

## Chapter 1: Mars

Marsha checked the clock. Just a few more minutes before Taylor arrived. Then she could go home. As she finished signing some documents, she grew distracted, thinking about the next day. Tomorrow would be her weekly day off. She would probably end up playing board games in the park near the local game store, weather permitting. She hadn't gotten much time to go to the park this week, even for short walks. It had been slightly busier than usual, but other than that this week had been fairly standard.

Or at least, it was standard for her and for her eight colleagues. Not very many people would call the jobs of the presidents of Mars "standard." The presidential office was located at the center of Noctis City, which was still a medium-size city by Earth standards despite being the largest Martian city. The office appeared from the outside to be a standard office building, but it was occupied by at least one of Mars's nine presidents at all times. Despite this, each individual president spent most of their time travelling the planet and giving speeches. Marsha fondly recalled the days when a president's time was mostly spent writing laws, because there were still many laws to formalize. She was the only remaining first president still in office—the rest had retired, but were still alive and well.

Suddenly, a blaring alarm startled Marsha out of her thoughts. She knew the sound of course, but only from drills. This alarm did not signify a problem with the building; it signified a planetary emergency, for the first time in Mars's history. This was the reason that the building was always occupied by at least one president. Snapping to attention, Marsha turned her attention to the screen which displayed the details of the emergency. Acting quickly, she sent two messages to Earth, then eight more to the other presidents. Given the current relative position of

the two planets, the Earth messages wouldn't be received for around ten minutes — slightly less time than average, but not ideal. Hopefully that was enough time. It appeared that her long week might have to extend a little longer.

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Taylor was on their way back to the office, after a plane flight from Meridiani, where they had given some speeches at the Opportunity Martian History Museum, as well as the prestigious Meridiani Academy. It was always enjoyable to give speeches to younger audiences, because they always asked interesting questions afterwards. Yesterday, someone at the academy had asked Taylor what they considered their biggest accomplishment, outside of their political career. Taylor had responded by stating that their biggest accomplishment in life was their children, who were both adults and worked in jobs that they each loved. One was an author, and the other a photographer. They also had said that the inclusion of their political career in the question wouldn't have changed their answer.

Now Taylor was back in Noctis City, travelling in the backseat of a subtly protected car. The protection hadn't been necessary yet, but it was just a precaution. As they travelled to the offices, Taylor reflected that they preferred the public relations side of the job slightly more, but the administrative side wasn't the worst. They had known what it meant to be a president when they decided to run.

They were just rounding the corner to the offices when Taylor's alarm went off on their phone. They didn't bother checking it. Checking the emergency would waste time, and time could be imperative now. They would be filled in by whoever was on duty at the moment — was

it Will? No, he was away at Candor today. Marsha maybe? It didn't matter. One thing was certain, though — tonight was going to be interesting.

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Most of the other presidents didn't have any particular opinion about which day they got off, but Eli had especially requested Saturdays. She always spent her day off with her children, aged 6, 8, and 11. Currently, they were reading through a series of books together. The children all liked adventure novels, especially if they took place on Earth, which they had never visited. Mars and Earth weren't all that dissimilar except for the gravity — that had been the case for around a century now — but Eli planned to take them in a few years when she got the chance, and then they would visit the locations of some of their favorite stories. Today they had just started a new book, and they had gotten through four chapters. Now it was time for dinner, and they were just sitting down when her phone's alarm went off. Quickly checking the situation, she apologized to her family. This couldn't wait. She would be at the office in five minutes if she hurried; she lived close enough.

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Marsha hoped there was time. If the computer had just detected the missile firing on Earth, that meant it had happened ten minutes ago. It hadn't even been aimed at a military base, so it might have been a misfire. If it was detected on Earth in time, it could be detonated midair with another missile. Marsha's messages to Earth would arrive twenty minutes after the firing, and she had reacted within seconds. Everyone else thought time zones were frustrating. They didn't have a universal speed limit to deal with. Her messages may not get there in time to warn China, but they might arrive in time to avoid a revenge strike if anyone listened. Why had the

U.S.A. suddenly fired, seemingly without provocation, and when Earth was just about to reach its first fifty years with no war? And why China, of all places? China and America had never been on the friendliest of terms, but as far as Marsha knew, they had never escalated either! Taylor walked in, and took a moment to process everything. The situation was immediately clear from the computer screen. “Live” satellite data of Earth took up most of the space, and in the corner were progress bars on the brief messages Marsha had sent. To the U.S. — “Why?” To China — “Incoming. Probably misfire. Don’t do anything.”

