Sidedoor Season 5, Episode 1:
Outer Space & Underwear

[MUSIC]

Lizzie Peabody: This is Sidedoor, a podcast from the Smithsonian with support from PRX. I'm Lizzie Peabody.

[MUSIC]

Lizzie Peabody: So, how recently did you return from space?

Nick Hague: I landed just this past October, so a little over four months ago.

Lizzie Peabody: Nick Hague is an astronaut. He just spent 203 days on the International Space Station. That's almost 7 months!

Nick Hague: I'm up here on this ship, zipping through space. It's a pretty magical experience.

Lizzie Peabody: If you're like me, you've probably imagined what it might feel like to be in space, floating in the void on a tether, looking down on Earth. But in my imagination, I've never really thought about what I would be wearing. When Nick Hague steps outside the space station, the only thing between him and the vacuum of space, is his spacesuit.

Lizzie Peabody: I want to kinda get inside that suit. I have a hard time imagining what that feels like.

Nick Hague: It's, it's strange when you first start training in one. It doesn't take, but a little bit and you realize, "Hey, this isn't just clothes. This is a tool." You know, it's a spacecraft for one person.

Lizzie Peabody: So, what does a wearable spacecraft feel like? I kind of figured it would feel like one of those overstuffed snowsuits kids waddle around in. Hague says it is pretty snug.

Nick Hague: You know, I squeeze myself into one and it embraces you like a real heavy, thick coat.

Lizzie Peabody: But the similarities end there because the spacesuit's first job is to keep air in.

Nick Hague: Essentially, it's gotta maintain pressure. Because you're going to work outside in a vacuum. And in order to do that, it has to be inflated with air. In our case, pure oxygen.

[MUSIC]

Lizzie Peabody: The suit inflates like a human-shaped balloon. Under pressure, it stiffens, like a bicycle tire. And you know what's hard to bend? A bicycle tire, but the spacesuit has a solution.

[MUSIC]

Nick Hague: There are joints that are worked in, so that you have the ability to rotate your hands and your shoulders and, and bend your elbows. But it's not the same as just having the freedom of movement of putting on, you know, a long sleeve shirt and just moving around.

[MUSIC]

Lizzie Peabody: Every movement he makes in the suit requires work. Even the most mundane task, like picking up your coffee cup, would be hard work in a pressurized suit.

[MUSIC]

Nick Hague: The motion of opening your hand, you're fighting against the pressure. And then, you have to close your hand and to hold the cup, you're constantly squeezing to make sure that the glove stays closed. The fatigue builds up and it takes a toll. It's hard work.

[MUSIC]

Lizzie Peabody: It's hard work and it's not always comfortable. There's chafing, bruising, and fingernail delamination, which I will let you google. Even so, the spacesuit is a triumph of wearable technology.

Nick Hague: I've put my life in the hands of the suit. It supports everything that I need to survive. So, you rely on that hardware and, you know, all the thought that's gone into its design andyour life depends on it.

[MUSIC]

Lizzie Peabody: Before man's giant leap on the moon, spacesuits weren't made for walking or bending or even really breathing for long periods of time. Until one suit changed all of that, and inspired generations of suit designs to come.

[MUSIC]

Nick Hague: If you look at the evolution of the spacesuit and how it fits the person and what it allows you to do, we can draw those lines from, from the Apollo suit.

[MUSIC]

Lizzie Peabody: This time on Sidedoor, the story of the spacesuit that revolutionized spacewear, and the unlikely team that kept astronauts secure, comfortable and well supported. And if that sounds like an underwear ad, well, it's no coincidence. That's coming up, after a quick break.

[MUSIC]

Previous Recording of President John F. Kennedy in 1962: (audience applause) We choose to go to the moon in this decade and do the other thing. Not because they are easy, but because they are hard.

Lizzie Peabody: In 1962, NASA faced an enormous challenge: to get a man to the moon by the end of the decade. And they needed a suit to keep him alive there. And ideally upright, able to walk around, pick up some rocks, and nothing like that existed.

