

CONSTELLATIONS

"This is not a waste of time," Niclas sang in his reedy tenor. "Not even slightly. Oh no. Not a waste of time."

Alastar Virgil ignored the complaining with the ease of long habit. After four years the Hinichi's chanting had become familiar, because he never let an opportunity to express his opinions go unutilized, and his habit of sing-songing his way through the same five or six melodic lines was a watchword throughout the ship. He had many potentially irritating habits—he liked granting nicknames, which is how she'd been awarded hers—but the personality quirks that might have caused significant acrimony were overlooked by nearly everyone because Niclas was smart, loyal, and generous. He was also diligent, which Alastar could appreciate, given that she was entrusting her safety to him.

"Our gear can do this by pinging the computer," Niclas continued, without the warbling, "so I don't know why we persist in these antiquated rituals."

"We persist in them because dying in space, alone, in a longvac suit, is a fate no one wishes on another person," Alastar said as Niclas studied her harness's status panel, and as she expected his eyes were moving in the quick and easy competence she'd come to associate with him. Despite his attitudes.

"Trust our Al-alet to put it in the most awful way possible," Niclas said, at last. He cuffed Alastar affectionately on the shoulder. "According to your 'buddy', you have 'check'ed out fine. Do me, now." As he turned to give Alastar his back so she could check the harness for obvious visual discrepancies, he continued, "At least this time it's not a drill. Though watch, give it half a week and Edris will pop out with another round of 'let's do another EVA exercise! The more practice, the better!'"

On that, Alastar was silently in agreement. As a fresh ensign on her first assignment to the Solarblade, her lieutenant had said that every captain had some tick biting their belly. For the Solarblade's captain, Marcello DawnJog, it had been rations; he'd locked down the genies so that they couldn't produce unhealthy foodstuffs. Most unhealthy foodstuffs, anyway, and it was hard to anticipate which items would pass muster and which would end up on Dawnjog's prohibited list. Alcohol had been permitted, for instance... but brownies had to be smuggled aboard as part of a crewperson's mass allotment. The black market in traded junk food had inspired several statistical models.

Alastar might also have occasionally sold some of her mass allotment. She'd considered it proof of her models' predictive abilities, if she made money. She had, in fact, made quite a bit of money.

On her present ship, the Silverquiver, the captain's tick was extravehicular proficiency. Meredith Edris insisted that all her people should be "as comfortable outside the ship as inside it," which was clearly an impossible goal. But the captain

was determined to come as close as possible. Certainly, Alastar had never taken part in so many routine EVA evolutions, and she conceded that familiarity had made her more proficient in vacuum. But she wondered, now and then, if that familiarity might make some more prone to underestimate the dangers.

Niclas was correct, however; this time they had a reason to spacewalk. The Silverquiver's "snowplow," the name given to the series of emitters that generated the low grade field that repulsed debris before it could strike the ship's hull, had stopped working. Engineering's tests had determined that four of the emitters needed replacement. They'd replicated the broken parts, and now someone needed to plug them in.

On a single-mission science ship like the Silverquiver, the distinctions between Engineering and the Science section only barely existed and lieutenant commanders were few. Which meant when the rotation roster had been consulted, Alastar and Niclas had come up as the next individuals of their rank for oversight duty. Which is how Alastar came to be standing in the suit locker, doing Niclas's equipment check. They were responsible for a six-hour shift, which should be sufficient for their twenty-person work crew to make the replacements. Then Alastar could return to the personnel evaluations she was finishing for the annual jacket updates. Not her favorite task, but preferable to hovering off the hull of the ship.

Despite the name chosen for the Silverquiver's ship class, most ships dedicated to scientific missions were Ghost class destroyers like her. With a complement of two hundred and twenty seven, she was just large enough to prevent the personnel issues common to smaller vessels, while also having a short enough roster to promote the much prized sense of community that gave a ship its esprit de corps. She was also, Alastar thought, one of the lovelier ship designs, too large for her vaguely anthropomorphic curves to look precious, while also sporting sleeker lines than the bigger ship classes. Some of the largest of Fleet's ship classes looked bloated in comparison, and as one of the only ship classes to be overhauled by the Design and Engineering Board, the Ghosts lacked the older designs' aesthetic flourishes, which had detracted from the clean, purposeful curves dictated by necessity.

