NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

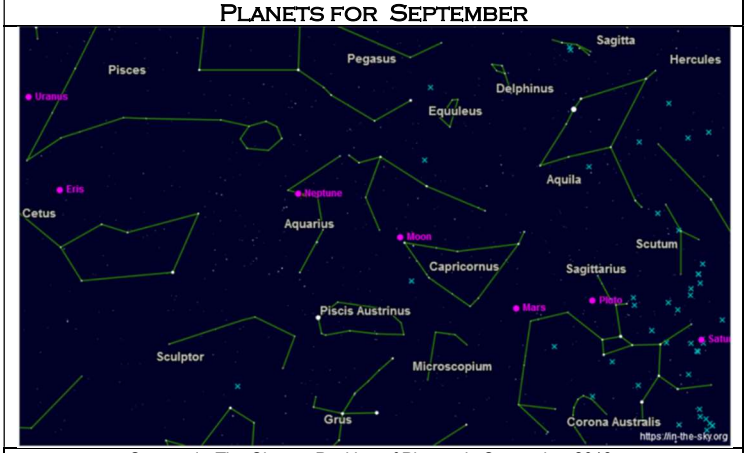
SEPTEMBER 2018

PRESIDENT'S NOTES

HAPPY DISCOVERY DAY, NEPTUNE

Hi everyone. While the August storms will continue into September, there may be nights of clarity, possibly suitable for celestial viewing. Saturn and Mars are still well placed for viewing from before dusk. After dark, you can try for the Kuiper belt object Pluto (the once planet and now tiny world) visited by the New Horizons spacecraft, hanging out a bit above and between the two. Remember, you will be going for a star-like object in a star field (through eyepiece or camera) that contains Pluto. You will not identify Pluto directly as a planet. It will not show as a disk, just a dot, and there are a lot of dots out there. If you image Pluto in the star field and return to shoot the same field a night or two later, you will get your needed data. An examination of the two images (if you got the right field) will show the tiny dot of a planet shifting across the static background. Moreover, given it may be several nights between clear nights your two shots may show a good bit of movement with respect to the background star field.

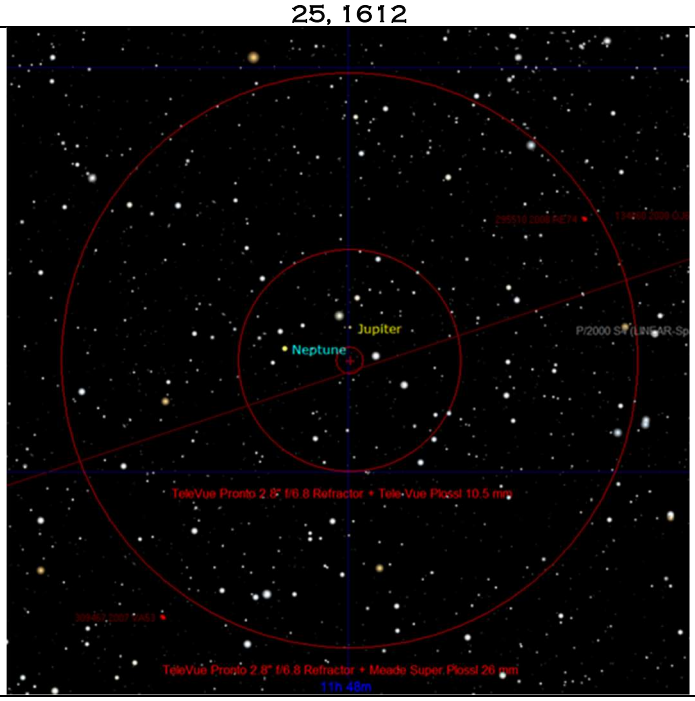
PLANETS FOR SEPTEMBER



Source: In-The-Sky.org Position of Planets in September 2018. https://in-thesky.org/findercharts.php?objtxt=P8&duration=5

If you're out looking for something more than a dot, on September 7, planet Neptune is at opposition. The cold blue gas planet will be its closest to Earth (which isn't saying that much at around 2.7 billion miles), but its disk will be fully illuminated by the sun. It will be brighter than any other time of the year and will be visible all night long, so it is the best time to view and photograph Neptune. Due to its extreme feeble brightness, you will need binoculars just to glimpse it, and it will only appear as a tiny blue dot in all but the most powerful telescopes. Still there are, in my mind, a few good reasons to go after Neptune. It is one of our own -- and we should always try to meet our neighbors. Secondly, Neptune is a size that we are beginning to pick up in our search for exoplanets. Imagine finding something that dim and relatively small around some far away star?

