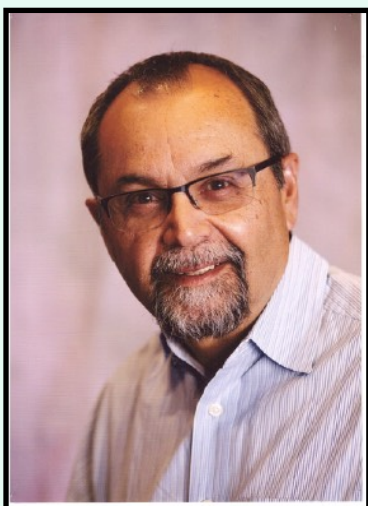


The High Desert Observer

February 2021

From the Desk of Ed Montes ASLC President

I have done hundreds of outreach sessions in my "career" as an amateur astronomer. There are always interesting questions that come up. Some are simple: How far is it to the moon? Some more detailed: How do you know how far away the stars are? In my experience the two most common



questions are less physical and more metaphysical: Is there life out there? Doesn't it make you feel small? Repetition has helped me refine my responses. For the former I rely on the law of large (actually VERY LARGE) numbers and say that every planet circling every star located in every galaxy is an experiment. So even if only a tiny, minuscule percentage of those experiments lead to life, then we are not alone. So, do I have direct evidence? No; no one does, but the numbers lead me to the conclusion. For the latter, I say no; the magnificence and enormity of the cosmos reinforce that fact that we are PART of this universe, we are part of something big.

What does this have to do with the ASLC? Well, the astronomical community is our universe. As we look out into it we recognize that we are not alone. There



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Coming Events (postponed due to Covid-19)

Typically, ASLC hosts public in-town observing sessions at the Pan Am Plaza on University Ave. and at Tombaugh Observatory on the NMSU campus. All sessions begin at dusk.

At our Leasburg Dam State Park Observatory, we normally hold monthly star parties. Located just 20 miles north of Las Cruces, our 16-inch Meade LX200 telescope at this site is used to observe under rather dark skies. Please note that the ASLC will not be holding other meetings, gatherings or public outreach events until it is deemed safe to do so. Please social-distance and wear your mask!

are individuals out there like John Briggs (last month's speaker) making things happen. There are other local clubs, national organizations, professional communities, magazines and blogs; so yes, there is other life out there. And does this make our own ASLC feel small? No, we are part of this Cosmos, linked to it and our members contribute to it. Just a few examples: Fred Pilcher does original research on the rotation periods of asteroids, Tim Kostelecky contributes observations to AAVSO, Bert and Janet Stevens have discovered asteroids, Howard Brewington has discovered comets, Jeff Johnson has had one of his images published in *Annals of the Deep Sky* vol. 8, and John Kutney has achieved the Master Observer designation from the Astronomical League.

My point is that we are a strong and viable local club that is an active and participating member of a larger community. To remain so, I ask that every member of the club take every opportunity to promote the club and try to recruit new members. I'm not saying go door-to-door, but when people you know and people you meet ask about what you do and what you like, tell them about astronomy and tell them about the club. If they are at all curious about the sky, help them out. Point them to the website, have them watch the club video, encourage them to attend one of our Zoom meetings. My desire, assuming there are no security issues, is to publish the link to the monthly meeting on our web page and allow interested members of the public to attend, just as we used to invite the public to our live meetings.

We are working diligently to find good and interesting speakers for our meetings. Many thanks to Rich Richins for obtaining our February speaker, Cameron Trapp, from U Cal San Diego, who will be talking to us about simulations of galaxy formation.

Until next month, clear skies!

The Astronomical Society of Las Cruces

(ASLC) is dedicated to expanding public awareness and understanding of the wonders of the universe. ASLC holds frequent observing sessions and star parties, providing opportunities to work on Society and public educational projects. Members receive electronic delivery of *The High Desert Observer*, our monthly newsletter, plus membership in the Astronomical League including their quarterly publication, *Reflector*, available in either paper or digital format. ASLC members are also entitled to a discount on a subscription to *Sky and Telescope* magazine. Annual Individual Dues are \$30; Family \$36; Student (Full Time) \$24. Dues are payable in January and partial year prorated for new members. Please contact our Treasurer, Patricia Conley, treasurer@aslc-nm.org for further information.

Next Monthly Meeting - February 26, 2021

Our next ASLC meeting will be virtual via Zoom®, to be held on Friday, February 26th at 7 p.m.

