

# Europa

## 1. Countdown

10...Alicia had butterflies in her stomach. She immediately started on her breathing exercises as she had been trained to do. It came naturally to her, and almost on reflex.

9...She started to control her breathing and her stomach calmed down.

8...She cast some side glances towards the others in the cabin. They all had a focused expression in their face, as would be expected.

7...In her mind she found it hard to fathom that this was really happening. It was a dream come to true for her.

6...She focused on the screen before her. Everything was green and good.

5...Her thoughts started wandering to the massive rocket beneath her and the forces that were about to be released.

4...More butterflies. She kept on doing her breathing exercises, but allowed herself to be a bit excited. After all, this was probably a once-in-a-lifetime experience for her.

3...Tension building.

2...Screen in focus.

1...Bracing herself.

0...Ignition!

The launcher rocket had brought them safely from the ground and out of the atmosphere, and they were now drifting towards the *Nautilus*.

"Everything went smoothly, status is green all over. You have the captain's permission to cheer up and have a moment of pure joy as we all enjoy the fabulous view." Alicia turned towards the rest of the crew with an underplayed smile on her face. She also took the moment to study the faces of her fellow crewmembers thoroughly, but discretely. She could sense a few of them releasing tension that had probably been building up through the shaky trip through the atmosphere. Nothing serious, all good, she told herself.

Alicia had been appointed the captain of the little group for their trip from the ground to the *Nautilus*. She had been the natural choice for the fact that she was a therapist, and therefore had the skill to remain calm in tense situations, as well as being good with people. This was not a natural for any therapist of course, but for Alicia it came naturally, and she had been trained for it as well. Once they entered the *Nautilus*, leadership would go to the captain there, but she would still be responsible for the mental wellbeing of her group, as well as that of other crewmembers of the *Nautilus* during their 2 years flight to Europa. Once they reached Europa, she would work as a therapist there for the entire colony.

It was the commander of the science colony on Europe that had requested a therapist. Living for years on end, first on a space ferry and then in a bunker like facility on a faraway moon was hard on the human psyche. All astronauts had been trained for life under those conditions, but there are things you cannot train for. Tension was beginning to build in the small science community on the surface of the icy Galilean moon of Jupiter.

## 2. Introductions

"We never thought we would find life like this," Jean, the commander of the colony, said in his French accent, as a strange luminescent creature appeared at the edge of the huge screen that was

built into the wall behind the commanders chair in his office. They were standing in front of the screen, and Alicia were still mesmerized. It was a live feed from the camera installed somewhere beneath the icy crust of Europa. Jean continued: "And so we never prepared for an extended stay. So far the mission has been extended by 50 years, but if you ask me, I think we will never leave. Not the people, most us will be replaced, but humanity. This colony is here to stay, and instead of pretending it is not, I am going to assume it will, and act accordingly. And that is part of the reason you are here. I plan for the future."

"That sounds wise," Alicia said. She had a hard time steering her attention away from the screen. She did though, eventually. She wanted to make a good impression on the commander. "I look forward to get to work. This is a dream come true for me, but I know I am not only here for my own satisfaction. Not many are given this opportunity, and I am going to repay you by doing all I can to help this colony and the mission become a success. I know how important your work here is for humanity, so I will not take my task lightly."

"Now that is dedication," Jean said, smiling. "I of course expect the people here to be serious about their job, and they are, but you can relax, we also need to be human. In fact, it is important for anyone working here to take time for nurturing their private life and mental health as well, otherwise you won't last long. Not everyone sees it that way though."

"What do you mean?" Alicia asked, curiously.

"You know what?" Jean said, avoiding the question. "I think you should take a few days to get acquainted with the place, and then you can start up with a small group of people, just to get a feeling of what you are dealing with here."

Alicia had decided to spend the afternoon exploring the colony. The entire facility was a mix of interconnected inflatable structures. As the price of transporting just a kilogram of material to Europa was quite high, the inner space to weight ratio had to be optimized. The technologies for creating inflatable structures had advanced over time, so the later structures were of much higher quality than the early ones, but they were all of them vulnerable to anything coming down from the sky. The chance of that was not high, but it was there, as part of the conditions of living on Europa.

"Yeah, so, this is the greenhouse. Or so they call it," Fritz said with an ironic expression on his face.

"You don't think it is a greenhouse?" Alicia asked.