Cathleen Lewis: If you look at the early things that we call spacesuits, they're really flight suits designed to fit inside their specific spacecraft. So, they're not truly spacesuits.

Lizzie Peabody: This is Cathleen Lewis, curator of International Space Programs and Spacesuits at the Smithsonian's National Air and Space Museum.

Lizzie Peabody: So why wouldn't the pressure suits that already existed at the time have worked on the surface of the moon? Why did NASA need something new?

Cathleen Lewis: Well, the pressure suits that had been designed before were really emergency suits. They're what the pilots referred to as, "Get me down" suits.

Lizzie Peabody: Oh!

Cathleen Lewis: If they had to eject from a cockpit, they could eject at a very high altitude, but they're not designed to sustain life support.

Lizzie Peabody: But for the first moonwalk, NASA needed a spacesuit that could protect astronauts in a vacuum for hours and the environment of the moon is not exactly hospitable.

[MUSIC]

Lizzie Peabody: The surface of the moon can reach 240 degrees Fahrenheit in the sun and minus 280 in the shade! There's no ozone layer to protect from…

Cathleen Lewis: …solar radiation.

[MUSIC]

Lizzie Peabody: And then there are micrometeoroids…

[MUSIC]

Cathleen Lewis: …fast-traveling particles.

[MUSIC]

Lizzie Peabody: Like microscopic grains of sand…

[MUSIC]

Cathleen Lewis: …traveling as much as 17½ thousand miles per hour.

[MUSIC]

Lizzie Peabody: Hold on. That's faster than a bullet, right?

[MUSIC]

Cathleen Lewis: That is faster than a bullet. You had to stop something going faster than a bullet.

[MUSIC]
Lizzie Peabody: I looked it up. It's like 13 times faster than a bullet. So, the spacesuit needed to weather extreme heat, cold, radiation, and getting pelted with microscopic bullets. And that's not all.

[MUSIC]

Cathleen Lewis: They wanted these astronauts to handle tools. So, they had to make gloves that were protective, yet allowed the astronauts to have a tactile sense. On top of that, they wanted astronauts to move around. They had to have flexible boots and they had to be able to see their feet, so they could look down and keep their balance and orientation as they walked on the surface of the moon.

[MUSIC]

Lizzie Peabody: So, to design this flexible, bulletproof, heat-and-cold-proof, pressurized moon walking armor, NASA sounded the call for proposals from its nearest and dearest contractors.

Cathleen Lewis: Places like Hamilton Standard, which had supplied propellers, BF Goodrich, which had made spacesuits for the Mercury program and David Clarke Company, which had made suits for the Gemini program. So, all of these companies were competing.

Lizzie Peabody: And then, there was Playtex. A company that built its reputation on women's underwear.

Old Playtex Bra Advertisement: "It fits perfectly! It fits like a glove. Introducing, "Fits Beautifully," the new firm support bra from Playtex. It's secret – this unique stretch frame adjusts to your size and shape…"

Lizzie Peabody: Okay, anyone who's worn a bra knows the engineering it takes to hoist, hold, squeeze and release in the right places! But what made Playtex decide to compete with the makers of planes and propellers? This is what I asked Nicholas de Monchaux.

Nicholas de Monchaux: Hey! Can you hear me? This is Nicholas.

Lizzie Peabody: Yes, Nicholas. I can hear you better!

Nicholas de Monchaux: Ok!

Lizzie Peabody: He's the author of the book, "Spacesuit: Fashioning Apollo."

Nicholas de Monchaux: I mean, I fell in love with this story.

Lizzie Peabody: And he said the story of Playtex begins with a company called ILC.

Nicholas de Monchaux: ILC stands for the International Latex Corporation, which sounds incredibly grand, but it in fact, was a name made up by a salesman in the 1920s, who was trying to start his own like door-to-door sales venture for rubber diaper covers.

[MUSIC]

Lizzie Peabody: That salesman was Abram Spanel, a Ukrainian immigrant determined to make his way in the United States.