All observations she had had more than enough leisure to contemplate, since she was, once again, outside the Silverquiver.

"So here we are," Niclas said on their private EVA command channel. "Wasting time."

"A pretty place to waste it, at least," Alastar said.

"Only you would think so. There's nothing out here, Al-alet. A whole lot of nothing. Cold, empty, suck your lungs out and blow your blood vessels nothing."

Niclas did not like EVA. Not because it frightened him, but because it bored him. Alastar hid a smile from the projection of the Hinichi that took up the upper left corner of her helmet's HUD. "Nothing is preferable to the alternative. I would think."

"Like a giant space amoeba that wants to engulf us? Or a caravan of aliens that ply the solar winds on star galleons? Probably pirates, those. Ho, oh, ho, oh, a pirate's life is short!"

"I believe the line from that musical is 'a pirate's life is free.'"

"I like my version better."

Alastar considered. "I believe I do as well."

"That's what I like about you, Al-alet. You only sound like you have a stick up your tail pipe. It makes your sense of humor all the more delicious for those of us who bother to notice it."

Alastar liked Niclas, but six hours of his company while he kvetched about their assignment would make personnel evaluations feel even more preferable to hovering off the hull of the ship. Something to be grateful for, perhaps... she would be relieved when she finally sat down again. "I'm gratified that you have put in the time. To notice."

"We're made of nothing but time, thanks to Edris's fixation with idling in vacuum."

She shook her head, smiling. "This time we do have a job to do."

"Such as it is. Let's go make our specialists nervous by leaning over their shoulders."

For the next three hours, they enacted a variation of Niclas's suggestion, without the anxiety-inducing behaviors. Hopefully. Their duty amounted to ensuring everything was done expeditiously and in order, and since the specialists were professional and competent, there was little to correct. It helped that while the emitters were large installations, the parts that needed replacement weren't: managing the anything of significant mass or of bulky/inconvenient size would have been more dangerous than handling parts small enough for one person to grip even in normal gravity. It was more a precision operation than a gross one, and they executed the entire evolution without errors, with twenty minutes to spare.

This made the error that did happen all the more frustrating. Their repair required the bridge crew to test the components using the diagnostic procedure for the individual parts.

They ran the diagnostic for the *emitter*. The *entire* emitter.

Alastar was listening to the team-to-bridge channel when they coordinated the initiation of the test, and one moment she was floating seven feet away from the hull and the next she was pinwheeling through space, feeling as if she'd been

slammed into a wall. Her comm filled with the shocked babble of unaffected personnel on the ship discovering what they'd done wrong.

Her own voice cut through the noise, a little breathless from the punch but even in tone. "Virgil to work team. Activate your thrusters' automatic spin correction routines."

"Lieutenant Commander," said one of the engineers from the bridge, "We'll have the shuttle out immediately—"

"A moment, please," Alastar said, switching to the command channel. "Niclas?"

Her fellow officer's voice was professional. "Here, arii. You got a headcount?"

Alastar consulted her heads-up display. "I see all twenty-two of our beacons."

"Looks like you're one of the farthest out. Hell of a stupid thing to have done. They should have double-checked before they ran the diagnostic."

No question of that. "I'll check in with the first half of the team."

"I got the back half."