Our speaker for the February meeting is **Cameron Trapp**, presenting "**Galaxies on Fire**". Cameron is a PhD candidate at the University of California, San Diego working with Dr. Dusan Keres on *The FIRE Project* (Feedback In Realistic Environments), a suite of cosmological zoom-in simulations that focus on creating realistic simulated galaxies. The talk will go over some of the key aspects that go into these simulations and how they compare to actual observations. Some of the work Cameron has done on simulated galaxies reflect our own Milky Way.

Future meetings will continue to be virtual until the Covid-19 situation allows us to meet safely in person.

ASLC Board of Directors

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Featured Article:**Landing on Mars - A Tricky Feat**

David Prosper



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 <https://nightsky.jpl.nasa.gov/> to find local clubs, events, and more!

The Perseverance rover and Ingenuity helicopter will land in Mars's Jezero crater on February 18, 2021, NASA's latest mission to explore the red planet. Landing on Mars is an incredibly difficult feat that has challenged engineers for decades: while missions like Curiosity have succeeded, its surface is littered with the wreckage of many failures as well. Why is landing on Mars so difficult?

Mars presents a unique problem to potential landers as it possesses a relatively large mass and a thin, but not insubstantial, atmosphere. The atmosphere is thick enough that spacecraft are stuffed inside a streamlined aeroshell sporting a protective heat shield to prevent burning up upon entry - but that same atmosphere is not thick enough to rely on parachutes alone for a safe landing, since they can't catch sufficient air to slow down quickly enough. This is even worse for larger explorers like Perseverance, weighing in at 2,260 lbs (1,025 kg). Fortunately, engineers have crafted some ingenious landing methods over the decades to

