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**Opening Extract from...**

# Packing for Mars

The Curious Science of Life in Space

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# HE'S SMART BUT HIS BIRDS ARE SLOPPY

*Japan picks an astronaut*

First you remove your shoes, as you would upon entering a Japanese home. You are given a pair of special isolation chamber slippers, light blue vinyl imprinted with the Japan Aerospace Exploration Agency logo, the letters *JAXA* leaning forward as though rushing into space at terrific speed. The isolation chamber, a freestanding structure inside building C-5 at JAXA's headquarters in Tsukuba Science City, is in fact a home of sorts, for one week, for the ten finalists competing for two openings in the Japanese astronaut corps. When I came here last month, there wasn't much to see – a bedroom with curtained "sleeping boxes," and an adjoining common room with a long dining table and chairs. It's more about being seen. Five closed-circuit cameras mounted near the ceiling allow a panel of psychiatrists, psychologists, and JAXA managers to observe the applicants. To a large extent, their behavior and the panel's impressions of them during their stay will determine which two will wear the JAXA logo on spacesuits instead of slippers.

The idea is to get a better sense of who these men and women are, and how well they're suited to life in space. An intelligent, highly motivated person can hide undesirable facets of his or her character in an interview* or on a questionnaire – which together have weeded out applicants with obvious personality disorders – but not so easily under a week long observation. In the words of JAXA psychologist Natsuhiko Inoue, "It's difficult to be a good man always." Isolation chambers are also a way to judge things like teamwork, leadership, and conflict management – group skills that can't be assessed in a one-on-one interview. (NASA does not use isolation chambers.)

The observation room is upstairs from the chamber. It is Wednesday, day three of the seven-day isolation. A row of closed-circuit TVs are lined up for the observers, who sit at long tables with their notepads and cups of tea. Three are here now, university psychiatrists and psychologists, staring at the TVs like customers at the American electronics superstore Best Buy contemplating a purchase. One TV, inexplicably, is broadcasting a daytime talk show.

Inoue sits at the control console, with its camera zooms and microphone controls and a second bank of tiny TV monitors above his head. At forty, he is accomplished for his age and widely respected in the field of space psychology, yet something in his appearance and demeanour makes you want to reach over and pinch his cheek. Like many male employees here, he wears open-toed slippers over socks. As an American, I have large gaps

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* As when astronaut Mike Mullane was asked by a NASA psychiatrist what epitaph he'd like to have on his grave stone. Mullane answered, "A loving husband and devoted father," though in reality, he jokes in *Riding Rockets,* "I would have sold my wife and children into slavery for a ride into space."

in my understanding of Japanese slipper etiquette, but to me it suggests that JAXA, as much as his house, feels like home. For this week, anyway, it would be understandable; his shift begins at 6 A.M. and ends just after 10 P.M.

On camera now, one of the applicants can be seen lifting a stack of 229×279-millimetre envelopes from a cardboard box. Each envelope is labelled with an applicant's identifying letter – *A* through *J* – and contains a sheet of instructions and a square, flat cellophane-wrapped package. Inoue says the materials are for a test of patience and accuracy under pressure. The candidates tear open the packages and pull out sheaves of coloured paper squares. "The test is involving . . . I am sorry, I don't know the word in English. A form of paper craft."

"Origami?"

"Origami, yes!" Earlier today, I used the handicapped stall in the hallway bathroom. On the wall was a confusing panel of levers, toggles, pull chains. It was like the cockpit of the Space Shuttle. I yanked a pull-chain, aiming to flush, and set off the emergency Nurse Call alarm. I'm wearing pretty much the same face right now. It's my *Wha?* face. For the next hour and a half, the men and women who vie to become Japan's next astronauts, heroes to their countrymen, will be making paper cranes.

"One thousand cranes." JAXA's chief medical officer, Shoichi Tachibana, introduces himself. He's been standing quietly behind us. Tachibana came up with the test. A Japanese tradition holds that a person who folds a thousand cranes will be granted health and longevity. (The gift is apparently transferable; the cranes, strung on lengths of thread, are typically given to patients in hospitals.) Later, Tachibana will place a perfect yellow crane, hardly bigger than a grasshopper, onto the table where I sit. A tiny dinosaur will appear on the arm of the sofa in the corner. He's like one of those creepy movie villains who

sneak into the hero's home and leave behind a tiny origami animal, their creepy villain calling card, just to let him know they were there. Or, you know, a guy who enjoys origami.