One by one, Alastar pinged each individual specialist. Emitters powerful enough to protect the ship in motion were more than powerful enough to snap the thin umbilicals used for mooring during minor tasks and send everyone sailing into the void. Her first two check-ins had used the automated emergency routine to bring themselves to a halt. The third she had to talk through the procedure, because the woman was hyperventilating. Thankfully the anti-nausea agents required prior to EVA excursions worked on panic-induced sickness as well as vertigo-induced sickness. Her fourth and fifth team members were nervous but stationary. Her sixth had gotten himself turned around and jetted off farther from the ship, but he'd managed to stop himself. The remaining four were holding still in space, though the last one thought she'd broken or sprained something when the umbilical broke. Alastar painted each individual's beacon icon based on their situation: all green, with the nervous ones yellow and the potential injury in red. They were fortunate the bridge hadn't brought the emitter up to full power, or the injury rate would have been far worse. "Niclas, I have accounted for everyone. You?"

Her HUD bloomed with Niclas's color assignments, green and yellow. "All good. Inasmuch as this situation is any good. You're senior by a month, you call it in."

"Virgil to Silverquiver. The team has reported in and is awaiting pick-up. Priorities have been assigned. You may dispatch."

"On our way."

Technically, the length of their work assignment had made the use of slimsuits rather than longvac suits possible, but Edris had drilled them to default to the longer duration suits unless their exercises could be completed in under an hour. The longvac suits were only slightly less comfortable than the slimsuits, so complaints were infrequent... and in circumstances like this, Alastar was grateful. Checking on everyone after the accident had used up nearly half an hour, and the pick-up wouldn't be expeditious. They could afford to take it slowly, and so soon after

making one error, the crew would be extremely particular about procedure. But as accidents went, it was minor: no one seriously hurt, no one lost. The damage done the umbilicals could be repaired with another EVA trip to plug in the replacements from stores.

She switched to the team channel. "A shuttle is on the way."

"Yay," someone said, sounding shaky.

"We're spread pretty far apart," said someone else. "What's the ETA?"

"We'll be on ship before next shift," Niclas said.

"Next shift!"

"Perhaps not the most comforting thing to have said to the nervous people," Alastar said on their private channel.

Niclas rolled his eyes. "Do you have any better ideas?"

Did she? Alastar looked out at the void, remembered a children's book her father liked to read her. Switching to the team channel, she said, "What constellations would you create from our vista?"

A pause. Then: "You mean... make something up? Based on what we can see?"

"Yes."

"Oh, that's easy," someone else said. "That's a cup of coffee there."

"Are you serious?"

"Hey, cups and plates are time-honored constellation themes!"

"I could use a cup of coffee right now..."

Every sentence lit up the icon belonging to the person who'd issued it. Alastar, watching the strobing, saw too many silent, still. "Anyone else?"

A new person, now. "A honey glider, maybe, over there. Oh, hey, I can draw it, look." A series of lines connected some of the stars. "There, see, it's got its wings open so it can come in for a landing."

"What's a honey glider?"

"They're little marsupials. Never seen one, but supposedly they exist where I grew up. On the other side of the planet."

"Ooh, my turn, I see a dancer."

Alastar made an encouraging noise... not that they needed one, by now. They were bouncing ideas off one another, and more of the icons were flashing as people participated.

"Nice," Niclas said to her privately. "I didn't think you had this much frivolity in you, Al-Alet."

"Creativity is a significant part of any scientific endeavor. In the sense of being capable of envisioning new solutions to existing problems."

"This is definitely a solution to problem I wouldn't have come up with... but I can certainly run with it." He switched to the team channel. "Draw out those constellations and save them, aletsen, and I'll hand out drinks from my private stash to the authors of the best ones."

That inspired a chorus of cheers from some of the team and confusion from the rest, who demanded and received an explanation of Niclas's infamous stash: the milk tea bases he brought aboard with him, since their patterns weren't available via genie. The leaves were locally grown in Stonylinn, the town from which he hailed on Hinichitii, and were combined with sweetened, thickened milk and salt and a packet of local spices Niclas refused to name, but that conversation kept them busy a little longer.

