NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

AUGUST 2022

PRESIDENT'S MESSAGE

Well, the monsoons have filled our skies this month with clouds and lots of rain. I applaud those who have braved early mornings and late nights to catch the planets in the limited skies.

Personally, we have almost completed our long journey thru construction for our home observatory. This project was conceived in 2019. It finally broke ground in the Nov 2021 with the first walls going up in Jan 2022. And now in Aug 2022 we have passed the final inspection.

We will not get a telescope mounted until the metal pier is installed but we can begin to migrate the books, and related equipment from the storage spaces thru out the house and garage in to the warm room.

I am sure many of you have dealt with long projects to achieve a dream and know the excitement as it neared completion. As soon as we have the telescope mounted, we will host a club viewing event. Until then we will join the others in seeking clear patches between clouds.

Photo in Space

As part of some Tesla promotion, Ken Kirchner was given the opportunity to launch a photo into space thru the Tesla Referral Program. Ken offered the opportunity to the Huachuca Astronomy club and created this photo grouping in memory of past presidents.

The photo has been laser etched into the Tesla Mosaic and is in the process of preparing to be launched aboard the KPLO mission from Cape Canaveral on August 4, 2022.

Thank you, Ken, for honoring our Club and its past presidents in this generous way.

Zane Landers and the Hadley Telescope

Zane Landers our speaker in July, brought his newest device a Hadley 114 MM Telescope that was created using laser printed parts and a purchased mirror. He talked of the cost effectiveness of building scope versus purchasing with enthusiasm and great detail. It got many members charged up with the idea of small portable scopes for table top use for looking at the moon and planets. This was a real change from those who keep getting bigger and bigger scopes. I was astonished at the amount of readily available parts for telescopes, if you know the right source. He is also working on thin telescope mirror for larger scopes. It will be interesting to watch the progress for this new technique in shaping glass and its impact on telescope users. Larger mirrors with much less weight will mean that the portability issues for larger scopes might be solved. It was wonderful to hear a younger member with such an enthusiasm for both astronomy and telescopes.

Speaker for August Meeting – Dean Frazeur

Presentation Title: Star Gazing for Grounded Living Part II

Who is Dean Frazeur? Why should I listen to Him?

Dean and Carol Frazeur arrived 'out West' from 'back East' (VA.) three years ago, fulfilling one of his boyhood dreams. Their resident family members are two rescued K-9s, three dozen outdoor fish, and various wildlife wandering through their palatial estate in Hereford.

Dean's continuing professional experiences span four arenas: business management, higher education (community colleges), consultancy/counseling, and non-profit organizations. He earned four college degrees in pursuit of related calling competencies. He is passionate about Carol, college basketball and football, classical rock & roll, astronomy, and lifelong learning.

He enjoys engaging in relaxed 'what makes life worth living?' conversations with individuals and groups over meals, using recent neuroscience and human development research studies. Dean likes to quote guitarist Joe Walsh's (the Eagles) lyric from the song by the same name, "Life's Been Good (to Me So Far)," 1978.

Artemis I Launch Party

NASA has announced a launch date for the Artemis I mission. The launch date and two announced backups, are still somewhat tentative, dependent on the completion of some ongoing testing, and the usual caveats about weather or unforeseen occurrences apply.

As of this moment, the primary date is Monday, August 29. There is a two-hour window beginning at 5:33a.m.

The backup dates are Friday, September 2 at 9:48 a.m. (two-hour window) and Monday, September 5 at 2:12 p.m. (90-minute window).

We expect to have a launch date commitment or cancelation in mid-August.

We will hold a public launch-watch party at the Patterson Observatory. If you would like to come, please RSVP to Ted Forte (tedforte511@gmail.com) and he'll keep you posted as to any change in the schedule.

Dual Asteroid Redirect Test (DART)

The DART spacecraft is scheduled to impact the asteroid Didymos's moon Dimorphos on Monday September 26 at 4:14 p.m. MST. NASA will cover the event live on NASA TV. The probe will impact the tiny moon at 6 km/sec. The impact will be observed by a small cubesat released a few days earlier. Ground based telescopes will then be used to determine the change in Dimorphos's orbit.

The idea is to test the feasibility of using an impactor to divert an asteroid on a collision course with Earth.

Monitor HacAstro for details on how to watch.