[MUSIC]

Nicholas de Monchaux: Because he was ambitious and intelligent, he called his one-person company, “the International Latex Corporation.”

Lizzie Peabody: (Laughs).

[MUSIC]

Nicholas de Monchaux: And then, the name brand that he came up with, for these rubber diaper cover was Playtex.

[MUSIC]

Lizzie Peabody: By the 1940s, Playtex had branched off to create other rubber-based products, including a rubber girdle. You know, the Spanx of yore.

[MUSIC]

Nicholas de Monchaux: I think the tagline was, “a liquid skin that holds you in.” And it sold like hotcakes because, even though you can imagine wearing a tight rubber tube around your torso would be incredibly uncomfortable…

Lizzie Peabody: Yes.

Nicholas de Monchaux: …but it was just much less uncomfortable than, than the (laughs) undergarments it replaced.

Lizzie Peabody: (Laughs).

Old Playtex Bra Advertisement: “A beautiful waist. Oooo! It used to hurt to have one. Oh… But now, Playtex introduced the...”

Lizzie Peabody: So, Playtex became a household name, and things were going pretty well for the company until World War II.

Old World War II Advertisement: Here, you’ll get the truth. We haven’t enough rubber for our tanks.

Lizzie Peabody: Rubber rationing nearly put the International Latex Corporation out of business. As a failsafe, Spanel decided it might be wise to develop some products that ILC could sell to the government. So, he created an industrial division.

Nicholas de Monchaux: An Industrial Division. A bit like, International Latex Corporation, sounds grand, like it should have its own chrome facaded building that people pulled up to in swoopy cars.

Lizzie Peabody: (Laughs).
Nicholas de Monchaux: But in fact…

Lizzie Peabody: (Laughs).

Nicholas de Monchaux: …it was really just a very small group of people headed by Abram Spanel's former television repairman.

[MUSIC]

Lizzie Peabody: That was Len Sheperd, a skilled technician and MIT dropout. Spanel identified with him as a fellow outsider.

[MUSIC]

Nicholas de Monchaux: …and he basically gave him a job and said, "Just do whatever you like, but just imagine what we might sell to the government."

[MUSIC]

Lizzie Peabody: Well, in 1962, the government was in the market for a spacesuit that could walk the U.S. to victory in the space race. ILC took their moonshot.

[MUSIC]

Lizzie Peabody: ILC may have been competing with the titans of aviation and veteran contractors, but all of these companies faced the same challenge: creating a suit that could be both pressurized and flexible. They needed a material that was strong, supportive, but allowed for movement. Sound familiar?

Old Playtex Bra Advertisement: Whether you stand, stoop, or sit, Playtex has 7-way stretch, doesn't ride up, gives you perfect control, with perfect freedom.

Lizzie Peabody: ILC's Industrial Division came up with a completely new material called, convolute.

Nicholas de Monchaux: What the convolute did that Len Sheperd invented is it combined the three fundamental materials out of which all of Playtex's women's underwear was made.

[MUSIC]

Lizzie Peabody: The latex of girdles, the nylon strapping of bra straps, and the thin webbing of bra cups.

Nicholas de Monchaux: It was literally a remix.

Lizzie Peabody: The convolute made a joint that was both flexible and strong. Think of the bend in a plastic straw.

Nicholas de Monchaux: Yes, exactly! The bend in the plastic straw works on exactly the same principle.

[MUSIC]

Lizzie Peabody: Using convolute, ILC built their suit. They were one of eight companies to submit prototypes to NASA, but ILC's suit was hands down, the best.

[MUSIC]

Nicholas de Monchaux: The convolute was at all the elbows and knees and other joints, and so, the suit was by a huge factor, the most flexible, workable, walkable suit.

[MUSIC]

Lizzie Peabody: Using the raw ingredients of women's underwear, ILC's unorthodox team, they made the best space suit!

[MUSIC]

Lizzie Peabody: And NASA made their announcement: the Apollo suit contract went to Hamilton Standard.

[MUSIC]

Lizzie Peabody: Wait, did I read that right? Even though they did not have as good a suit??

