NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

JULY 2020

PRESIDENT'S NOTES

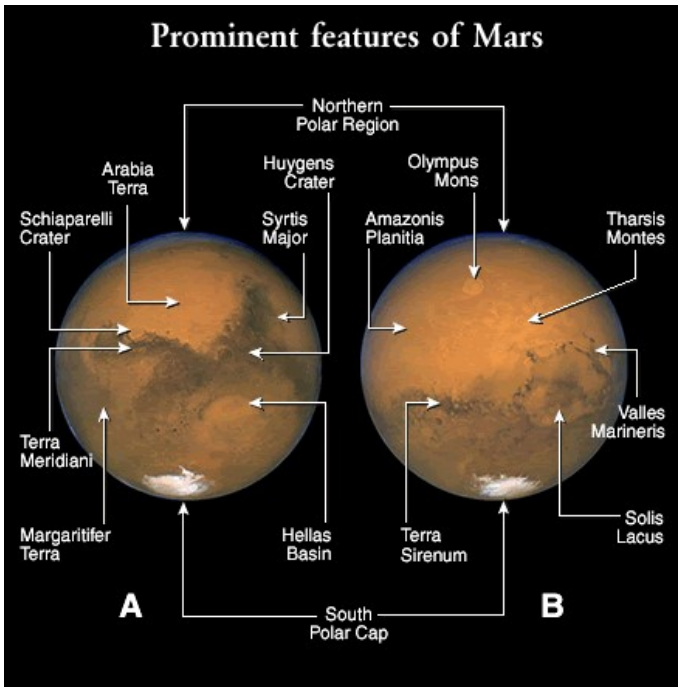
Hello HACers,

We had a good run of weather through much of June, so much so that some of our members even felt a bit sleep deprived as the clear night skies continued. Now it is July, and if the normal high- and low-pressure zones set up, the monsoon will be giving us plenty of nighttime down time, unless you are buying time on a remote telescope somewhere far, far away.

I am hoping and planning for breaks in the monsoon, within which to view the parade of planets. Throughout July the line up from west to east will be Jupiter, Saturn, Neptune, and then way to the east: Mars. Three of the four planets will be beautiful globes to visit telescopically. Jupiter's red spot has bloomed again after many diminishing years, and the four Galilean moons still fascinate me with their constant movements. Saturn … what need you say beyond, it's got rings! Well you can say: you can see gaps on the rings and six or seven moons with a moderate (6-8") telescope.

Neptune, yep it's up there. To me looking through the telescope at Neptune has always been disappointing. It is bigger than a dot and it has color, green-blue or blue green. But that's all folks. Time to move on, to Mars.

Now there's a planet. Vivid colors even in a small telescope, and when it gets close, as it is this year, a polar cap is usually visible even in a small telescope. And I'm not saying the small telescope is imparting false colors either. When there is a favorable passing, small scopes can show some honest to goodness features. The graphic below shows more detail than you are likely to see, but as you move away from the image you will get to distance that pretty much matches what you are seeing through your lens. There is a great short but concise write-up on the features of Mars that goes along with this graphic. You'll find it at:
https://amazing-space.stsci.edu/news/archive/2004/01/photo-02.php



Source: Space Telescope Science Institute, Ann Feild Didyk and Graphics Dept.

Martian features are on solid ground unlike the large gas planets and so are semi-permanent. But they do change from one passing to another. First, Mars undergoes seasons like the Earth, so the ice caps grow, ebb, and there seems to be darkening around the poles as the ebb. Also, dark patches such as Terra Sirenum, Terra Meridani, and Syrtis Major can undergo some major changes. I am not saying your observing rig will have enough resolution or you will be lucky enough to get the excellent seeing needed to see changes. But if you do, these changes usually take place just along the outer edges, so they appear to erase and rewrite the "coastline" of the features. From time to time, however, changes "inland" seem to break up the features into unrecognizable shapes. These changes come and go from passage to passage and are most probably due to light coatings of wind-blown dust coming from the Hellas Basin. The dust storms originating from the Hellas Basin are notorious. Many storms can be small and interesting to watch as they make their way across the Martian surface. However, when the storm continues to grow, Mars can be enveloped in dust that blocks all its surface features in less than an Earth week, and the storm can last for weeks. This

usually puts an end to the Martian viewing season here on Earth.

