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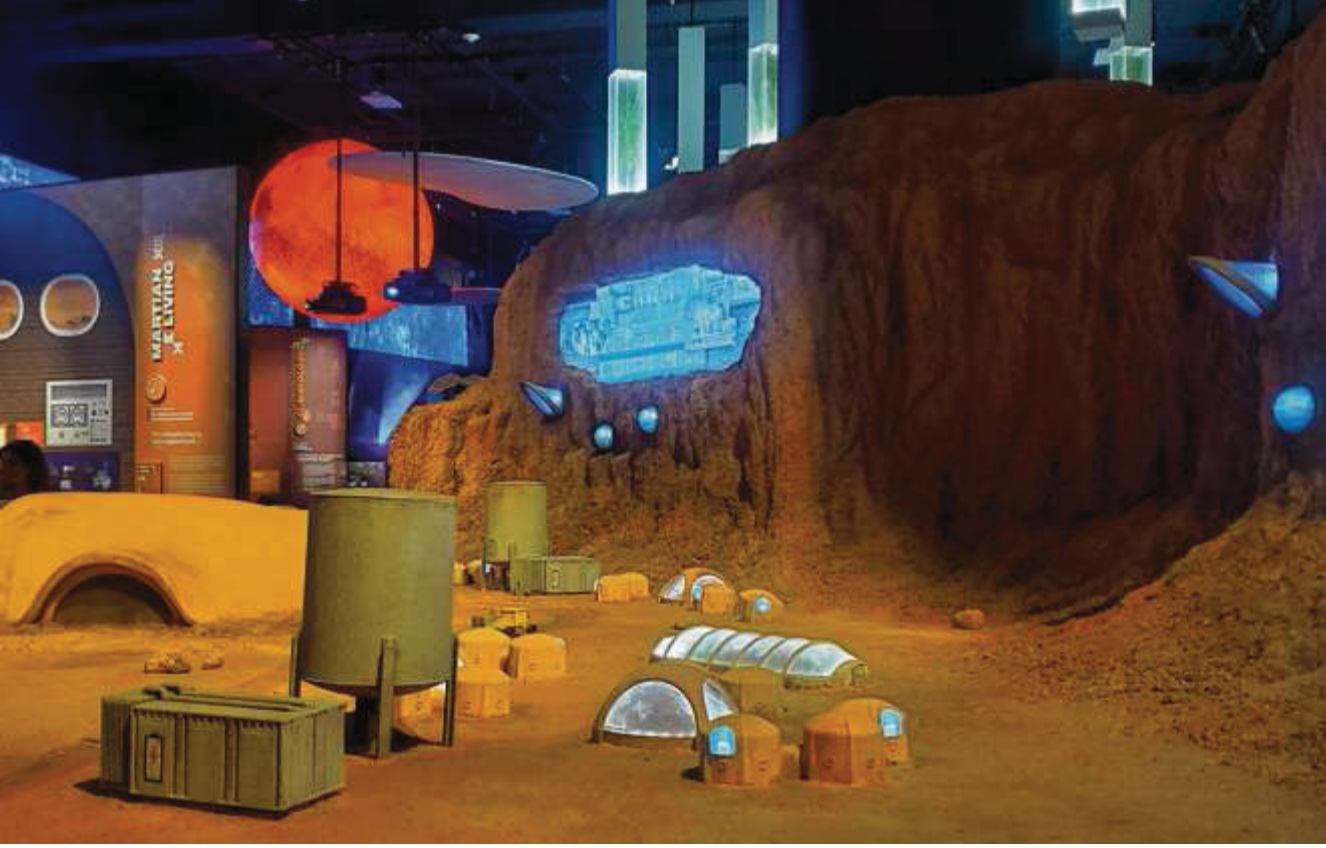
PITTSBURGH — The city that lays claim to Andy Warhol, Heinz, and much of the steel used to build America’s skyscrapers is now leading the charge for our country’s return to space. Pittsburgh scientists, university students, contractors, and businesses have contributed significantly to NASA’s upcoming lunar program, while Astrobotic Technology, a small Pittsburgh-based aerospace company founded by a local university professor, has built the first US spacecraft to land on the moon in more than 50 years.

Learn about Pittsburgh’s role in the space industry and ponder the future of space travel and life while visiting the newest permanent exhibit at the Carnegie Science Center, “Mars: The Next Giant Leap,” and the city’s new Moonshot Museum. Both delve into the issues of space exploration — the risks and the rewards — and welcome input from visitors on everything from the moral issues of space travel to the practical realities of establishing life on another planet.

This isn’t a far-fetched dream. NASA plans to launch a lunar lander by the end of this month (around Dec. 24), a manned Artemis mission in 2025, and — once a base is set up on the moon, which will act as a refueling station and slingshot for Mars-bound spaceships — trips to Mars by the mid-2030s.