Cathleen Lewis: They did not have as good a suit, but they had a better track record, an impeccable track record, for supplying the government. So, NASA decided that Hamilton Standard really needed to be the answerable company for the production.

Lizzie Peabody: This might seem unfair, but let's look at it from NASA's point of view. The thought of going before Congress to explain that the first man on the moon would be outfitted by a small division of *a* company best known for lingerie*,* headed by a former TV-repairman, that wouldn't have felt like an option. With billions of dollars and the future of the American space program on the line, NASA needed a company they already trusted. They wanted the security of Hamilton Standard, and the innovation of ILC.

Cathleen Lewis: ILC would supply the suit itself, the pressure suit, to Hamilton and Hamilton would do all the checking and be responsible for the delivery of the suit.

Lizzie Peabody: So, how did that, how did that go?

Cathleen Lewis: As in many forced marriages in modern times, it didn't go well. (Laughs).

Lizzie Peabody: (Laughs).

[MUSIC]

Lizzie Peabody: It was a match made at NASA. More on that arranged marriage, and how it all fell apart, after the break.

[MUSIC]

Lizzie Peabody: We're back! And here's where we are. The International Latex Corporation, known for its brand, Playtex, surprised NASA, and everyone else, by making the best prototype for the Apollo spacesuit, but NASA didn't trust ILC to handle the contract. Instead, they put a more experienced company in charge, Hamilton Standard, and told the two companies to make it work. Former competitors, now collaborators.

[MUSIC]

Nicholas de Monchaux: The companies did, I think, sincerely try to work together, but there were real difficulties on, on both sides.

Lizzie Peabody: Author Nicholas de Monchaux explained, on one side, you had Hamilton Standard.

[MUSIC]

Nicholas de Monchaux: They were famous, for example, for making propellers. And if you think about an airplane propeller, it has to be precisely symmetrical, precisely balanced. Nothing can be a, even a fraction of a millimeter out of place.

Lizzie Peabody: Hamilton Standard was all about uniformity. ILC on the other hand…

[MUSIC]

Nicholas de Monchaux: That culture was very well suited to figuring out how to make something around the mushy, squishy, weird human body, but, but…

Lizzie Peabody: (Laughs). Speak for yourself!

Nicholas de Monchaux: (Laughs). You know, I'm in my 40s, so it's a… (Laughs). You can't fight gravity.

Lizzie Peabody: (Laughs). ILC prioritized ingenuity. They called themselves the "hard knocksters."

[MUSIC]

Nicholas de Monchaux: Because they had only graduated from the school of hard knocks.

Lizzie Peabody: (Laughs).

Nicholas de Monchaux: There was a kind of pride in the eccentricity of the ILC team.

[MUSIC]

Lizzie Peabody: It was the crew cuts and the long hairs. The old guard and the new kids. Hamilton Standard set up offices at ILC headquarters, so that they could supervise the suit design. And for nearly three years, they tried to collaborate.

Nicholas de Monchaux: These were very competitive people. And they were competing for ownership of one of the most important moments in the history of the human species.

[MUSIC]

Nicholas de Monchaux: So, you can kind of understand them taking it very seriously.

[MUSIC]

Cathleen Lewis: ILC was convinced that they were on the right track and they were going to do what they had proposed to NASA. Hamilton Standard had their own ideas that they knew better what NASA wanted.

Lizzie Peabody: Finally, Hamilton Standard went to NASA and said, “Enough!”

[MUSIC]

Lizzie Peabody: And because they were the prime contractor…

Nicholas de Monchaux: …NASA was obligated to let ILC go.

Lizzie Peabody: NASA fired ILC, and went back to the drawing board. They were running out of time to get the suit they needed, and remember…

Nicholas de Monchaux: …you had the entire American national identity and foreign policy, all resting on the function of a single object.

Lizzie Peabody: NASA announced a final contest. They invited Hamilton Standard and another experienced contractor, the David Clark Company, to go head-to-head, or rather suit-to-suit, in what would basically be a spacesuit obstacle course. ILC was not invited. And when Len Sheperd, the head of the ILC team, heard this, he said, “hold the phones,” and flew to NASA Headquarters in Houston to give them a piece of his mind. And it worked.