The Silverquiver's shuttle began picking up the scattered crew. Alastar had painted herself with the lowest priority, as one of the farthest from the ship and the least likely to panic; even if she hadn't been, she would have arranged for the rest of the team's rescue first. It was one of the obligations of her rank, to shoulder the increased risk and discomfort of any given job. In this way, she heard the constellations described, and the enthusiasm and relief of each person as they clambered aboard the shuttle.

"You're the last," Niclas said. "And we're almost at your position."

"I see you," Alastar replied.

"So what's your constellation, arii? I'd hate for you to lose out on a chance at one of my hand-mixed milk teas."

Surprised, Alastar said, "I... have not come up with one."

"All this time hanging in the middle of nowhere, and you've got nothing?"

"I'm afraid not."

His joking tone had a sympathetic gloss. "Too busy worrying about us to trot out that creative problem-solving science brain, mmm?"

"I wasn't worried," Alastar said.

"Pull the other one, Al-Alet, it comes off."

She shook her head.

The following day, the second commander summoned Alastar to her office to discuss the after-action report, the crafting of which had pushed the personnel jacket updates off Alastar's desk for almost two hours. Stanzi Billings was the head of the science department, which made her Alastar's commanding officer, and a serendipitous one: they shared a field of study, despite how uncommon it was for ship science departments to be overseen by computer specialists, rather than scientists in other fields. Also unusually for someone in their field, Stanzi was good with people—insisted, in fact, that management was something that could be reduced to communicable rules. Alastar had already learned a great deal from her, enough to expect the coffee service that had been set out at the informal chair grouping in the corner of Billings's office.

“Have a seat, please,” Billings said cheerfully. “I’ll be with you in a moment, I just need to finish this sentence or I’ll forget entirely what I was planning to say when I get back to it.”

Alastar obediently sat on one of the plush chairs. Fleet had standard issue furniture, both for work functions and for recreational uses like the groups intended for entertaining... but the colorful crocheted antimacassars on the backs of the seats were all Billings’s touch. That they were shaped like animal faces was typical of her sense of humor.

“There, all done. Pour me a cup, will you? I’m ready for a break.”

Alastar, already in the process of doing so, smiled. And since the second commander had gone through the trouble of setting out the savory snacks Alastar preferred, she helped herself to a few.

Billings dropped into the chair opposite hers, deflating its cushion with a crinkly noise. She reached for her coffee and said, “You did an excellent job on the after action. The recommendations in the appendix especially.”

“I assume someone else had already thought of them?” Alastar said.

“Oh yes. The captain tore strips off people, I assure you. I was one of them.” Billings looked pained, one ear lopsided, the other sticking straight up. “I deserved it, admittedly. It was an avoidable error, and we should all have been on top of it. But that’s not what I called you here to talk about. How are you? Are you all right?”

“Medical cleared me—”

Billings flapped her free hand. “Not physically. Mentally. Going mob is scary.”

Going mob was Fleet’s technical term for what had happened: Man OverBoard. The slang for it was the far more gruesome ‘joining the Dutchman’, after an ancient story of a ghost ship piloted by a skeletal crew. “I wasn’t in danger, sir.”

“And that’s all I’m going to get from you, isn’t it.”

Alastar paused before saying, “Dwelling on it would only make it worse. I believe.”

Billings nodded. “As long as you do talk to someone if it gets to you. Which brings me to an issue I wanted to bring up.” She tapped the wall of her cup with a fingertip. “Your report said that ‘a group-directed activity intended to alleviate anxiety was employed in the team while awaiting pick-up’ but I had to go into Niclas’s report to find out that you were the one who suggested the activity, and what it was. I went back through the audio logs to get a sense for it. That was a great idea, Alastar. Why didn’t you include any details in your report?”

“It... didn’t seem relevant?” Alastar said, caught by surprise. “Any exercise would have done.”

“And if no one can think of a similar exercise, they won’t have any history to fall back on to look for ideas if you don’t report it,” Billings said. “That’s the first problem with not discussing it. What’s the second?”

That was easier. "You wanted me to state that I was responsible for the exercise so that I can be commended for it."