Astrobotic created the nonprofit Moonshot Museum at its headquarters and space-production facility in Pittsburgh’s North Side. It offers hands-on displays that let you build your own lunar rover, design a space mission patch, and explore the different craters and historical landmarks on the Moon (such as where we’ve landed on previous Apollo missions). It tells you about notable Pittsburghers such as James Irwin, who drove the first-ever lunar rover, and Jack Kinzler who figured out how to make the American flag appear to “fly” in photos while on a windless moon during the first manned moon landing. Also learn about the Lunar Gateway space station, which will be a moon-orbiting international space station that enables astronauts to complete short trips to the Moon for experiments and testing.

The museum’s real highlight, though: The up-close views into Astrobotic’s “clean room,” a living lab where scientists in head-to-toe bunny suits build lunar landers in real time. Here, the Astrobotic team recently construct-



KARI BODNARCHUK

Two Pittsburgh attractions offer windows into the future of travel and life in space

ed the Peregrine I, which will be the first US lander on the Moon since the 1972 Apollo mission. The 8.5-by-6.2-foot spacecraft will carry 21 payloads from seven countries (as of last count), including five mini robots for the Mexican space agency, a German radiation detector, a Japanese capsule with messages from children around the world, and a rover built by Carnegie Mellon University students called IRIS, which will be the first American rover back on the Moon and will take photos and gather data on the lunar surface.

“Peregrine I will have lots of different things attached to it like pockets,” says museum-interpreter James Jamison. “It will even include a micro art museum,” he adds, referring to MoonArk, a 10-ounce time capsule designed by College of Fine and Applied Arts alumni in Illinois. The sculpture, which measures 8 inches tall by 2 inches in diameter, has four stacked cham-

If you go...

Moonshot Museum, 1016 N. Lincoln Ave., 412-314-4111, <https://moonshotmuseum.org>. Open Thu.-Sun. 10 a.m.-4 p.m. (sometimes closed because of big events at neighboring Acrisure Stadium); free ages 2 and under, \$5 ages 3-17, \$10 for those 18 and older.

Carnegie Science Center, 1 Allegheny Ave., 412-237-3400, <https://carnegiesciencecenter.org>. Admission free ages 2 and younger, \$15 ages 3-12, \$25 ages 13-64, \$20 ages 65 and older.

bers filled with hundreds of poems, images, music, mechanisms, and nano-objects designed to survive on the surface of the moon for thousands of years.

The completed Peregrine I has already arrived at Cape Canaveral to prepare for launch, but you can now watch Astrobotic workers building the Griffin lunar lander, which NASA expects to launch in November 2024.

Down the hill at the Carnegie Science Center — just half a mile from the Moonshot Museum — you can learn about future exploration to Mars and the potential for human settlement there. “Mars: The Next Giant Leap” takes visitors on an interactive journey to discover what it would be like to live on Mars and how we might inhabit the planet.

The exhibition has seven experiential zones that explore fascinating aspects of the Martian climate, potential living arrangements, search for evidence of life there, food, and more. It raises questions about how we would live (in homes built into cliffs or on the surface of Mars), produce sustainable

What’s on your skiing and riding bucket list?

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better.” John Evanson of Plymouth, N.H., has this winter off. He took a quick break on the side of the Range View trail during an early-season day at Bretton Woods in mid-November and noted he plans to ski a lot. How often? “A hundred days sounds good. It seems doable. I had 39 days last year and I was just doing weekends and a couple of trips.”

Bernie Weichsel, a member of the US Ski and Snowboard Hall of Fame, ran the Boston Ski Show for 38 years and has been a lifelong promoter of winter sports and knows a thing or two about piling up powder days.

When he turned 70 a few years ago, Weichsel vowed to match that number with his number of ski days. He did.

He hit 50 days last year and that again seems like a good target.

“I’ll ski all over the place: East, West, North,” he says and then ticks off a wide-ranging tally of wish-list stops for this and future years.

Here are the details of what these — and several other folks who are fanatical about their winter sports and boast strong New England ties — have on their bucket lists.

For this winter. And beyond.

Hannah Kearney

“I learned to ski at Burke and Jay Peak and dabbled in the Dartmouth Skiway with the Ford Sayre program. Once I got hooked on freestyle, I joined the Waterville Valley program and was there every weekend, and when I got on the circuit we only went to mountains that had competitions. So as much as a Vermonter as I am, I’m almost embarrassed to say I’ve never skied Mad River Glen. That’s the first item on my bucket list. Whether it happens this year or not, it will stay on the list until it gets checked off. It’s the quintessential New England area and right up my alley. I’ve been there, I’ve hiked up, but I’ve never actually skied it. It’s old school, the iconic single chair. It’s the base lodge, not a village. It’s what I think of when I think of skiing. It’s why I got into it. . . . We were back East last February and I hadn’t skied Sugarbush in 20 years. It



LUCAS JACKSON/REUTERS

Hannah Kearney competing in the 2014 Sochi Winter Olympic Games.

was a Thursday and it was real good and so fun to ski. No crowds, good weather, a long mountain. That was a treat. . . . I have a New England soul. . . . Our adorable little nugget (Lula, born in July) has changed our lives completely. We’ll see what a ski season looks like for two new parents. It might be, ‘You go. Then I’ll go.’”