The applicants have until Sunday to finish the cranes. Paper squares are spread across the table, the vibrancy of the colours played up by the drabness of the room. Along with the shoebox architecture and the rockets reclining around the grounds, JAXA has managed to duplicate the uniquely unappealing green-grey you often see on NASA interior walls. It's a colour I have seen nowhere else and on no paint chip, yet here it is.

The genius of the thousand cranes test is that it creates a chronological record of each candidate's work. As they complete their cranes, candidates string them on a single long thread. At the end of the isolation, everyone's string of cranes will be taken away and analysed. It's forensic origami: as the deadline nears and the pressure increases, do the candidate's creases become sloppy? How do the first ten cranes compare to the last? "Deterioration of accuracy shows impatience under stress," Inoue says.

I have been told that ninety per cent of a typical mission on the International Space Station (ISS) is devoted to assembling, repairing, or maintaining the spacecraft itself. It's rote work, much of it done while wearing a pressurized suit with a limited oxygen supply – a ticking clock. Astronaut Lee Morin described his role in installing the midsection of the ISS truss, the backbone to which various laboratory modules are attached. "It's held on with thirty bolts. I personally tightened twelve of them." ("So that's two years of education for each bolt," he couldn't help adding.) The spacesuit systems lab at Johnson Space Center has a glove box that mimics the vacuum of space and inflates a pair of pressurized gloves. In the box with the gloves is one of the heavy-duty carabiners that tether astronauts

and their tools to the exterior of the space station while they work. Trying to work the tether is like dealing cards with oven mitts on. Simply closing one's fist tires the hand within minutes. You cannot be the sort of person who gets frustrated easily and turns in a haphazard performance.

An hour passes. One of the psychiatrists has stopped watching and turned his attention to the talk show. A young actor is being interviewed about his wedding and what kind of father he hopes to be. The candidates are bent over the table, working quietly. Applicant A, an orthopedist and aikido enthusiast, is in the lead with fourteen cranes. Most of the rest have managed seven or eight. The instructions are two pages long. My interpreter Sayuri is folding a piece of notebook paper. She is at step twenty-one, where the crane's body is inflated. The directions show a tiny puff beside an arrow pointing at the bird. It makes sense if you already know what to do. Otherwise, it's wonderfully surreal: *Put a cloud inside a bird.*

IT IS DIFFICULT, though delightful, to picture John Glenn or Alan Shepard applying his talents to the ancient art of paperfolding. America's first astronauts were selected by balls and charisma. All seven Mercury astronauts, by requirement, were active or former test pilots. These were men whose nine-to-five involved breaking altitude records and sound barriers while nearly passing out and crashing in screaming-fast fighter jets. Up through Apollo 11, every mission included a major NASA first. First trip to space, first orbit, first spacewalk, first docking manoeuvre, first lunar landing. Seriously hairy shit was going down on a regular basis.

With each successive mission, space exploration became a little more routine. To the point, incredibly, of boredom.

"Funny thing happened on the way to the moon: not much," wrote Apollo 17 astronaut Gene Cernan. "Should have brought some crossword puzzles." The close of the Apollo program marked a shift from exploration to experimentation. Astronauts travelled no farther than the fringes of the Earth's atmosphere to assemble orbiting science labs – Skylab, Spacelab, Mir, ISS. They carried out zero-gravity experiments, launched communications and US Defense Department satellites, installed new toilets. "Life on Mir was mostly mundane," says astronaut Norm Thagard in the space history journal *Quest.* "Boredom was the most common problem I had." Mike Mullane summed up his first Space Shuttle mission as "throwing a few toggle switches to release a couple comms satellites." There are still firsts, and NASA proudly lists them, but they don't make headlines. Firsts for shuttle mission STS-110, for instance, include the "first time that all of a shuttle crew's spacewalks were based from the station's Quest Airlock." "Capacity to Tolerate Boredom and Low Levels of Stimulation" is one of the recommended attributes on a space shuttle–era document drafted by the NASA In-House Working Group on Psychiatric and Psychological Selection of Astronauts.

These days the astronaut job title has been split into two categories. (Three, counting payload specialists, the category into which teachers, boondoggling senators,* and junketing

* Between the astronauts who used their status to win a place in the Senate and the senators who used their influence to win a spot on a NASA mission, there's practically been a Senate quorum in space. (John Glenn managed to work it both ways, returning to space as a seventy-seven-year-old senator.) The gambit occasionally backfires, as when Jeff Bingaman defeated Apollo-astronaut-turned-United-States-senator Harrison Schmitt using the campaign slogan "What on Earth has he done for you lately?"