Neither Marsha nor Taylor could do anything right now except watch. There was still eight minutes until Marsha’s message would get through. Eli walked in, with seconds until the message arrived. The missile was still over the sea, but that didn’t mean China had been warned. If Marsha’s message was arriving now, it meant that what the screen showed was the situation at the time of Marsha sending her message. If either party responded, it would take another ten minutes to arrive, and the arrival of that message would come with the current satellite data.

Nine and a half minutes later, a missile was fired from China to intercept the other missile. Shortly after, a message from the U.S.A. came through, which read, “Radar error detected missile. Fired to intercept. For official purposes: Radar had no error. Fired to intercept and missed, then fired to intercept and hit.”

“So nobody was hurt.” sighed Eli, plainly relieved.

Marsha’s relief was only partial. “It looks like some egos were, though. That’s bad news.”

To prove Marsha’s point, another message arrived from China: “We will wait. But the United States should think twice about what they tell the public.”

Followed by a third message, from the U.S. “Are we supposed to tell everyone that our radar malfunctioned? That would be a disaster!”

“Great,” Taylor grumbled. “They can see each other’s messages. That’s not a surprise. They’re not exactly private, flying through the vacuum of space. But they aren’t going to sort this out by themselves. Are we going to have to act as a medium? It’s as if two very dangerous siblings were fighting!” Then, in a mocking tone, “‘Mars, tell China that this is my side of the couch.’ ‘Mars, Tell the U.S.A. that I was here first.’ ‘Mars, tell the U.S.A. that I’m here now, so it doesn’t matter who was here first.’ Couldn’t they have picked some other Earth country as a medium, which doesn’t have a ten minute delay between messages?”

After a pause, Eli inquired, “You just got off a plane, didn’t you? You only have outbursts like that in the hours after a plane-flight.”

Taylor, somewhat abashed, said, “Sorry. Let’s try to think of some solution, rather than grumble. Lives are on the line. We need some way to pressure the U.S.A. into giving the accurate story. Apparently the possibility of avoiding war isn’t enough incentive.”

Eli began typing. ‘You may temporarily lose some respect from advertising the truth, but will you not lose more respect in the long term once the public comes to realize that you hid from it?’ As she typed, she asked, “How’s this for incentive?”

Marsha nodded agreeably. “That should do the trick. If it doesn’t, we could add in a sanction from trade if they report falsely on this incident. Most of their imports are from China and from us.”

Taylor said, gravely, “Let’s hope it doesn’t come to that. A sanction on trade would hurt us as much as them. We would do it to save lives, but we should not throw that possibility around loosely, especially since we are two presidents short to make a vote.”

As it turned out, much to the relief of everyone present, Eli’s message was enough. Not only did the U.S.A. reveal the truth to the public, they also revealed Mars’s role in pressuring them to do so. This was, however, only the first time that Mars was forced to settle an Earthly dispute, because from that moment on, Mars, the planet which had been called “bringer of war” before its settlement, gained its reputation as peace-keeper.

## Chapter 2: Europa

Isaac opened another one of his boxes. He had arrived a week ago, but he was too disoriented by the changes to unpack everything at once. Boxes were being opened as their contents were called for. This wasn’t the first box, and it wouldn’t be the last, but right now he needed his lighter jacket. He could have used that jacket yesterday, but he didn’t feel the need before he left the building, and then he had regretted it later.

‘If you could call it a building,’ he thought as he exited. Does it count as a building if it’s inside of a large cave? Does a building need to have only the sky above its roof? Isaac supposed that calling something a “building” just meant it was built, and it doesn’t matter if that’s underground or on a mountain. He didn’t particularly like the fact that everything here was underground. Sure, there were lightbulbs in the “sky” to provide “sun”-light, including some

ultraviolet to give enough vitamin D. There were trees, grass, and animals. But it still felt like an imitation. His neighbors told him he would adjust after a while, and that you could always go up to Skyview to see the real Sun. Isaac knew they were right, and he had also known what he was getting into when he accepted the job on Europa. He was a science teacher, after all, and knew the surface wasn't survivable.

He had even gone up to Skyview every day so far, but the Sun was so much smaller than he was used to on Earth, and it looked strange to have the Sun and the stars in the sky at the same time. And then, of course, there was Jupiter. Jupiter went through phases, just like the Moon on Earth. It was familiar in that respect. But Jupiter was large, and it was slightly frightening for something of Jupiter's size to be looming in the sky, as if it would crash down any minute. There was something beautiful in all of this strangeness; Isaac could appreciate that. He just felt a little homesick, and he wished he could see the bright blue sky again. Even some grey clouds would have been nice.