A three-time Olympian with gold (2010) and silver (2014) medals for moguls, Hannah Kearney grew up in Norwich, Vt. She and her husband, fellow Olympian freestyler Mike Morse, a native of Duxbury, live in Park City, Utah, with their daughter, Lula. Kearney has a virtual fitness business, Fitness From Afar, and also does freestyle commentary for NBC Sports.

John Evanson

“I’m planning to get out to Colorado for the first time this year and go to Breckenridge. I have an Epic Pass (Vail Resorts) for the trip so I’m also going to try and hit all the Vermont and New Hampshire Epic places (Stowe, Okemo, Mount Snow, Mount Sunapee, Attitash, Wildcat, Crotched), almost none of which I’ve skied before so that’s going to be pretty cool. I have a White Mountains Super Pass (Bretton Woods, Cannon, Waterville Valley, and Cranmore), which I’ve had in the past, so I’ll ski all those. It should be a fun winter.”

John Evanson skied some as a kid and got back into it after moving to New Hampshire in 2014, following 15 years of working and living in Texas after college.

Allie, Gavin, and Avery Stoddard

Avery, 7: “I want to learn to snowboard. I don’t know why. I just want to have options.”

Gavin, 10: “I want to learn how to do a 360 on skis. [I’ll get there] sometime this winter. I practice at different mountains. We go to Cannon and Waterville, too.”

Their mother, Allie: “I just want to get out as many days as possible. We try

to get out between 60-70 days a year. I just love skiing with them and I like watching them learn new things. I’m going to learn to snowboard with Avery so she has a buddy. I snowboarded some when I was in my early 20s. I’m excited to try it again. We’re going to take it slow. We’re going to start on powder days when it’s nice and soft to fall into. We’re going to have fun.”

Allie Stoddard and her kids live in Thornton, N.H. They were taking a break from home-schooling on a sunny mid-November day at Bretton Woods.

Taylor Varrato

“I was depressed at the time I got into skiing after college and I had very low self-esteem. It was the one thing I was passionate about. It was the first time I felt like I do have athletic ability and I can do this and I was able to progress over a period of time. I’m not a great skier and I’m sure people would look at me and say I’m a ‘back-seater.’ But I don’t care about that. I just care about safety and just sending it and having fun. I want my son to do it. He’ll be 2 on Christmas and he has a pair of skis and we’ll see what happens. My husband’s been skiing since he was 3. I always think of skiing as the thing that gave me reason. Before I had a family, it gave me something to look forward to and something I felt passionate about. Maybe it didn’t save my life, but it certainly helped me. It gave me a new perspective. I’m 27 and have been skiing for six years and I’ll be instructing this year and I hope to extend that passion to others. I wish we had more programs to get people out up here. They’re really good about it in school. In Bethlehem they have a program for kids that is really affordable, super affordable. I’d love to get more people who don’t have the financial backing, more children, into it.”

A registered nurse, Taylor Varrato never had the opportunity to ski as a youngster while growing up in Connecticut. She and her husband and son

moved to the mountains of New Hampshire last winter.

Bernie Weichsel

“I always get a few Western trips in. I’d like to go back and make sure to spend some time in Colorado, Utah, and Tahoe. I haven’t been to Western Canada in a while and I’d like to get to Fernie (British Columbia) and Whistler. I’ll head up North here and go to Stowe and haven’t been to Sugarloaf in a few years and I try to rotate through the areas. I’d like to get to Montana. I hope to go to Europe again. I’ve been looking at a trip to Switzerland and adding a few days in Meribel. If you haven’t been to Les Trois Valles (southeastern France), you need to. There’s more skiing there than in all the resorts in Colorado put together. If I can do a bunch of those places this year, it will be a great winter.”

Bernie Weichsel lives in Boston and travels far and wide — and near — to satisfy his skiing itches and has built connections around the world through his years in the ski industry.