Oh, before I go, I wanted to catch everyone up on the goings-on of the club. In no order of importance: Astronomy is a hobby, a way to learn humility, an obsession, an intellectual endeavor, a way of life, a stubborn problem, a pleasant pastime, a series of stubborn problems, an engineering project, a way to forget the problems of this world, a very large and odd jigsaw puzzle, a spiritual journey, a math problem that has too many variables rounded too large, ferreting out the original law and order, and a cover story for your insomnia. These were just a few definitions off the tip of my pointed head, but I think there are enough of them to show a bit of the bandwidth in our mutual interest. While we are still not holding public meetings, we are still practicing our pastime. So, our plan is to begin having Zoom virtual meetings, star parties and tech sessions. There is no reason a pastime such as ours that bridges light years and encompasses the universe should be limited due to lacking physical meetings. In fact, we should embrace it. More news to come!

Until then, go clean a few optics, and whenever you can get out and stare.

Welcome our new member

Joining in June, Cassie Bonadeo of Sierra Vista is our newest military member. Welcome Cassie, we are glad you joined.

Anybody out there?

There are over 100 members of HAC and 154 members of the HACAstro group https://groups.io/g/HACAstro but very few members that post. Why so shy?

It is especially important now that we are avoiding in person activities that we keep in touch. The HACAstro group is a great place to do that.

I don't know about you, but spending so much time at home has given me the opportunity to use my observatory more than ever. I'm making progress on several observing projects. I'll bet that many of you are too!

So, let's hear about it. What are you observing? Do you have any astro-images to share? Have you made any improvements or modifications to your observatory? Your mount? Your scope? Buy any new equipment? Have some equipment to sell or trade? Lean any new Hacks? Read any good (on-topic) books?

Maybe you have questions? We are fortunate to have a number of world-class astro-imagers and some very experienced observers on the list that would be happy to try and answer them.

Maybe you have thoughts about the club – all of the members of the board of directors monitor the list.

Anything related to our hobby is fair game: astronomy, observing, telescopes, eyepieces, astro-cameras, observing gear, astro-gadgets, star parties, astronomy books and papers, astrophysics, club events and organization, meeting topics, outreach and activities, the list goes on.

If you are not on the list, it's easy to join; just send an email to HACAstro+subscribe@groups.io

NASA Night Sky Notes July 2020

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!

Mars's Latest Visitor: NASA's Perseverance Rover

By David Prosper

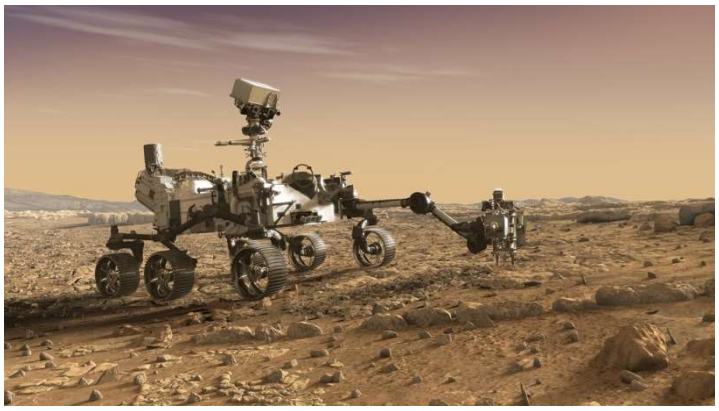
NASA's latest Mars rover, Perseverance, is launching later this month! This amazing robot explorer will scout the surface of Mars for possible signs of ancient life and collect soil samples for return to Earth by future missions. It will even carry the first off-planet helicopter: Integrity. Not coincidentally, Perseverance will be on its way to the red planet just as Mars dramatically increases in brightness and visibility to eager stargazers as our planets race towards their closest approach in October of this year.

Perseverance's engineers built upon the success of its engineering cousin, Curiosity, and its design features many unique upgrades for a new science mission! In February of 2021, Perseverance will land at the site of an ancient river delta inside of Jezero Crater and ready its suite of seven primary scientific instruments. The rover will search for traces of past life, including possible Martian fossils, with WATSON and SHERLOC, two advanced cameras capable of seeing tiny details. The rover also carries an amazing instrument, SuperCam, to blast rocks and soil outside of the rover's reach with lasers to determine their chemical makeup with its onboard suite of cameras and spectrometers. Perseverance will also take core samples of some of the most promising rocks and soil, storing them for later study with its unique caching system. Future missions will retrieve these samples from the rover and return them for detailed study by scientists on Earth. Perseverance also carries two microphones so we can hear the sounds of Mars and the noises of its instruments at work. It will even launch a small helicopter - Ingenuity - into the Martian atmosphere as a trial for future aerial exploration!