Saudi princes fall.) Pilot astronauts are the ones at the controls. Mission specialist astronauts carry out the science experiments, make the repairs, launch the satellites. They're still the best and the brightest, but not by necessity the boldest. They're doctors, biologists, engineers. Astronauts these days are as likely to be nerds as heroes. (JAXA astronauts on the ISS thus far have been classified as NASA mission specialists. The ISS includes a JAXA-built laboratory module, called Kibo.) The most stressful part of being an astronaut, Tachibana told me, is not getting to be an astronaut – it's not knowing whether or when you'll get a flight assignment.

The first time I spoke to an astronaut, I didn't know about the pilot–mission specialist split. I pictured astronauts, all of them, as they were in the Apollo footage: faceless icons behind gold visors, bounding like antelopes in the moon's weak gravity. The astronaut was Lee Morin. Mission Specialist Morin is a big, soft-spoken man. One foot turns in slightly as he walks. He was dressed in chinos and brown shoes the day we met. There were sailboats and hibiscus flowers on his shirt. He told me a story about how he helped test the lubricant for a launch-pad escape slide on the Space Shuttle. "They had us bend over and they brushed our butts with it. And then we jumped on the slide. And it passed, so [the shuttle mission] could go forward and the space station could be built. I was proud," he deadpanned, " to do my part for the mission."

I remember watching Morin walk away from me, the endearing gait and the butt that got lubed for science, and thinking, "Oh my god, they're just people."

NASA funding has depended in no small part upon the larger-than-life mythology. The imagery forged during Mercury and Apollo remains largely intact. In the official NASA astronaut portraits, many still wear spacesuits, still hold

their helmets in their laps, as though at any moment the Johnson Space Center photography studio might inexplicably depressurize. In reality, maybe one per cent of an astronaut's career takes place in space, and one per cent of that is done in a pressure suit. Morin was on hand that day as a member of the Cockpit Working Group for the Orion space capsule. He was helping figure out sight lines and optimal placement of computer displays. Between flights, astronauts spend their days in meetings and on committees, speaking at schools and Rotary clubs, evaluating software and hardware, working at Mission Control, and otherwise, as they say, flying a desk.

Not that bravery has been entirely phased out. Those recommended astronaut attributes also include "Ability to Function Despite Imminent Catastrophe." If something goes wrong, everyone's clarity of mind is needed. Some selection committees – the Canadian Space Agency's, for instance – appear to put greater emphasis on disaster coping skills. Highlights of CSA's 2009 astronaut selection testing were posted in instalments on the website home page. It was reality television. The candidates were sent to a damage-control training facility, where they learned to escape burning space capsules and sinking helicopters. They leapt feet first into swimming pools from terrifying heights while wave generators pushed five-foot swells. A percussive action-movie soundtrack ramped up the drama. (It is possible the footage had more to do with attracting media coverage than with the realities of choosing Canada's next astronaut.)

Earlier, I asked Tachibana whether he was planning to pull any surprises on his candidates, to see how they cope under the stress of a sudden emergency. He told me he had given thought to disabling the isolation chamber toilet. Again, not the answer

I was expecting, but genius in its way. The footage might not play as well with a kettledrum soundtrack (and then again it might), but it's a more apt scenario. A broken toilet is not only more representative of the challenges of space travel, but – as we'll see in chapter 14 – stressful in its own right.

"Before you arrived yesterday," Tachibana added, "we delayed lunch by one hour." The little things can be big tells. Unaware that a late lunch or a malfunctioning toilet is part of the test, the applicants behave truer to character. When I first began this book, I applied to be a subject in a simulated Mars mission. I made it past the first round of cuts and was told that someone from the European Space Agency would call me for a phone interview later in the month. The call came at 4:30 A.M., and I did not take care to hide my irritation. I realized later that it had probably been a test, and I had failed it.