Dine Under the Stars

Dine Under the Stars is the University South Foundation's annual fundraiser held adjacent to the Patterson Observatory. This year's event is Saturday November 5 from 6 to 9 pm.

The foundation owns the Patterson Observatory and HAC enjoys exclusive use of the facility due to our long-established symbiotic relationship with the foundation. HAC volunteers operate and maintain the observatory.

The foundation exists to support the students, faculty and staff of the University of Arizona, Sierra Vista, but its collateral objectives include serving as community advocates for higher education, promoting quality of life for area residents, and contributing to lifelong learning. As such, the foundation considers the observatory to be a vital component of its mission. Supporting the foundation ensures that the observatory continues to operate.

To maintain HAC's influence and cooperation with the foundation we have three members on the foundation board of directors, Penny Brondum, Jim Reese, and Ted Forte. You can support them by buying tickets to the Dine Under the Stars event from them. Adult tickets are $60. We should have tickets available at the August, September and October meetings. Make checks payable to "University South Foundation". The cost of the event is borne by sponsors, so all of the money made at the event goes toward the charitable purpose of the foundation- scholarships.

Dine Under the Stars will include dinner and live entertainment. There will be a silent auction, a 50/50 raffle, door prizes and more. The observatory will be open during the event and we need volunteers to bring telescopes and greet our guests. This year we'll have Saturn, Jupiter and a waxing moon as targets, so it should be a pretty exciting evening.

Event To Explore Life of Enigmatic Astronomer Robert Burnham, Jr.

Lowell Observatory will host a panel discussion about the author of the three-volume astronomy masterpiece, Burnham's Celestial Handbook. This event is open to the public.

When: August 13, 2021, 7-8 p.m. MST

What: *Lowell 42 | Examining a Genius: The Triumph and Tragedy of Robert Burnham, Jr.*

Lowell Observatory Historian Kevin Schindler will moderate a panel discussion that explores Burnham, what drove him, and the personality of a genius.

Who: Panelists include:

*Journalist Tony Ortega, who in 1998 wrote the defining account of Burnham's life

*Donna Courtney, Burnham's niece and only surviving relative

*Dr. William Sheehan, astronomy historian and retired psychiatrist

*Brian Skiff, renowned sky expert who has worked for nearly 40 years at Lowell Observatory

Where: Virtual (free):
https://www.youtube.com/watch?v=9TW4DntK0Ks
*Viewers will have the opportunity to ask questions via the YouTube chat feature.

In-person at Lowell Observatory (regular admission fee to Lowell Observatory applies): 1400 W. Mars Hill Rd., Flagstaff, Arizona.

Why: Robert Burnham, Jr. compiled one of the most popular astronomy books ever—the three-volume observing bible, Burnham's Celestial Handbook—while working at Lowell Observatory in the mid-20th century. Yet Burnham was enigmatic and tragic in many ways, and his story is little known.

This program is part of Lowell Observatory's Lowell 42 series, which connects guests to "life, the Universe and everything." (Many of you will recall that in Douglas Adams's comical novel "The Hitchhiker's Guide to the Galaxy," the supercomputer came up with 42 as the answer to the ultimate question of life, the universe, and everything.)

Contact:

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NASA Night Sky Notes August 2022

This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

Artemis 1: A Trip Around the Moon – and Back!

David Prosper

We are returning to the Moon - and beyond! Later this summer, NASA's Artemis 1 mission will launch the first uncrewed flight test of both the Space Launch System (SLS) and Orion spacecraft on a multi-week mission. Orion will journey thousands of miles beyond the Moon, briefly entering a retrograde lunar orbit before heading back to a splashdown on Earth.