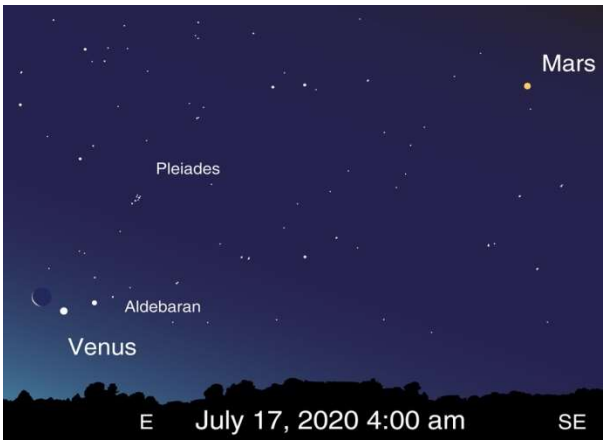
Would you like to contribute to Mars mission science? You can help NASA's rover drivers safely navigate the Martian surface by contributing to the AI4Mars project! Use this tool to label terrain features on photos taken of the Martian surface by NASA missions to help train an artificial intelligence algorithm to better read their surrounding landscape: bit.ly/AI4Mars

The launch of Mars Perseverance is, as of this writing, scheduled for July 20, 2020 at 9:15am EDT. More details,

updates, and livestreams of the event are available on NASA's official launch page: bit.ly/Mars2020Launch . Dig deep into the science of the Mars 2020 mission and the Perseverance rover at: mars.nasa.gov/mars2020/. Find out even more about past, present, and future Mars missions at nasa.gov.



Perseverance inspects a cluster of interesting Martian rocks with its instruments in this artist rendering by NASA JPL/Caltech



Observe Mars yourself over the next few months! Mars can be found in early morning skies throughout July, and by the end of the month will rise before midnight. Mars gradually brightens every night until the close approach of Mars in October. The pre-dawn skies of July 17 present an especially nice view, as the waning crescent Moon will appear near Venus and Aldebaran.

Pictures from HAC Members

NGC 4725, NGC 4712, NGC 4747 by Glen Sanner

Comet NEOWISE by Jay LeBlanc

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HAC Jul/Aug Calendar of Events

SU	MO	TU	WE	TH	FR	SA
28 1:16 am	**29** EVENTS ARE TENTATIVE	**30** TBD BY THE STATUS OF CONTINUING SITUATION	**1 Jul**	**2**	**3**	**4** 
5 9:44 PM on the Fourth Penumbral lunar eclipse	**6** Saturn and moon 2 degrees	**7**	**8**	**9**	**10** Hac Meeting Venus at greatest brillancy	**11**
12 4:29 PM Pallas Opposition	**13**	**14** Jupiter Opposition	**15** Pluto Opposition	**16**	**17** Venus and moon 3 degrees	**18** Mercury and moon 4 degrees
19	**20** 10.33 am Saturn Opposition	**21**	**22** Mercury at greatest western elongation	**23**	**24**	**25**
26	**27** 5:33 am	**28** Delta Aquariid meteors	**29** Delta Aquariid meteors	**30** Delta Aquariid meteors	**31**	**1 Aug** Jupiter 1.5 degrees fm moon
2 Saturn 2 degrees from moon	**3** 8:59 AM	**4**	**5**	**6**	**7** HAC Meeting Library commons	**8**
9	**10**	**11** 9:45 AM Perseid meteors	**12** Venus Western elongation Perseid meteors	**13** Perseid meteors	**14**	**15** Venus 4 degrees fm moon
16	**17**	**18** 7:42 PM	**19**	**20**	**21**	**22**
23	**24**	**25** 10:58 AM	**26**	**27**	**28** Ceres opposition	

Join HacAstro to keep up to date with all of the Huachuca Astronomy Club events
Send an email to: HACAstro+subscribe@groups.io