NASA uses similar tactics. They'll call an applicant and tell her that they need to redo a couple of tests on her physical and that they need to do it the following day. "What they're really doing is saying, 'Let's see if they'll drop everything to be one of us,'" says planetary geologist Ralph Harvey, whose Antarctic Search for Meteorites (ANSMET) program personnel sometimes apply for astronaut openings. (Antarctica is a useful analogue for space, and people who thrive there are thought to be psychologically well equipped for the isolation and confinement of space travel.) Harvey recently got a call about one such applicant. "They said, 'We're going to give him a T-38 to fly for the first time tomorrow. And we'd like you to go along with him as an observer and tell us how you think he's doing.' And I said, 'Absolutely.' But I knew that wasn't going to happen. What they were doing was assessing my confidence level in the person."

Another reason to see how would-be astronauts handle stress is that options for reducing it are limited on board a space-

ship. "Shopping, let's say," says Tachibana. "You cannot do such a thing." Or drinking. "Or a long bath," adds Kumiko Tanabe, who handles press and publicity for JAXA and thus, I suspect, takes lots of long baths.

LUNCH HAS ARRIVED, and all ten candidates get up to unpack the containers and set out plates. They sit down again, but no one picks up chopsticks. You can tell they're strategizing. Does taking the first bite show leadership, or does it suggest impatience and self-indulgence? Applicant A, the physician, comes up with what seems an ideal solution. "*Bon appétit*," he says to the group. He picks up his chopsticks as the others do, but then waits for someone else to take the first bite. Canny. I've got my money on A.

Here's the other thing that's changed since the heyday of space exploration. Crews aboard space shuttles and orbiting science labs are two or three times the size of Mercury, Gemini, and Apollo crews, and the missions span weeks or months, not days. This makes the Mercury-era "right stuff" the wrong stuff. Astronauts have to be people who play well with others. NASA's recommended astronaut attribute list includes an Ability to Relate to Others with Sensitivity, Regard, and Empathy. Adaptability, Flexibility, Fairness. Sense of Humor. An Ability to Form Stable and Quality Interpersonal Relationships. Today's space agency doesn't want guts and swagger. They want Richard Gere in *Nights in Rodanthe*.* Assertiveness has to be "Appropriate" and Risk-Taking Behavior has to be "Healthy." The right stuff is no longer bravado, aggressiveness, and virility. Or as Patricia Santy,

* It was a ten-hour flight to Tokyo.

NASA's first staff psychiatrist, put it in *Choosing the Right Stuff*, "narcissism, arrogance, and interpersonal insensitivity." "Who," she asks, "would want to work with a person like that?"

As a gross overgeneralization, the Japanese are well suited to life on a space station. They're accustomed to small spaces and limited privacy. They're a lighter, more compact payload than the average American. Perhaps most important, they're raised to be polite and to keep their emotions in check. My interpreter, Sayuri, a woman so considerate she wipes the lipstick off the edge of her teacup before handing it to the JAXA cafeteria dishwashers, says her parents used to tell her, "Don't make waves on the quiet surface of the pond." Being an astronaut, she noted, is "an extension of everyday life." "They make excellent astronauts," agreed Space Shuttle crew member Roger Crouch, whom I had been emailing during my stay in Japan.

I ran my theory by Tachibana. We had gone down to the lobby to chat. We sat on low sofas arranged beneath portraits of the JAXA astronaut corps. "What you say is true," he said, one knee bobbing up and down. (His boss told me when I'd visited earlier in the year that leg-bobbing is viewed as a red flag during astronaut selection interviews, along with failure to make eye contact. For the remainder of the conversation, the boss and I stared intently at each other across the table, both refusing to look away.) "We Japanese have a tendency to suppress emotion and try to cooperate, try to adapt, too much. I worry that some of our astronauts behave too much well." Suppressing one's feelings too tightly for too long takes a toll. You either explode or implode. "Most Japanese will become depressive rather than explosive," says Tachibana. Fortunately, he adds, JAXA astronauts train with NASA astronauts for several years, and during those years "their character becomes somewhat more aggressive and like Americans."

In the previous isolation-chamber test, one applicant was eliminated because he expressed too much irritation and another because he was unable to express his irritation and acted it out passively. Tachibana and Inoue look for applicants who manage to achieve a balance. NASA astronaut Peggy Whitson strikes me as a good example. On NASA TV recently, I heard someone at NASA tell her that he could not find a series of photographs that she or some member of her crew had recently taken. If I'd spent the morning shooting photographs and the person I'd shot them for then misplaced them, I'd say, "Look again, lamb chop. I know I sent them." Whitson said, without a trace of irritation, "That's not a problem. We can do them over."

Anything else to avoid should you wish to become an astronaut?