JUPITER AND NEPTUNE POSITIONS IN THE SKY, DECEMBER 25, 1612



Source: D. Roemer, Sky 6 screen save.

Third, as an extension to that thought (think how much trouble you have finding Neptune when you *know* where it is), now imagine trying to find it if you had no clue. In the notes taken by Galileo in late 1612 (406 years ago), while he was observing the Jupiter system he recorded Neptune as a nearby moderately bright star. About a month later on 27 January 1613, still looking in the same area of the sky,

he recorded two stars in his field of view. One was Neptune and the other an actual star. Bizarrely, Galileo observed the pair again the following night when he noted that the two stars appeared to be further apart but didn't continue to investigate. Apparently, Neptune was star-like enough to dismiss. I've included a screen save from my planetarium *The Sky*, with the fields of my small 70mm telescope and a couple of normal eyepiece fields to show just how near the two planets were in the sky of 1612-13. Therefore, the fourth reason to look for and recognize Neptune is that telescopic observations confirming the existence of Neptune were not made until the night of September 23–24, 1846, almost exactly 172 years ago, 234 years after Galileo had taken a look. Happy discovery day Neptune

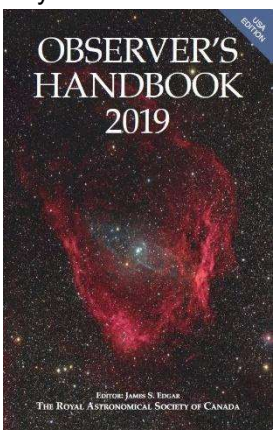
While we are thinking of small dots, full disks and that sort of thing, our own wobbly little world will become evenly illuminated from pole to pole for a day in September, The equinox occurs at 01:54 UTC on the 23rd. The Sun will shine directly on the equator and there will be nearly equal amounts of day and night throughout the world. This is also the first day of fall (autumnal equinox) in the Northern Hemisphere and the first day of spring (vernal equinox) in the Southern Hemisphere.

Now get out there and stare.

At the September Meeting

The treasurer will be taking orders for the 2019 RASC Handbooks (US Edition) and Astronomy Magazine calendars at the September 14 and October 12 meetings.

The RASC Handbook, published for over 100 years, is an approximately 350-page guide published annually by The Royal Astronomical Society of Canada.



Yearly data in the handbook includes such topics as: rise/set times for sun and moon; eclipses; location of the planets and bright asteroids; periodic comets; times of meteor showers; star occultations by the Moon/asteroids; orbital positions of the brighter satellites for Jupiter and Saturn; and, cycle information of many variable stars.

Recurring data includes such topics as: orbital/physical data on the planets and their satellites; astronomical and physical constants; some optical properties of telescopes/binoculars; information on filters for astronomical observing; light pollution and sky transparency; descriptions of the various systems of specifying time; information on the Sun including sunspots and aurorae; a list of meteorite craters in the US and Canada; advice on using the RASC Handbook for teaching astronomy; information on the Gegenschein and zodiacal light; 40 pages of tables dealing with stars, star clusters, nebulae and galaxies; and, maps of the Moon and the entire stellar sky.

The Deep Space Mysteries 2019 calendar produced by Astronomy Magazine features 12 breathtaking images of stars, planets, galaxies, and other deep space wonders. Each image is accompanied by an informative, educational essay about the celestial object shown in the image.

Please plan to pay for your purchase at the time you sign up.

RASC Handbook $22.50 (Please pay $23.25 if paying with PayPal) (Regular retail is $28.95)

Astronomy Mag calendar $6.50 (Please pay $6.75 if paying by PayPal) (Regular price $12.95)

You can sign up for these publications at the September 14 or October 12 meetings. (Cash or check made out to Huachuca Astronomy Club). You can also email the treasurer (tedforte511@gmail.com) and pay by PayPal (use the donate button on www.hacastronomy.org). Please be sure to add the extra charge for Pay Pal purchase. When paying by PayPal, you can use your credit card or your PayPal account.

Also available at the September 14 and October 12 meetings will be tickets for this year's Dine Under the Stars fundraiser to be held adjacent to the Patterson Observatory on October 20 from 6-9 PM. Adult tickets are $50 each and the proceeds go toward supporting the University of Arizona, South students, faculty and staff with scholarships, grants, and awards. Your purchase of a Dine Under the Stars ticket helps Ted (HAC's representative on the University South Foundation's board of directors) fulfill his obligation and remain in good standing with the foundation that owns the Patterson Observatory. Please pay with cash or check payable to "University South Foundation".