Devin Delaney

“I’m looking so forward to exploring all the backcountry my new backyard has to offer. I got injured playing in a women’s hockey league in April and I’ve been working really hard to get back so I can continue to get into the backcountry. I think after ski racing I felt a little burned out and I was in Denver and Breckenridge at the time and got into exploring the woods and being out there and earning my turns. I love being out there. Then we have my first helicopter trip to Meadows Lodge in British Columbia. That’s been a huge bucket list item and it’s happening at the end of March. You’re in the Esplanade Mountain range between the Rockies and the Selkirks. It’s known for the incredible powder. I think I’ll be pushing my comfort zone. I’m really looking forward to that. There are about 10 of us and we’ll be living that hut culture: skiing hard together, looking at maps, scoping terrain, coming back with tired legs and cooking together and then doing it again.”

Devin Delaney grew up in North Conway where her parents own Delaney’s Hole in the Wall, a popular apres ski spot. An All American racer at the University of Denver, she now lives in Victor, Idaho, with her fiancée, Max Marno, a former teammate at Denver. She works in nutrition therapy and as a personal trainer.

Theresa Martens

“You caught us at a tough time. My husband, Clark, is having surgery on his

A large-scale diorama in the Carnegie Science Center shows what it might look like to live on Mars.

food, and play sports and stay in shape in a low-gravity environment (Mars has 62 percent less gravitational pull than Earth so a 150-pound person on Earth would weigh just 57 pounds on Mars — and have to work harder to stay fit).

In the Martian Garden zone, learn what it takes to grow crops in a place with no soil and how to create sustainable meals with ingredients that can thrive in a Martian environment — like using plant-based cheese that’s made on Mars versus powdered cheese imported from Earth. Hydroponic trays and aeroponic tubes in the middle of the exhibition contain live strawberries, snap peas, mustard seed, basil, and numerous other plants and herbs, displaying the technology that may help sustain life on Mars. Considering how to grow food in such an inhospitable environment, the exhibit suggests, may help us face the challenges of food insecurity here on Earth and embrace more sustainable practices.

“When people leave, I want them to think about how they can do things differently in their lives,” says Marcus Harshaw, the science center’s senior director of museum experiences.

A large-scale diorama with impressive detail shows a futuristic settlement on Mars, letting you see just how life might look. Over the past year, the museum has solicited input from visitors on their vision for this new world, asking them to vote on social justice and education issues to the best way to power life on Mars (wind, nuclear, or geothermal energy?).

The exhibition also addresses how our view of Mars has changed over time and, like the Moonshot exhibit, tries to dispel lingering myths or misunderstandings: The space industry isn’t just made up of rocket scientists and astronauts, but requires designers, writers, artists, lawyers, chefs, and other people with a variety of talents and backgrounds — maybe someone just like you.

As we prepare for a new age of space exploration, these exhibits get us thinking about this next phase, how developments in space technology may help us here on Earth, and where the next giant leap for humankind may take us.

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ACL in January and we’re not going to be able to do the ton of skiing together that we would normally do. I would like to go out West for two or three days. That’s a bucket list kind of thing for this year. I’ve never skied Alta and that’s a total skier’s mountain. I haven’t been to Snowbasin where they held the Olympic downhill and I’d love to get in a little time out there. Another bucket list item, probably longer term, is helicopter skiing in Banff. Closer to home for this year, I’d like to get to Loon and ski on their new steep trails, they’re great for someone who’s looking for a challenge and loves to go fast. Cannon’s awesome, too. Another thing for this year is just skiing with the family, with Clark and the boys. They’re 28 this year and it doesn’t matter where, Waterville, Loon, Cannon: It gets harder to get everyone together and hopefully we can get out at least once before the surgery.”

The mother of twins Peter and Colin Martens, who skied for the University of New Hampshire, Theresa Martens is consistently one of the top finishers in the adult racing league at Pat’s Peak in Henniker. She raced in the NCAA’s Division I for the University of Wyoming.

Adam White

“I’ve been thinking about this a long time. I’ve seen others go through the woods with kids in tow and thought, ‘I can’t wait until I can do that.’ It’s got to be the right snow. There’s got to be enough snow. It can’t be icy. It’s my biggest lifetime bucket list goal, to get my three boys skiing in the woods with me, to introduce them to the joys of skiing in the woods, especially here in the Northeast. It’s my favorite type of skiing, my favorite terrain, and my favorite ski environment. I like the quiet. I like the sense of solitude, the feel of nature when you’re in the woods. Any time I go to places like Jay Peak, Bolton, Stowe, Smugglers, Stratton, Magic, Mount Snow, I seek those glade runs. There are a lot of spots over in New Hampshire. The boys keep progressing and last year, on the last run of the year, we skied off the summit of Smugglers Notch. One of the things kids do is ski along the margins of the trail, poke in and out of the margins, adults do it, too, to get a little taste of it. They’ve been doing that and I think they’re ready, they have enough skill, enough confidence to do some tree runs. I can’t wait. I really can’t.”

Adam White started skiing at Otis Ridge near his home in Western Massachusetts and is looking forward to getting into the woods with his sons, Jackson, 10, and Bodhi and Ronin, both 8.

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