"Oh, it's a greenhouse alright," Fritz said. "It works in the ways it is supposed to, and for the purposes for which it was made. You can certainly grow vegetables in it." Alicia looked down the long rows of shelves and pipelines. There were tomatoes on one side and lettuce on the other side. She studied the face of the botanist.

"Would you mind coming in for a conversation in my consultation room?" she asked. When she felt the man go into defensive mode she quickly added: "Don't worry, it's just a standard checkup, everybody has to go through one. I'll serve a cup of tea, and you can tell me more about the greenhouse or anything else you'd like to talk about." she smiled, and could see in his face that she had fended off his scepticism. She continued her tour inside the greenhouse.

Several structures were dedicated to living quarters, and some for laboratories. The few rooms in the colony that were set up as offices were actually just extensions of the laboratories. Most office work was done using personal computers in the living quarters, but sometimes physical presence were preferable to online communication. Some food was grown in the greenhouse, but otherwise the colony was dependent on supplies from Earth for everything from nutrition supplements to laboratory equipment. After all, this was a science mission, not a settlement.

### 3. Sessions

"We all feel it, the gloominess. Has to do with the lighting," Jack said.

"It seems to me all rooms a well lit," Alicia said.

"It seems so at first," Jack said. "But after a few months you start to realize that something is missing. Now I have some knowledge in the field of optics, and I think there is something wrong with the distribution of wavelengths. It's supposed to mimic daylight, but it doesn't. Maybe it also has to do with where the light sources are placed, I don't know."

"Have you discussed it with others?" Alicia asked.

"I have, but I think they have stopped listening. Maybe they feel that I have become too obsessed about it, and that it is something better left to the commander and the mission control on Earth. And some, like Nikita, just fix their own room for more comfort, leaving 'common space' for others to fix. I accidentally mentioned all this to Sanders too, our doctor, and now I am on tranquilizers. So I have stopped talking about it."

-----

"Hello Fritz, nice to meet you again," Alicia said, smiling. "Now tell me about the greenhouse."

"It's a facility for growing vegetables on substrate in a way that has been tested out on Earth and proven to work," Fritz said.

"But you think it should be different?" Alicia tried.

"The setup does not leave room or capability to experiment," Fritz said. "If we had more space we could grow fruit, but of course we'd need real soil for that too. I'd also like to experiment with growing mushrooms, and to add more flavour to the tomatoes and the cucumbers especially. Of course, that last part would require more workhours in the greenhouse for us working there, and that can only be taken from the science projects, so that is probably not going to happen."

"But in order to grow fruit trees you would need some seeds as well," Alicia said.

"Nikita has a small lemon tree in her room, and I'm pretty sure she has other seeds as well. I think she is using the lemons for essential oils or something. I don't think she'd ever consider sharing her lemons with the rest of us, but maybe she'd share the seeds," Fritz said.

"Nikita, huh?" Alicia said.

-----

"Hello," Alicia said, opening the door, but before she had time to say anything else, the woman before her extended her hand, smiling, and said: "Hi, you must be Alicia. Welcome to Europa." Alicia shook hands with her and greeted her. She felt an instant chemistry between them and sensed that Nikita was a woman with a winning personality towards those that she liked. Obviously she had decided to like Alicia instantly the moment they met. They sat down.

"Tell me a bit about yourself," Alicia started. "Do you like it here?"

"I work in the xenobotany department," Nikita said. "Alien plants. Yes, I like it, I find my work to be..fascinating. The plants of Europa, it is a whole new world opening up to us. They are akin to the plants on Earth in many ways, and then again, in many other ways, completely different."

"Are you a religious person, Nikita, if you don't mind me asking?" Alicia asked.

"I don't," she said, smiling. "No, not really. Well, I think I'd describe myself as a spiritual person maybe."

"Spiritual in what way?" Alicia asked, curiously.

"I've always been looking for something, some meaning besides the facts and theories you find in the world of science. It is like, our minds were not created for understanding things in the scientific way, do you know what I mean?" Alicia nodded.

"Well, I brought some items from Earth to make myself comfortable, mostly out of habit. But when I got here, and especially after starting up my work, I started feeling drawn to something spiritual once again, and in a way I had not experienced before."

"How?" Alicia asked.

"Have you been to the lookout?" Nikita asked.

"You mean the big transparent globe at the end of the left wing? Yes, I have."

"What did you see?"

"Well I saw Jupiter, hanging above, taking up a big chunk of the view, and I saw the icy landscape stretching out in all directions. It was quite beautiful, and.." Alicia said.

"Yes..?"