Isaac reminded himself of the opportunity he had been granted. Everyone else on this world had also come from Earth, or from Mars. Europa was strange to everyone at first. Everyone, that is, except the children — the children whose parents had moved in with the first wave of settlers starting twenty years ago, and who he, Isaac, was going to have the privilege of teaching soon. For them, living under the ice was all they had ever known, and Jupiter's looming presence was an intrinsic part of the sky. If they ever came to Earth, they might feel the same way Isaac was feeling now about Europa. How strange would it be to them to look up and see blue? For the Sun to be bright enough and large enough to drown out the light of other stars?

What was he going to teach them about? This was a question he had thought a lot about during the journey. Much of science was the same here as it was on Earth; that's the beauty of science. Water molecules are still made of two hydrogen atoms and an oxygen atom. Light and heavy objects still fall at the same speeds. But other classic elementary school science topics would be complete and utter nonsense to these children. The water cycle, for instance: "So water just falls from the sky sometimes on Earth? And then it gets hot enough to turn into steam and go back up?" Or if they aren't nonsense, some subjects are changed. Biology, for example, needs new classifications because of the life native to Europa. Not all life is based on the same basic molecules.

He would be teaching kids aged 7 or 8 standard years this year, and astronomy seemed to be a fairly good choice. That was an opinion gaining traction among most teachers across the Solar system. Now that humanity had expanded to its third world, schools all over were including astronomy in their curriculums as early as possible, both to put certain other scientific concepts in perspective and to capture the attention of kids. Besides, Isaac had recent firsthand experience with interplanetary travel, since he had only just gotten off of a spaceship one week ago.

Of course Isaac had taught astronomy before, but the subject matter was slightly different now. Europa no longer counted as "astronomy," and Earth did, which would be strange, although he was fairly certain he knew a lot about Earth. And you could get a fairly close-up view of Jupiter here just by taking a field trip — no telescopes necessary. In fact, a field-trip to Skyview seemed like the perfect way to start the year. There were telescopes there, so that trip might be recurring as well.

If anything, Isaac thought, he would be even better at teaching astronomy to others than he had been in the past. He had experience in space now, and he had set foot on two separate and starkly different worlds. His challenge here, as he began to realize, would be re-teaching astronomy to *himself*. Once he could face the differences, he could begin to adjust. Life on Europa wouldn't remain strange forever.

### Chapter 3: Beyond

Sam was four standard years old, although if anyone stated that fact in his presence, he would indignantly respond that he was, in fact, four *and a half*. He loved asking questions about how things worked. He was already taking after his parents. When someone had asked him a month previously what his parents' jobs were, he had mostly learned how to pronounce "astrobiologist," and he had also learned that an "astrobiologist" studied life that didn't come from Earth.

That was what he was thinking about the next afternoon, when another question occurred to him, and so he walked into his mother's home-office. "Mom, you said an astro-bollo-gist studied life that didn't come from Earth. Does that mean you study us?"

Sam's mother turned away from her computer. "No, Sammy. We don't live on Earth, but your grandparents came here from Earth. You can ask them about it next time they visit. In fact, all people originally come from Earth. Other animals, and plants, too. When people first came to live here, they brought all of that with them."

“Oh! So if everything came from Earth, what do astro-bollo-gists study?”

“That’s a great question! Actually, not *everything* came from Earth. Everything here on Mars did, but before people brought stuff to Europa, there was already some life in the underground ocean. We had to make sure that the European life was safe for people before anyone moved there, and that’s what the first astro-*bi*-ologists studied.”

This explanation raised a whole slew of questions for Sam (as was often the case). “Are they called Europa-fish? If they live in the ocean in Europa; I think they should be called Europa-fish. Do astro-bi-ologists still study the Europa-fish? Do you study the Europa-fish? Is there any other kind of life that’s not from Earth?”

“You never have only one question, do you?” Sam’s mother chuckled. “Yes, some astrobiologists still study the Europa-fish — I guess you could call them that — because there’s always more to study. But we don’t know if there’s any other kind of life that’s not from Earth. There probably is, but we haven’t found it yet. That’s what Dad and I do; we look for other life that’s not from Earth. Especially other life that can do science, like us.”

Just now realizing what his parents did, Sam started jumping with excitement. “You and Dad look for aliens? That’s so cool! I didn’t know you could look for aliens! I want to be an astro-bollo-gist when I grow up and look for aliens, too!”

A month is a long time when you are four (and a half). Now Sam could actually say “astrobiologist,” even though he had to say it slowly. He hadn’t exactly understood what his mother had meant when she had said they were “looking for” aliens, and every day he would spend some time walking around the house, looking under pillows and between couch cushions.