Nicholas de Monchaux: ILC was able to talk its way into this, what became a three-way competition.

Lizzie Peabody: They had to pay their own way, and they only had six weeks to deliver a suit.

[MUSIC: A-Team THEME]

Lizzie Peabody: It was on!

[MUSIC: A-Team THEME]

Lizzie Peabody: So, what is that six-week period look like?

[MUSIC: A-Team THEME]

Nicholas de Monchaux: I grew up with the A Team, you know, and in the end of every episode of The A Team, there's this montage as they quickly build something out of nothing… (Laughs).

Lizzie Peabody: (Laughs).

Nicholas de Monchaux: …to get themselves out of a crisis.

Lizzie Peabody: Uh, huh.

Nicholas de Monchaux: And by all that counts, it really was like that.

[MUSIC: A-Team THEME]

Lizzie Peabody: It was a mad scramble. Literally.

Nicholas de Monchaux: In order to get the parts to build their suit, ILC needed to break into…

[MUSIC]

Lizzie Peabody: …their own storerooms…

[MUSIC]

Nicholas de Monchaux: …offices in its own building and crawl through…

Lizzie Peabody: (Gasps).

Nicholas de Monchaux: ventilation ducts…

Lizzie Peabody: (Laughs).

Nicholas de Monchaux: …to get all the stuff that they needed to, to make this new suit from, from scratch for the competition.

[MUSIC]

Lizzie Peabody: The team worked around the clock: building, cutting, testing, sewing. Len Sheperd had engineers, but he also had a secret weapon: skilled seamstresses.

[MUSIC]

Nicholas de Monchaux: The most skilled, the most talented craftswomen, who worked for the larger company of ILC, they brought this, this knowledge that was not present anywhere else in this larger military industrial mixture into the suit making process.

Lizzie Peabody: And what did the seamstresses know that the engineers didn't?

Nicholas de Monchaux: Um, everything? (Laughs).

[MUSIC]

Jean Wilson: The engineers would come up with designs, but the thing was, they couldn't sew.

[MUSIC]

Lizzie Peabody: This is Jean Wilson.
[MUSIC]

Jean Wilson: My name is Jean Esther Wilson. I've been told that I'm one of a kind.

[MUSIC]

Lizzie Peabody: She's also one of the ILC seamstresses. Miss Wilson grew up the tenth of 13 children, and her mother taught her to sew on buttons and hem her clothes from the age of seven.

[MUSIC]

Jean Wilson: Who knew that would advance me to the point that I would end up working on Apollo spacesuits?

[MUSIC]

Jo Thompson: We would sit there with a little six-inch ruler in our hand to make sure that as we stitched that everything was exactly right.

[MUSIC]

Lizzie Peabody: Jo Thompson sewed the gloves of the Apollo spacesuit.

[MUSIC]

Jo Thompson: I was about 14, when my aunt taught me how to sew. I used to hang over her chair and, and look over her shoulder. She taught me a lot.

[MUSIC]

Lizzie Peabody: Miss Wilson and Miss Thompson described how sewing the Apollo suit was different from any other job. For one thing, they read blueprints instead of patterns. The fabric they worked with was so expensive it had to be locked in safes. And unlike the typical whirring and hustle of a factory setting…

[MUSIC]

Jo Thompson: …well, we had one big open room, and there was not a lot of noise. The machines went very slow. We went like, a stitch at a time.

[MUSIC]

Jean Wilson: It was very quiet because everything had to be sewn very precise.

[MUSIC]

Lizzie Peabody: A stitch misplaced by even 1/32nd of an inch would be unacceptable. That's like the width of the tip of a ballpoint pen!

[MUSIC]

Jo Thompson: We knew that the man's life depended on it. So, we were very careful.

[MUSIC]

Jean Wilson: After the suits were put together, they were actually sent to the hospital. Just like people get x- rayed, those suits got x-rayed.