"It instilled in me a kind of awe and..tranquility I think."

"It does, doesn't it?" Nikita said. "And add to that the fascinating creatures and plants living beneath the ice. I think I needed a way to process it all."

"And did you find it?" Alicia asked.

"I did," Nikita said.

-----

"It is only a matter of time before something falls on top of our heads," Ben said. "And when it does it will be the end of us all, and of this mission altogether."

"You will have to excuse me, I am not a scientist or an engineer," Alicia said softly, "but isn't that unavoidable? We all knew when we signed up, that since Europa does not have an atmosphere to speak of.."

"Well I am an engineer, and I can tell you, it's not unavoidable," Ben said. "What we could do was to sink all the structures into and beneath the surface. Yes, I know it sounds like an impossible project, but it can be done. And it would be worth it, in the long run, too. I made some statistical calculations and added some numbers, and there is no doubt that, statistically speaking, it will be worth it. Not counting to human lives that are at stake of course."

"Did you speak to Jean about it?" Alicia asked.

"I did, but he is not in charge. And mission control is not either. It's the politicians and whatever money interests is behind the mission who has the final word. This is an international mission, with nations coming together all over the Earth, so there's no telling how it all works, and who is really pushing the buttons.."

"But if you showed them your calculations, or if Jean did.."

"I think I've already made enough of a fool of myself as it is. I'm going to keep taking care of the machinery as is my job, and then I'll head home on the next scheduled flight."

-----

"Hello Keith," Alicia said, while bending down and shaking the hand of the 7 year old boy in front of her. "And you brought your parents too, very nice. Come on in, all three of you." They all got seated.

"I hear that you are something of a celebrity," Alicia said.

"The first child born on Europa, yes, I know," Keith said. Alicia sensed a bit of pride in his voice.

"Keith could you describe one good thing and one bad thing about living on Europa, in your own words, please?" Alicia asked.

"The good thing is I get to go to work sometimes with my mom or dad. Usually one of them stays at home with me, teaching me stuff, or just working at home while Sean and I are playing.."

"Sean is the other boy here at the colony? He is six, is he not?" Alicia asked.

"He is," Keith said.

"And a bad thing?" Alicia said.

"That I have to wear a gravity suit underneath my clothes. I know that it is keeping me healthy, but you can't do the cool stunts with the suit on. And also.." he hesitated.

"Yes?" Alicia encouraged him.

"Sometimes when Sean and I are playing, it feels like, well, it's like, there's not always so many things to do."

"Keith, are you feeling bored?" Alicia asked. Keith hesitated.

"Yes," he said.

"Doctor Sanders?" Alicia said.

"Yes," Sanders said. "Come on in."

"I am Alicia, the new colony therapist," Alicia said. "I thought I would step by and say hello." Sanders extended his hand. They shook hands.

"I also have a question for you. I am curious: How many people in the colony are you prescribing tranquilizers to?"

"You should have access to the files.." Sanders began.

"I do, but I thought I'd save myself the trouble of counting and ask you instead. I only need a round number," Alicia said.

"Well, in that case, I'd say about a hundred."

"That's almost half the colony!" Alicia was shocked.

"You must understand, it is a precautionary measure," Sanders said. "I know that you are used to conditions on Earth, but things are different here. I can't just send someone on a long vacation. And you must understand, one crazy person here can jeopardize the safety of the entire colony. Maybe you should try speaking with the commander about it, I'm sure he can make you understand that safety in the colony is not to be trifled with.."

"You can be certain that I will take it up with the commander," Alicia said, and as she left the room she wondered if it was wise to get into a conflict with the doctor this early in her stay. And then she decided that she didn't care.

"I have read your report, Alicia. It seems your main point is, that problems in the colony are mainly structural. Or, if I understand you correctly, that solutions lie in many cases beyond mental therapy. Is that correct?" Jean asked.

"It is," Alicia said.

"So what are your suggestions then? How do you suggest we go about solving these issues?"

"Well, I have been told that safety plays a very important role here.." Alicia said.

"It does," Jean said.

"Then let's take this one step at a time. My first suggestion to you would be to set up a suggestion box."

"You mean a physical box? Isn't that a bit.." Jean was searching for the right word.

"Not, I mean a dedicated email address," Alicia said, smiling.

"Oh, well, I guess there's no harm in that. We do have a command structure here, it's not really a democracy, but I guess there's no harm in listening to what people have to say."