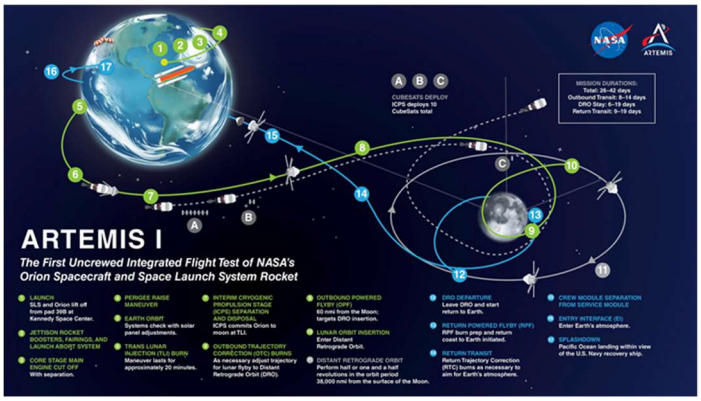
The massive rocket will launch from Launch Complex 39B at the Kennedy Space Center in Florida. The location's technical capabilities, along with its storied history, mark it as a perfect spot to launch our return to the Moon. The complex's first mission was Apollo 10 in 1968, which appropriately also served as a test for a heavy-lift launch vehicle (the Saturn V rocket) and lunar spacecraft: the Apollo Command and Service Modules joined with the Lunar Module. The Apollo 10 mission profile included testing the Lunar Module while in orbit around the Moon before returning to the Earth. In its "Block-1" configuration, Artemis 1's SLS rocket will take off with 8.8 million pounds of maximum thrust, even greater than the 7.6 million pounds of thrust generated by the legendary Saturn V, making it the most powerful rocket in the world!

Artemis 1 will serve not only as a test of the SLS and the Orion hardware, but also as a test of the integration of ground systems and support personnel that will ensure the success of this and future Artemis missions. While uncrewed, Artemis-1 will still have passengers of a sort: two human torso models designed to test radiation levels during the mission, and "Commander Moonikin Campos," a mannequin named by the public. The specialized mannequin will also monitor radiation levels, along with vibration and acceleration data from inside its mission uniform: the Orion Crew Survival Suit, the spacesuit that future Artemis astronauts will wear. The "Moonikin" is named after Arturo Campos, a NASA electrical engineer who played an essential role in bringing Apollo 13's crew back to Earth after a near-fatal disaster in space.

The mission also contains other valuable cargo for its journey around the Moon and back, including CubeSats, several space science badges from the Girl Scouts, and microchips etched with 30,000 names of workers who made the Artemis-1 mission possible. A total of 10 CubeSats will be deployed from the Orion Stage Adapter, the ring that connects the Orion spacecraft to the SLS, at several segments along the mission's path to the Moon. The power of SLS allows engineers to attach many secondary "ride-along" mission hardware like these CubeSats, whose various missions will study plasma propulsion, radiation effects on microorganisms, solar sails, Earth's radiation environment, space weather, and of course, missions to study the Moon

and even the Orion spacecraft and its Interim Cryogenic Propulsion Stage (ICPS)!

If you want to explore more of the science and stories behind both our Moon and our history of lunar exploration, the Night Sky Network's Apollo 11 at 50 Toolkit covers a ton of regolith: bit.ly/nsnmoon! NASA also works with people and organizations around the world coordinating International Observe the Moon Night, with 2022's edition scheduled for Saturday, October 1: moon.nasa.gov/observe. Of course, you can follow the latest news and updates on Artemis 1 and our return to the Moon at nasa.gov/artemis-1



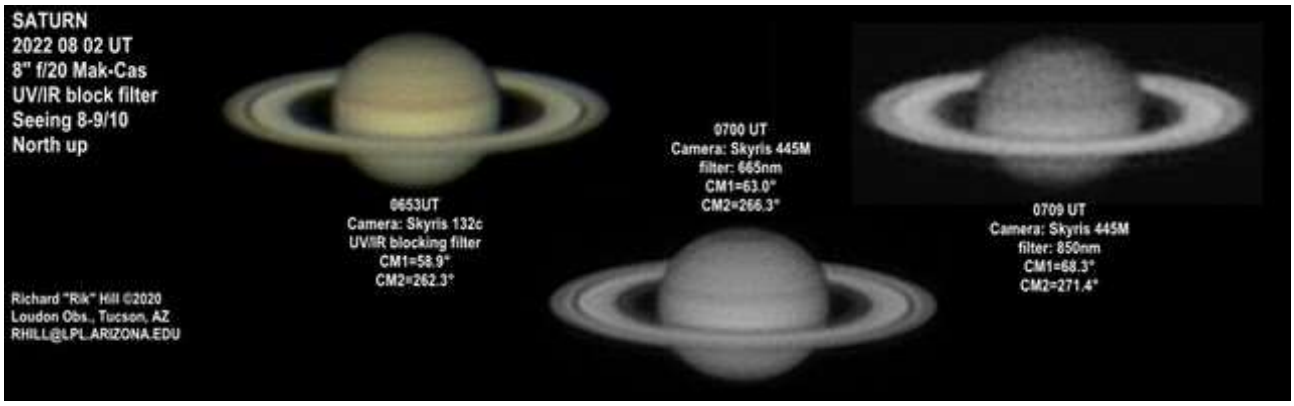
Follow along as Artemis 1 journeys to the Moon and back! A larger version of this infographic is available from NASA at: nasa.gov/image-feature/artemis-i-map