Snoring, says Tachibana. If it's loud enough, it can mean elimination from the selection process. "It wakes people up."

According to the *Yangtse Evening Post,* the medical screening for Chinese astronauts excludes candidates with bad breath. Not because it might suggest gum disease, but because, in the words of health screening official Shi Bing Bing, "the bad smell would affect their fellow colleagues in a narrow space."

LUNCH IS OVER, and two – now three, wait, four! – of the candidates are cleaning the surface of the table. I'm reminded of those brushless carwashes where a small army of wiping employees descends on your vehicle as it exits the wash. But no one has to clean the dishes. The instructions are to put your dirty plates and utensils back inside the plastic tub labeled with your I.D. letter, and to put the tubs in the "airlock." What the candidates don't know is that the dirty dishes are then loaded onto a dolly and wheeled away to be photographed. The photos

will be delivered to the psychiatrists and psychologists, along with the origami birds. I watched the photo shoot after last night's meal. The photographer's assistant opens each tub and holds a piece of cardboard printed with the candidate's letter and the date just inside the bottom of the frame, as though the place setting had been picked up for a crime and was now being posed for a mug shot.

Inoue was vague about the purpose. To see what they ate, he said. For what it's worth, C didn't eat her chicken skin, and G left the seaweed in his miso soup. E left half his soup and all his pickled vegetables. My man A ate everything and placed it back in the container in the same precise configuration in which it had arrived.

"Look at G-san," tutted the photographer. He lifted the pickle dish that G had placed on top of the dinner plate. "He's hiding his skin." ("San" is a Japanese honorific, like our "Mr" or "Ms.")

I'm not sure I understand why it's important that astronauts clean their plates and stack their dirty dishes. Tidiness is certainly important in a small space, but I think this is about something else. If I showed a stranger a list of the activities I've been observing these past few days and asked him to guess where I'd been, I doubt "space agency" would leap to mind. "Primary school" might. In addition to origami, the tests this week have involved building LEGO robots and making coloured-pencil drawings of "Me and My Colleagues" (also destined for the mental health professionals' in-boxes).

Right now, H is on the TV screens, addressing his colleagues and the cameras. The activity is called "self-merits presentation." I had expected something along the lines of a one-way job interview, a recitation of character strengths and job skills. This is more like a summer camp talent show act. C's talent was singing songs in four languages. D did forty push-ups in thirty seconds.

Adding to the overall schoolyard ambiance, the candidates wear pinnies. They're the sort of thing kids used to wear during gym class to help them keep track of who's on what team. These have candidates' letters printed on them. They are for the observers. The lighting is poor and the camera rarely zooms in on faces, so it's hard to figure out who's talking. Before the pinnies went on, everyone was constantly leaning over and whispering to their neighbor. "Who's that? E-san?" "I think it's J-san." "No, J-san is there, with the stripes."

H is saying: "I can ride a bike without holding the handlebars." Now he cups his hands together and puts his lips to his bent thumbs. After a few tries, he produces a low, dry, unmusical whistle. "I don't have a skill like yours," H says to B glumly. B just finished telling us about the badminton championship his team won and then pulling up the legs of his shorts to show off his thigh muscles.

H sits down, and F stands up. F is one of three pilots in the group. "What is important in a pilot is communication." After a solid start, the presentation takes an unexpected turn. F tells us that he often goes out drinking with his pals. "We go to places where ladies entertain. That helps to communicate and help break the ice with the guys." F opens his mouth wide. He's doing something with his tongue. The psychiatrists lean toward the TVs. Sayuri's eyebrows shoot up. "I do this for the ladies," says F. *Wha?* Inoue pulls the zoom. F's tongue is double-curled, like a pair of tacos. "For me it is an ice-breaking technique."

My guy A is up next. He tells us he is going to demonstrate an aikido technique and asks for a volunteer. D stands up. His pinnie is partly slipping off his shoulder like a bra strap. A says that when he was in college, the younger students would get so drunk they couldn't move. "So I twist their arm to help them get up." He grabs D's wrist. D yelps, and everyone laughs.

"They're like frat boys," I say to Sayuri. Tachibana is sitting beside Sayuri, who explains "frat boy" to him.

"To tell you the truth," Tachibana says, "astronaut is a kind of college student." He is given assignments. Decisions are made for him. Going into space is like attending a very small, very elite military boarding school. Instead of sergeants and deans, there is space agency management. It's hard work, and you better stick to the rules. Don't talk about other astronauts. Don't use cuss words.* Never complain. As in the military, wave-makers are leaned on hard or sent away.