[MUSIC]

Lizzie Peabody: Just to make sure that there were no stray pins or anything?

[MUSIC]

Jean Wilson: There you go. Because you can only imagine what a pinhole could do to a suit.

[MUSIC]

Lizzie Peabody: It honestly sounds like a very high stress job.

Jean Wilson: It was.

[MUSIC]

Lizzie Peabody: But the ILC seamstresses were more than skilled fingers.

Nicholas de Monchaux: Through their very tangible understanding of how the cloth and material behaved, they um, contributed in a very tangible way to the actual design and assembly of the suit and how it worked together.

Lizzie Peabody: The engineers designed for space, but the seamstresses told them what could or couldn't be sewn.

Jean Wilson: That's what I liked about the engineers: they always worked on it with us very closely. When they felt it was something that was really difficult for us to do, then they would go in another direction. I don't remember anyone having an attitude like, "Well, I'm better than you or my job's more important than your job," but it was our jobs all connected together.

Nicholas de Monchaux: Collaboration is a word that means laboring together and that's what I really think of when I think of the intensity of the six-week period in which ILC's competition suit was made.

[MUSIC]

Lizzie Peabody: After ILC's six-week mad dash, in July of 1965, representatives from the three companies: ILC, Hamilton Standard, and David Clark, gathered at NASA headquarters. Ready to put their moon suits to the test, on Earth.

[MUSIC]

Lizzie Peabody: How was the competition set up?
Nicholas de Monchaux: It's a dress rehearsal for going to the moon except, instead of being surrounded by the infinite void, you're inside a hung ceiling office environment, with plywood mockups of all the parts and, and ladders…

Lizzie Peabody: (Laughs).

Nicholas de Monchaux: …and, but it looks about it as undramatic and unspectacular as you could possibly imagine, except for these hulking suits.

[MUSIC]

Lizzie Peabody: The suits trailed long hoses attached to air compressors. The idea was to simulate the pressurized environment of the suit in space.

[MUSIC]

Nicholas de Monchaux: Oh, it's comical! People in inflated clothing trying to do difficult things.

[MUSIC]

Lizzie Peabody: The spacesuits competed in 22 different challenges. They received scores based on criteria like size, weight, mobility, visibility, temperature and how tired the testers got while wearing them. The contest started out bumpy for ILC, when a zipper on the suit failed. The team had 12 tense hours to charter a plane and fly it back to Delaware for emergency repairs, but Hamilton Standard and David Clark had their own problems. Big ones.

[MUSIC]

Lizzie Peabody: During one test, the helmet of the David Clark suit blew clear off! And the shoulders of the Hamilton Standard suit expanded so far under air pressure, that when the test subject tried to enter the lunar lander…

[MUSIC]

Nicholas de Monchaux: …they just couldn't get in the door. (Laughs). And it's very funny…

Lizzie Peabody: No!

Nicholas de Monchaux: …if you can imagine them just sort of butting themselves in and trying to get into the door. But then you know…

Lizzie Peabody: (Gasps).

Nicholas de Monchaux: …you imagine it on the surface of the moon (laughs) and it's suddenly not so funny anymore.

Lizzie Peabody: Oh god. (Laughs).

[MUSIC]

Lizzie Peabody: No, leaving astronauts stranded on the moon because they were too wide to climb back in the spacecraft would have made for some traumatic television. By the end of testing, the victor was clear.

[MUSIC]

Lizzie Peabody: It was the most mobile, leaked the least air, and kept its shape the best under pressure. ILC's suit won, for real this time.

[MUSIC]

Nicholas de Monchaux: ILC won the test and they became prime contractor for the suit.

Lizzie Peabody: As prime contractor, ILC continued to work with Hamilton Standard and other contractors, who contributed life support systems and other parts, but they were in charge of their own work. The final suit had 21 layers, including rubber to keep pressure in, convolutes enabling movement at the joints, and ultra-thin insulating fabrics, hand-sewn together…

[MUSIC]

Lizzie Peabody: So, the final suit, it could withstand over 1,000 degrees Fahrenheit heat and negative 280 Fahrenheit cold.