“I’m looking for aliens, just like an astrobiologist!” he would proudly proclaim to his parents. If they weren’t busy, they played along and helped him look, because he was having so much fun.

One day, as he was performing this daily search, he passed his father’s home-office, and heard four voices inside. He recognized two of the voices — they belonged to his parents — but there were two other voices that he didn’t recognize. Of course, Sam knew that sometimes his parents would call other people during work, and they were sometimes on the same call, but these other voices were talking a little strangely. They were using the same kinds of big words that they usually used when talking to other astrobiologists, though, so he didn’t think too much about it until his parents came out of their meeting.

“Have you ever heard of Europe?” Sam’s father said when asked about the strange voices.

“That’s the planet where we found the fish! Did you find more?”

“*Europe*, not *Europa*,” his mother chimed in. “*Europe* is a section of Earth, so I suppose you could find fish there too, but that would be regular biology, not astrobiology. People from Mars tend to talk differently from people on Earth, and within Earth there are a lot of different ways people talk. Those are called accents.”

Both of them avoided pointing out the fact that there is a delay of 3 minutes between any communication from Mars to Earth at the best of times, and that calls between the two places therefore never happen. Sam didn’t know that, and the questions he next raised about Europa and Europe would have distracted him from the topic anyway, even if he had known. They each would have loved to tell Sam that there was interstellar life in orbit around Mars at that very

moment, of course, but the Solar Interplanetary Union had classified all information about life outside the Solar System until they had worked out whether that life was friendly and safe.

Their friendliness was determined quickly. Whether they were safe was a different matter: it was entirely possible that their biologies would be too similar to those of humanity, and therefore their viruses would be too. It was also possible that their biology contained some chemical that was toxic to humans, or vice versa. So, the S.I.U. dictated that the information was classified, which meant that Sam's parents had to hide their excitement, even from Sam.

However, Sam soon realized what had been happening anyway. It happened the following day, when the people with cameras showed up at the front door. Sam's parents both went out, and Sam opened a window to listen. He could hear the reporters asking about aliens, and his mother kept repeating the same phrase over and over again. Sam couldn't understand all of the big words, but he caught "We are not... allowed to... any information... the possibility of... intelligent life," and he could fill in the rest from there. He saw that after his mother said this a few times, some of the people went away, but some of them stayed.

Sam's father began answering as well, with the phrase "Even if there was... intelligent life, we would not... be allowed to... any information... that either," using the same big words as before. A few more people went away, but not very many of them. Eventually, Sam could see his parents start to get visibly frustrated, raising their voices, and appending "We have already told you that..." to the beginnings of their answers, and ending with "... It's not *our* decision."

Sam began wondering why the people were still asking the same questions, even though they kept getting the same answers. Perhaps they were trying to make his parents angry until

they gave a different answer? That wasn't a nice thing to do, but it seemed to be what was happening. He wished they would go away, and let his parents come back inside, but they looked like they would be willing to stand outside and ask the same questions all day if they had to.

Eventually he realized that they might go away if his parents went away. They weren't going to let his parents go away, which was a problem. But the only reason they couldn't come inside was that it might look mean to the people with the cameras. If he gave his parents a reason, they could come inside, and then the other people might leave! Sam made up his mind: he was going to ask for help fixing a "broken" toy. Then his parents could come and help him "fix" it, and the people with cameras would go away!

Sam's parents spent the rest of that day exchanging information with what Sam now knew were really aliens (having promised he wouldn't tell anyone, he was allowed to watch), and also asking the S.I.U. if they had enough information by now to declassify the matter. In addition, they found out that the reporters' source of partial information was an astronomy professor who had noticed the new satellite in the sky. By the end of the day, the S.I.U. had decided that, given that their information had been partially leaked, and a decent amount (though not quite enough) was known about the alien life, the safest route would be to make everything available to the public.

Of course, this meant that the next day, when the reporters inevitably showed up again, they were greeted with less frustration and more excitement about the story. As the public soon found out, the mysterious satellite in the sky contained intelligent life native to the Tau Ceti system, less than 4 parsecs from Earth. They had, like humans, settled on other planets, but

unlike humans, were in their first stages of settling on other planetary systems. These particular Tau Cetians were citizens of a younger neighboring star system, which had no native multicellular life, and which was slightly closer to the Sun than Tau Ceti. They had received a signal indicative of intelligent life from the Solar system, and had come to find out more, and to collaborate if humans turned out to be friendly. They were more than willing to teach humans the technology that had unlocked interstellar travel for them, and since it was a new technology for them as well, had high hopes that the human mind could improve upon it. Humanity's leap to the stars was about to begin!