Patterson Observatory addition update

A back-order delay in the metal siding for the exterior of the addition has caused the completion date for the project to slip into October. Much of the interior work, such as dry wall installation cannot be completed until the exterior is completed making the addition water proof. Construction activity will be managed to not interfere with scheduled events at the observatory but the classroom will be unavailable for most of the month.

The Patterson extension project will add restrooms, a kitchenette, and a storage area to the observatory. The upgrade is being funded by a donation from the David Patterson estate.

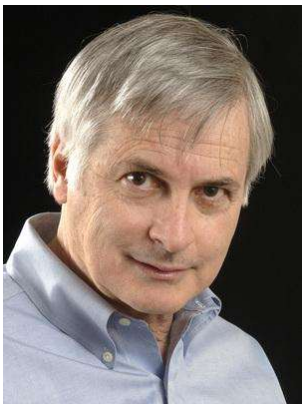
Special Appearance by Seth Shostak

The University South Foundation is teaming with the Huachuca Astronomy Club to bring Dr. Seth Shostak of the SETI institute to Sierra Vista for a special presentation as a community event. Seth's talk will be held on Monday, November 5 at 7 pm in the Student Union at Cochise College.

The foundation and the club are cost-sharing (about 80%-20%) to pay for this special event which will be open to the public free of charge. In addition to paying 20% of the stipend, HAC will treat Dr. Shostak to dinner at the Outback Steak House before the talk. Any HAC member wishing to attend the dinner is welcome (pay as you go) but seating will be limited and it's first come first serve.

Whether you can make it to dinner or not, we hope you will plan to attend this special event and bring your family, friends, and neighbors.

Seth Shostak directs the search for extraterrestrials at the SETI Institute in California—trying to find evidence of intelligent life in space. He is also committed to getting the public, especially young people, excited about astrobiology and science in general.



Seth is the host of "Big Picture Science," the SETI Institute's weekly radio show. The one-hour program uses interviews with leading researchers and lively and intelligent storytelling to tackle such big questions as: What came before the Big Bang? How does memory work? Will our descendants be human or machine? What's the origin of humor? Big Picture Science can be found in iTunes and other podcast sites.

What species are you? What is your Astronomer's DNA? Do you know?

By Ted Forte

Placing tongue firmly in cheek I submit to you below the major identifiable species of amateur astronomers.

Astronomae Amaterium Astronomus Artifex (AArt) (the astro-photographer) This species is devoted to turning astronomical objects into subjects for the camera.

The species is subdivided into *Astronomus Artifex Digitatum, which* has only recently evolved having supplanted:

Astronomus Artifex Membrana which is an endangered species that is nearly extinct. Membrana dabbled in film photography, hypersensitizing, and manual guiding.

Astronomae Amaterium Astronomus Visula (AV) is colloquially "the visual observer". Astronomy to this amateur means looking through telescopes for the visceral enjoyment of the act.

This species also has subdivisions, the primary diversification appearing recently as *Astronomus Visula Admeo (AVa)* who has developed behavioral adaptations that exploit go-to technology.

The emergence of Admeo has led some to reclassify the classical Visula as *Astronomus Visula Astrum Humulus* (*AVh*) known popularly as "the star hopper". Humulus has recently been placed on the endangered species list. The AVh genetic marker is apparently a recessive gene.

Astronomae Amaterium Astronomous Instrumenta (AI) (The ATM or amateur telescope maker) This species enjoys building telescopes. (Sometimes to the exclusion of using telescopes).

Astronomae Amaterium Astronomous Instrumenta Coactor (AIC) This is the astronomer who pursues the hobby for the toys. Coactor collects telescopes and would rather look *at* them rather than *through* them.

Astronomae Amaterium Astronomous Physicus (AP) The science is the thing. Research and pro-am collaboration is the name of the game. Expression of the *AP* gene often results in publication in peer reviewed journals.

Astronomae Amaterium Astronomous Magister (AM) "The teacher" is obsessed with outreach and enjoys sharing astronomy with the public. Research has shown that the *AM* gene is present in the entire amateur astronomer genus and can be activated by contact with Magister or exposure to a curious public. Once expressed, this gene has the potential to become dominant.

Astronomae Amaterium Astronomous Auctor (AAuc) "The writer" does newsletters, blogs, and articles about astronomy. Upon publication of bound volumes, they can undergo a metamorphous that changes them into an entirely different genus (of the family *Scriptor*). (One can actually belong to both *Scirptor* and *Astronomae* simultaneously).