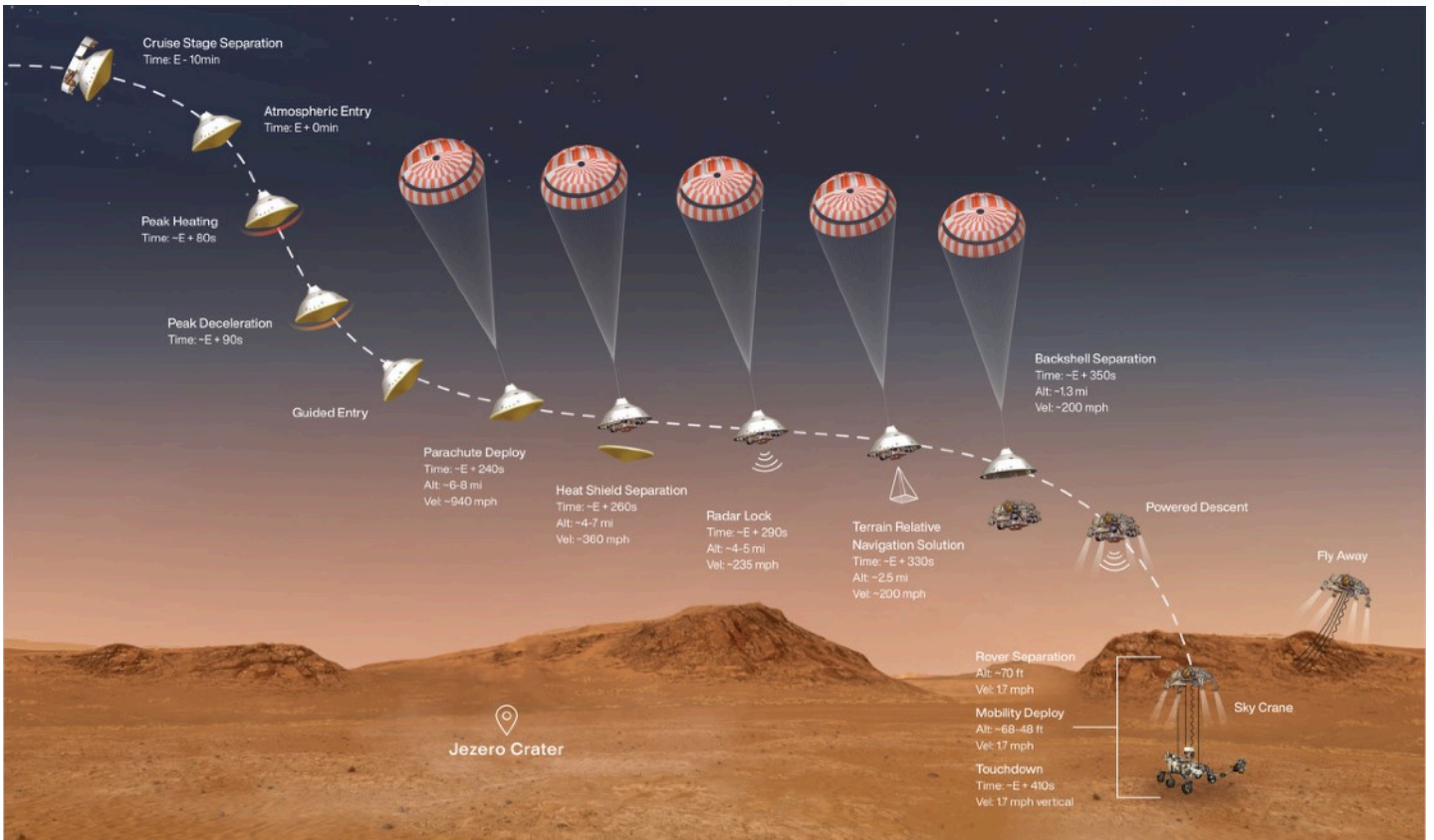
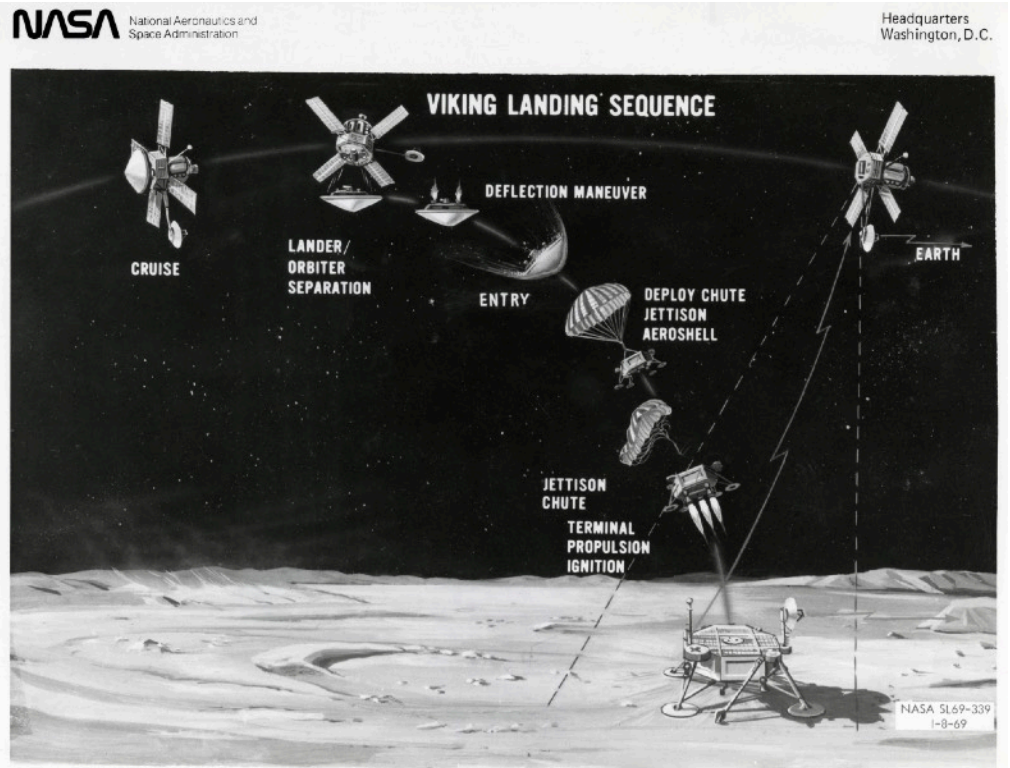
allow their spacecraft to survive what is called Entry, Descent, and Landing (EDL).

The Viking landers touched down on Mars in 1976 using heat shields, parachutes, and retrorockets. Despite using large parachutes, the large Viking landers fired retrorockets at the end to land at a safe speed. This complex combination has been followed by almost every mission since, but subsequent missions have innovated in the landing segment. The 1997 Mars Pathfinder mission added airbags in conjunction with parachutes and retrorockets to safely bounce its way to a landing on the Martian surface. Then three sturdy "petals" ensured the lander was pushed into an upright position after landing on an ancient floodplain.

The Opportunity and Spirit missions used a very similar method to place their rovers on the Martian surface in 2004. Phoenix (2008) and Insight (2018) actually utilized Viking-style landings. The large and heavy Curiosity rover required extra power at the end to safely land the car-sized rover, and so the daring "Sky Crane" deployment system was successfully used in 2012. After an initial descent using a massive heat shield and parachute, powerful retrorockets finished slowing down the spacecraft to about 2 miles per hour. The Sky Crane then safely lowered the rover down to the Martian surface using a strong cable. Its job done, the Sky Crane then flew off and crash-landed a safe distance away. Having proved the efficacy of the Sky Crane system, NASA will use this same method to attempt a safe landing for Perseverance this month!