Full Moon over Artemis-1 on July 14, 2022, as the integrated Space Launch System and Orion spacecraft await testing. Photo credit: NASA/Cory Huston Source: https://www.nasa.gov/image-feature/a-full-moon-over-artemis/

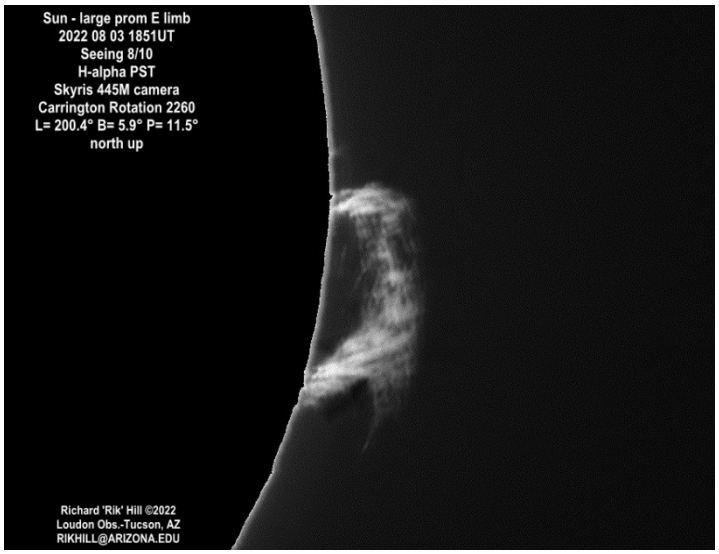
Pictures from HAC Members

JWST Party Photos

Saturn by Rik Hill



Large Prominence on Sun in H-alpha by Rik Hill



A Final Thought:

"The Star Gazing Year" by Charles Laird Calia

"A beginner will often peer into a telescope for a few seconds and proclaim confidently that he can't see anything. But a seasoned observer knows better. The atmosphere is constantly moving. It can vary from an image that simply hangs stationary in the eyepiece, as a painting does on an artist's wall, or it may ripple violently like the writing on a newspaper held behind a running faucet. An astronomer has to be patient then, like a good hunter. He has to wait at the eyepiece and pick his moments, training his eye to locate the faintest hint of detail, a process that can take time to develop."

To all those who are patient this monsoon season to bring up new images and insights Thank you.

Club Officers and Contacts

President: *Penny Brondum*

Vice President: *Karen Madtes*

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For more information on products and contact information, their websites are:

Farpoint Astronomy http://www.farpointastro.com/

Starizona http://starizona.com/

HAC Aug-Sep 2022 Calendar of Events

SU	MO	TU	WE	TH	FR	SA
31 Jul	**1 Aug**	**2**	**3**	**4**	**5** 4:06AM	**6**
7	**8**	**9**	**10**	**11** 6:36PM	**12** HAC Meeting 7PM Room A102 Perseid meteors	**13** Perseid meteors
14 Saturn at Opposition	**15** Jupiter/Moon 2° apart	**16**	**17**	**18** 9:36PM	**19** Mars/Moon 3° apart	**20**
21	**22**	**23**	**24**	**25**	**26**	**27** 1:17AM Mercury at eastern elongation
28	**29** Artemis I launch window 5:33 AM (Tentative)	**30**	**31**	**1 Sep** Patterson Public Night 7PM	**2**	**3** 11:08 AM
4	**5** 	**6**	**7**	**8**	**9** HAC Meeting 7PM Room A102	**10** 2:59AM
11	**12**	**13**	**14**	**15**	**16**	**17** 2:52PM
18	**19**	**20**	**21**	**22** Autumnal equinox 6:04Pm	**23**	**24**
25 1:54PM	**26** Jupiter at Opposition	**27**	**28**	**29** Patterson Public Night 6:30PM	**30**	

All times local MST

Join **HacAstro** to keep up to date with all of the Huachuca Astronomy Club events

Send an email to: HACAstro+subscribe@groups.io

Watch the group for notice when in person events and meetings will resume