Astronomae Amaterium Astronomous Rerum (AR) "The historian" is an admirer of the astronomers of the past. They too, often share traits with *Scriptor* and can sometimes be hard to identify as *Astronomae Amaterium.*

Seldom is an amateur astronomer pure-blooded; we are all hybrids of the above basic types to varying degrees. It has also been discovered that the entire genus *Astronomae Amaterium* has the remarkable ability to adapt through Lamarckian evolution with species transmutations occurring in as little as months and there is even evidence that these acquired adaptations and their resulting transformations are sometimes reversible. The astronomer you are today is not predictive of the astronomer you may be become.

This article is provided by NASA Space Place.

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Space Place Article September 2018

A Trip Through the Milky Way

By Jane Houston Jones and Jessica Stoller-Conrad

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

The waning days of summer are upon us, and that means the Sun is setting earlier now. These earlier sunsets reveal a starry sky bisected by the Milky Way. Want to see this view of our home galaxy? Head out to your favorite dark sky getaway or to the darkest city park or urban open space you can find.

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

Jupiter, Saturn and reddish Mars are next in the sky, as they continue their brilliant appearances this month. To see them, look southwest after sunset. If you're in a dark sky and you look above and below Saturn, you can't miss the summer Milky Way spanning the sky from southwest to northeast.

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

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

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

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

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

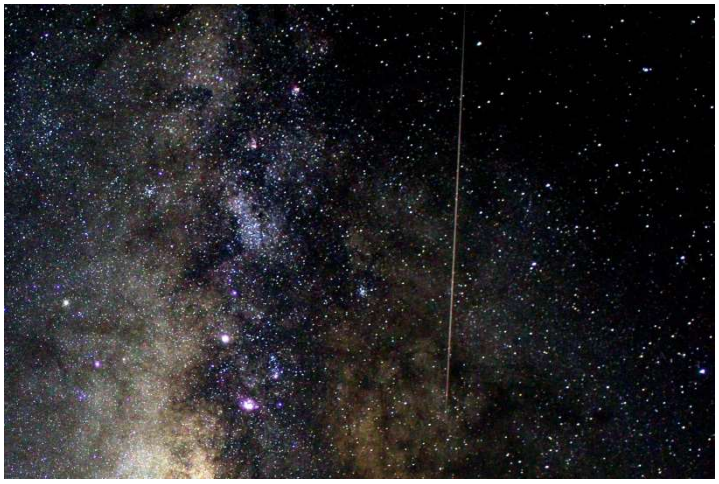
Caption: This illustration shows how the summer constellations trace a path across the Milky Way. To get the best views, head out to the darkest sky you can find. Credit: NASA/JPL-Caltech

Pictures from HAC Members

Comet P-21 Giacobini-Zinner by David Roemer

Mars by David Roemer

Perseid in Sagittarius isteri by Bob Kepple



Want Ads

For Sale: 127mm, f7.5 ED Triplet Explore Scientific refractor (like new) tube assembly

Asking $1400.00.

Or will sell complete system with Celestron CGEM equatorial mount with autoguider and all equipment ready for astrophotgraphy for $3,100.00.

Contact Bob Kepple at 520-366-0490.

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HAC Sep - Oct Calendar of Events

SU	MO	TU	WE	TH	FR	SA
2 Sep 7:37 PM	**3**  LABOR DAY	**4**	**5**	**6**	**7** St. David H.S. at Patterson 9am- Noon Member Star Party BMO	**8**
9 11:01 AM	**10**	**11**	**12**	**13** Patterson Public Night 7 pm	**14** HAC Meeting Student Union	**15**
16 4:15 PM Mars at perihelion	**17** Saturn 2 ° S of moon	**18** Gather Homeschool Grp at Patterson 9 AM to noon	**19** Veritas School at Patterson 9 AM to Noon	**20**	**21** Venus greatest brilliancy	**22** Autumnal Equinox 6:54 PM
23	**24** 7:52 PM	**25**	**26**	**27**	**28**	**29**
30	**1 Oct**	**2** 7:37 PM	**3**	**4**	**5**	**6** Member Star Party
7	**8** 8:47 PM Draconid Meteors	**9** Draconid Meteors	**10**	**11** Patterson Public Night 6:30 PM	**12** HAC Meeting Student Union	**13** Kartchner Star Party noon to 9 PM
14	**15**	**16** 11:02 AM	**17**	**18**	**19**	**20** Dine Under the Stars @ Patterson Obs Orionid meteors
21 Orionid meteors	**22** Orionid meteors	**23** Ft. Huachuca Home school grp @ P.O. Uranus Opposition	**24** 9:45 AM	**25**	**26**	**27**
28	**29** Challenge II Group at Patterson 6 PM	**30**	**31** 9:40 AM	**1 Nov**	**2**	

All event times MST. Join Haclist to keep up to date with all of the Huachuca Astronomy Club events
Send an email to: haclist-subscribe@yahoogroups.com