[MUSIC]

Cathleen Lewis: Yes.

[MUSIC]

Lizzie Peabody: It could fend off bullets from space. It could allow the astronauts to see their feet and enable them to walk and work on the moon.

[MUSIC]

Cathleen Lewis: Yes! It fit every mandate that was required.

[MUSIC]

Lizzie Peabody: The final proof came on July 20, 1969, when Neil Armstrong stepped out of the lunar lander. Jo Thompson and Jean Wilson, and the rest of America, watched and held their breath.

[MUSIC]

Jo Thompson: It's just was almost unbelievable. It was almost too much to comprehend.

[MUSIC]

Jean Wilson: To see Neil Armstrong on the moon, and at the same time, what he's wearing, you helped to make. A lot of us cried.
[MUSIC]

Jo Thompson: But um, yes, I watched it. And um, I was hoping that nothing, nothing, nothing went wrong. (Laughs).

[MUSIC]

Lizzie Peabody: Of course, it didn't. Neil Armstrong and his suit made it safely back into the lunar lander, and you can see that suit on display today at the Smithsonian's National Air and Space Museum. When you do, take a look at those teeny tiny stitches. Those sewing skills, passed down by women in the home, took humanity as far away as we've ever gone. And remember that beneath the fabric of the suit, lies technology born of women's underwear. The materials that imposed extreme conditions on the body on earth, were the same materials to protect human bodies from one of the most extreme environments we've faced: space.

[MUSIC]

Lizzie Peabody: You've been listening to Sidedoor, a podcast from the Smithsonian with support from PRX.

[MUSIC]

Lizzie Peabody: For a photo of Miss Jean Wilson, who still has some of the spacesuit fabric she used for practice stitching, subscribe to our newsletter! At si.edu/sidedoor. That's si.edu/sidedoor. And definitely follow us on Twitter @Sidedoorpod! And, we are now on Instagram @Sidedoorpod! Follow us there too.

[MUSIC]

Lizzie Peabody: If you're looking for more space stories, check out these episodes from Season 4: "Apollo 12's Really Close Call" and "Moon Rocks and Space Jocks."

[MUSIC]

Lizzie Peabody: For more stories of important women in history, be sure to look into the Smithsonian American Women's History Initiative. To learn more, go to womenshistory.si.edu. And join the conversation using #becauseofherstory on social media.

[MUSIC]

Lizzie Peabody: Season 5 is off with a bang thanks to a listener pitch! Thank you, Cathy H. from Seattle, for suggesting this idea for an episode. If you have an idea for an episode, email sidedoor@si.edu. That's sidedoor@si.edu.

[MUSIC]

Lizzie Peabody: Special thanks to Cathleen Lewis, Nicholas de Monchaux, Miss Jeanne Ethel Wilson, Jo Thompson, Bill Ayrey, and the PRX podcast garage.

[MUSIC]

Lizzie Peabody: Our podcast team is Justin O'Neill, Nathalie Boyd, Ann Conanan, Caitlin Shaffer, Jess Sadeq, Lara Koch, and Sharon Bryant. Episode artwork is by Greg Fisk. Extra support comes from John, Jason and Genevieve at PRX. Our show is mixed by Tarek Fouda. Our theme song and other episode music are by Breakmaster Cylinder and the A-Team.

[MUSIC]

Lizzie Peabody: If you want to sponsor our show, please email sponsorship@prx.org.

[MUSIC]

Lizzie Peabody: I'm your host, Lizzie Peabody. Thanks for listening!

[MUSIC]

Lizzie Peabody: So, you've spent a lot of time moving in these sort of constricted ways. Does that make you really good at the Robot dance?

Nicholas de Monchaux: You know, I have my opinions…

Lizzie Peabody: (Laughs).

Nicholas de Monchaux: But I think the opinions of my children probably matter more and they would say that I should never be seen dancing in public. (Laughs).

Lizzie Peabody: (Laughs).