"There's not," Alicia said. "Oh, and one more thing..I think that approval of tranquilizer prescriptions should go through me, since I must be considered an authority in this field, at level with the doctor. Tranquilizers may seem like an innocent, but they are not. Since you have me now, we have a chance to treat problems at the root, and not just at symptom level."

Jean thought for a while. "Ok," he said.

#### 4. The School

"It's a radical idea," Jean said.

"And yet you may see why it makes sense," Alicia replied. "Two bored boys in a space colony like this, what could possibly go wrong?"

"Good point."

"And also: I am only one person, I can only do so much as a single therapist. The way I usually worked down on Earth was, that while the client was learning something about himself, and got to the core of the problems, I would also teach him something about how to handle them in his everyday life. These tools were actually some part of my knowledge in psychology translated and transformed into something useful for the client.."

"You want to teach psychology?" Jean asked.

"Yes, but not in the traditionally sense. Psychology is a university field of study. I want to teach it at grade school level, and not as academia, but on the practical level. *Applied psychology* if you wish. And not just for the children, for the adults as well, so that all are at the same level."

"Ok, but you know it will have to be off work hours. And I can't force anyone to go to school," Jean said.

"And you won't have to," Alicia said.

"Then there are these suggestions from the suggestion box. I'm not quite sure what to do with them. Some of them are quite good, but I think they have to be worked on a bit before I can present them to mission control."

"How about setting up some work groups including anyone who is interested? You can have someone setting up a system on the computer where people can volunteer for working groups."

"Sounds like a great idea," Jean said.

"Welcome to this first lesson of applied psychology. Today we will learn about how we learn. There are many methods we can use, but in the world of the animals we learn through play. It's a very effective way, if we can get it right. What we need to do is taking things one step at a time. It is important that the level of difficulty is not too high, or we give up. And what happens when the level is too low? Keith?"

"We are bored," Keith answered.

"That's right," Alicia said. "By being taught at the right level of difficulty and one step at a time we get a series of success experiences which will cause us to believe in ourselves and encourage us to move on. It piques our curiosity. I have put together some exercises where you have to pair up and teach each other what you read on the paper. You may help your comrade if he or she is having difficulties, but only if you sense that he or she needs it. It is a lesson not only in the techniques of learning, but also in speaking and listening."

Nikita was undecided.

"I don't know. *Teach* spirituality? It is hardly a school subject," she said.

"It wouldn't be mandatory. Like you said, it is something you only find if you search for it, right?" Alicia said.

"But would anyone even show up? And I don't know the first thing about teaching."

"You could start by just teaching meditation. I will make the commander reserve a room for you to decorate, to be reserved for meditation and for your spirituality lessons. And I assure you, someone *will* show up, myself included," Alicia said, smiling.

"Ok, I will do it."

## 5. Changes

"The story of the greenery dome is one not only of ideas and dreams come true, but also that of resilience in the hearts of those who had visions beyond the ordinary, who did not give up when reality came knocking on the door, telling them this could not be done. And they were right not to give up, because here we stand in front of a new marvel in our colony: *The Greenhouse*. Yes, the architects behind it insisted it be named so, even though it is hardly a house." Jean laughed. He was standing in front of the red ribbon separating the large crowd of people from the Greenhouse, giving his speech. "The Greenhouse will be a place for restoration of the soul, a small oasis of green plants and open sky amidst a world of steel and plastics, but it will be so much more than that. It also marks a transition into a new era, where we will be expanding our fields of discovery. We started as a science team focused on xenobiology, and we are now beginning to explorer how to not only live but also to thrive on worlds in the outer solar system. We will be experimenting with new genetically modified plants, for food, for building materials, and for science.

And this structure is unique, for while our colony has moved underground, the Greenhouse has its head in the sky. And so I can already sense what we will be focusing on next: Keeping track of

celestial objects and building up a defence system against those that may threaten our colony. In fact I already have suggestions in my suggestion box about a mass driver that will allow us to launch small satellites, so I'll be putting that one to a vote soon. But for now, let's enjoy the fruits of hard labour and explore the building. Ladies and gentlemen, I declare the Greenhouse open for the public." Jean cut the ribbon.

They all started to move into the dome, and the view was astounding. The Greenhouse was divided into sectors with different levels of temperature and humidity. The entry sector was the tropical area. There were trees all over, and little hummingbirds flew around, finding nectar in exotic flowers. Streams of flowing water driven by underground pumps provided an atmosphere of serenity. A large butterfly landed on the shoulder of Alicia. She smiled. Change had come.