You can watch coverage of the Mars Perseverance landing starting at 11:00 AM PST (2:00 PM EST) on February 18 at nasa.gov/nasalive. Touchdown is expected around 12:55 PM PST (3:55 PM EST). NASA has great resources about the Perseverance Rover and accompanying Ingenuity helicopter on mars.nasa.gov/mars2020. And of course, find out how we plan to land on many different worlds at nasa.gov.

Contribute to science with monthly observing programs from Globe at Night's website, <https://www.globeatnight.org/>, and check out the latest NASA's science on the stars you can - and can't - see <https://www.nasa.gov/>



Illustrations of the Entry, Descent, and Landing (EDL) sequences for Viking in 1976, and Perseverance in 2021. Despite the wide gap between these missions in terms of technology, they both performed their landing maneuvers automatically, since our planets are too far apart to allow Earth-based engineers to control them in real time! (NASA/JPL/Caltech)

Minutes of January 2021 Meeting

John McCullough - Secretary

Edward Montes, President, Astronomical Society of Las Cruces (ASLC, the Society), called the January 2021 meeting to order at 7:06 pm on 22 January 2021. He welcomed attendees to tonight's meeting via ZOOM. Nineteen (19) attendees were signed in for the start of the meeting, eventually twenty-two (22) individuals participated.

Ed welcomed the group, noting that 2021 marks the 70th anniversary of the founding of the Society (founded in 1951). Ed also welcomed new members to the Board of Directors, Mike Nuss and Rani Bush. He noted that Tracy Stuart will continue on the Board as Immediate Past President, Tim Kostelecky will be VicePresident, Patricia Conley will continue as Treasurer and John McCullough will continue as Secretary for 2021. Ed thanked everyone for their willingness to serve as officers and directors for 2021 and he also thanked those members who were term-limited for their previous service.

Officer/Committee Reports:

Treasurer:

The Treasurer, Trish Conley, reported positive income as of December of \$180. The Society received a generous donation from a member at the end of the year. Member dues received to date will cover the insurance premium due in January.

Secretary:

The Secretary, John McCullough, reported that he has been able to access the ZOOM app and should be able to participate in meetings in the future to resume recording minutes. He has not been able to access

previous meetings recorded to the cloud to generate minutes for those meetings.

Newsletter:

The current Editor of the Society newsletter, the High Desert Observer (HDO), Tim Kostelecky reported he would like inputs and submissions no later than the 15th of the month to facilitate distribution prior to monthly meetings.

Loaner Telescope:

The program coordinator, Tim Kostelecky, reported no recent requests for telescopes. He would like to update the inventory and verify equipment location(s) with Tracy Stuart soon.

The Observatory at Leasburg Dam State Park (LDSP):

Steve Barks and Jerry Gaber continue to work on specifications for a new computer for the Observatory. Ed Montes has talked to the Chief Ranger at the Park who is willing to let the Observatory "piggyback" on the Park's internet service. Steve and Jerry will provide an update at the February meeting. Rich Richins noted he had live-streamed the Saturn-Jupiter conjunction from his house in December. He said this was a relatively straight forward process and suggested it as an option for public outreach events such as Moon Gazes.

New Business:

No additional new business was offered for consideration.

Presentation:

Tonight's presentation was by former Society member John W. Briggs, founder and curator of the Astronomical Lyceum in Magdalena, NM. John has worked in a technical capacity at various observatories worldwide including Mount Wilson, Yerkes, National Solar, Maria Mitchell, Venezuelan National, Chamberlin, and South Pole Station. John came to New Mexico in 1997 to assist

in the commissioning of the Sloan Digital Sky Survey. He was assistant editor at Sky & Telescope magazine in the 80s and is now a member of many astronomical organizations. John is a new board member-elect of the century-old American Association of Variable Star Observers (AAVSO).

The Astronomical Lyceum in Magdalena, New Mexico, originally built by the WPA in 1936 as a school theater and gymnasium, now houses a collection of instrumentation and literature representing the ascendancy of American astronomy. Tonight's ASLC

presentation, originally presented at a Society for Photo-Optical Instrumentation Engineers (SPIE) meeting last year, illustrates unusual items, large and small, created by some of America's greatest early optical artists. John hopes this reminds participants how the history of science and technology can be powerfully engaging and interesting. Questions followed the presentation.

The January 2021 meeting was adjourned at 8:41 pm.

Member Images

NGC 2359 (Thor's Helmet) - Bob Kimble



Winter Constellations Rising in October - Ed Montes



From Backyard in Las Cruces

NGC 1300 - Chuck Sterling



NGC 1300 Barred spiral galaxy in the constellation Eridanus

M45 - Pleiades (Seven Sisters) - Jeff Johnson



From Backyard in Las Cruces - Takahashi FS-60C @ f/6.2