All through the space station era, the ideal astronaut has been an exceptionally high-achieving adult who takes direction and follows rules like an exceptionally well-behaved child. Japan cranks them out. This is a culture where almost no one jaywalks or litters. People don't tend to confront authority. My seatmate on the flight to Tokyo told me that her mother had forbidden her to get her ears pierced. It wasn't until she was thirty-seven that she summoned the courage to do it anyway. "I'm just now learning to stand up to her," she confided. She was forty-seven, and her mother was eighty-six.

"Of course, exploration to Mars will be a different story," says Tachibana. "You need someone aggressive, creative. Because they'll have to do everything by themselves." With a twenty-minute radio-transmission lag time, you can't rely on

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* I read an unedited draft of an oral history last week that had the "dangs" and "hells" inked out like operatives in a CIA dossier. When Gene Cernan responded to an Apollo 10 close call with "more than a few goddamns, fucks and shits," the president of Miami Bible College wrote to President Nixon demanding public repentance. NASA made Cernan comply. He got the last word in his memoir: "Bunch of goddam hogwash."

advice from ground control in an emergency. "You need again a brave man."

A FEW WEEKS after I left Tokyo, an email arrived from the JAXA Public Affairs Office, informing me that candidates E and G had been selected. E is a pilot with All Nippon Airways and a fan of Japanese musicals. For his self-merits presentation, he acted out a scene from his favorite musical. The scene required E to pretend to weep and wrap his arms around his invisible mother. It was brave, though not in an astronaut sort of way. G is also a pilot—with the Japan Air Self-Defense Force. Military pilots have always been a good fit for the astronaut corps, and not just because of their aviation background and skills. They're used to taking risks and operating under pressure, used to bunking in cramped quarters with no privacy, used to following orders and enduring long separations from their families. Also, as one JAXA staffer pointed out, astronaut selection is political. Air forces have always had ties to space agencies.

The week after I left Japan, all ten candidates flew to Johnson Space Center for interviews with NASA astronauts and selection committee members. Tachibana and Inoue conceded that the applicants' English skills were an important factor in the decision, as was, I imagine, how well they click with the NASA crews. "The most important part of all this, the heart of the process," says ANSMET's Ralph Harvey, "is the interview where they sit you down with a couple astronauts and you just talk. You're someone they may end up stuck in the equivalent of a tent in Antarctica with, for not just six weeks or six months in the space station, but maybe ten years as you're waiting to fly, working at Mission Control or elsewhere. They're picking a buddy as much as they're picking a work

partner." A Japanese pilot has an advantage over a doctor in that he has something in common with a lot of NASA astronauts. The military and aviation are global fraternities, and E and G are members.

THE FIRST TIME I visited JAXA, I travelled with a different interpreter. As we drove along the route from the train station, Manami translated some of the signs. One welcomed us to TSUKUBA, CITY OF SCIENCE AND NATURE. I had always heard it called Tsukuba Science City. Not only JAXA is here, but also the Agricultural Research Institutes, the National Institute for Materials Science, the Building Research Institute, the Forestry and Forest Products Institute, the National Institute for Rural Engineering, and the Central Research Institute for Feed and Livestock. There are so many research institutes here that they have their own institute: the Tsukuba Center for Institutes. So what's with the "and Nature" in the city's name? Manami explained that when people first moved to Tsukuba, there weren't any trees or parks or anything to do other than work. No major roads or express trains led into or out of the city. People just worked and worked. There were a lot of suicides, she said, a lot of people jumping off the institute roofs. So the government built a mall and some parks and planted trees and grass, and changed the name to Tsukuba, City of Science and Nature. It seemed to help.

The story made me think about a trip to Mars and what it would be like to spend two years trapped inside sterile, man-made structures with no way to escape one's work and colleagues and no flowers or trees or sex and nothing to look at outside the window but empty space or, at best, reddish dirt. The astronaut's job is stressful for all the same reasons yours or

mine is – overwork, lack of sleep, anxiety, other people – but two things compound the usual stresses: the deprivations of the environment and one's inability to escape it. Isolation and confinement are issues of no small concern to space agencies. The Canadian, Russian, European, and US space agencies are spending £9.5 million on an elaborate psychology experiment that puts six men in a simulated spaceship on a pretend mission to Mars. The hatch opens tomorrow.