"Right," Billings said. "You're making my job harder, alet. Part of my work, of any officer's of sufficient rank, is to develop our people. Positive reinforcement is one of the best ways to do that: praising people for things they do right, and noticing things they do well so we can make sure they have more chances to do them. We can't do that without data. And you, no less than anyone else, need development."

"I apologize, sir," Alastar said. "It wasn't my intention to..."

"Hide your light under a basket?" Billings grinned. "It just didn't rise to the level of relevance, by your standards." More seriously, "But Fleet is only as good an instrument as its people. That makes the maintenance of those people our primary focus, alet... because without those people, we can't do any of our other jobs effectively."

Alastar nodded. "Message received, sir."

"Good. Then I can move on to the personal development part. Which is when I say 'that was a great idea.' Where'd it come from?"

"My father read to me," Alastar said. "Every night, when I was young. One of the first books I remember was a picture book, one of the thick ones with hard pages. Every page was a different world's sky, and a different constellation in it. I asked him how people decided what the constellations should mean and he said..." Alastar trailed off, smiled. "That it was not a question for scientists, but for storytellers, to answer."

"Was he a storyteller?"

"A geologist," Alastar. "But my mother was a historian, and as you would know already, history is a story."

"A million stories," Billings agreed; her other interest being history, something they'd discussed in the past. "All twined up with the immutable laws of the universe. Like a poem: the story needs rules, or the structure isn't satisfying."

Which was a fascinating suggestion, but before Alastar could consider it, the second commander was continuing. "You're better with people than you think, you know."

Alastar looked up, surprised.

"In fact, I'm sure most of what's stopping you is that you *think* you're bad with people. Because you aren't energized by large groups of them, maybe. Or because you need a lot of time alone to think. But those things don't make you bad at social interaction, alet. What does, is deciding in advance to limit yourself in that regard. So think about that, will you?"

"Yes, sir," Alastar said, still wide-eyed.

"Excellent. And now we get to talk through the routine computer updates we're getting next week and how to stagger them so they don't depress the ship's responsiveness."

Two days later, Edris called for the inevitable reprise of their spacewalk, sending all twenty-two people who'd been subjected to the accident back into the vacuum. "Because," Niclas said dryly, thumping Alastar on the back as he greenlit her harness, "we need to face our fears before they have time to grow."

"She's not incorrect."

"No, but she's not the one who's going to get her fur rubbed off on the inside left leg of this stupid suit. Why is it always the left leg? Near the groin? That's sensitive real estate—"

Alastar strove not to sigh and ended up chuckling instead.

Their assignment involved a visual check of the newly installed components because, Alastar supposed, if the real purpose of their exercise was to force everyone to confront the fears provoked by the accident, returning to the scene, and to the activities they'd been engaged in immediately prior, was certainly the most definitive way to do so. Certainly there was a nervous air in the team as she and Niclas shepherded them back to the head of the ship. Nor did that nervousness dissipate when they reached the emitters and hunkered down to work their checklists. As before, she and Niclas hovered behind them, tethered by the new cords installed the previous day by some other team whose turn it had been to practice spacewalking.

Since the real reason they'd been sent was to grapple with any lingering anxiety about the accident, Alastar said, "Niclas, do you mind if I walk out farther?"

"You really want to?" he said. "There's still nothing out there, you know."

"I'm aware," she said, amused.

"Then be my guest, Al-alet."

She used her harness thrusters to spin outward and drifted to the end of the umbilical: not a long distance, but far enough that the activity behind her no longer impinged on her senses. As best she was able, she was facing the vastness of the universe alone. The Silverquiver had halted in her course between stars, and there was no darkness like the void between solar systems. Unlike space in a solar system, here the black felt like an abyss, falling forever around a person—if she didn't pick a point to stare at, the vertigo was immediate and intense.

The Alliance was vast: at last count, over a hundred worlds with nearly 700 billion people living spread among them like inhabitants of islands in an interstellar sea. The ships that plied those depths from star to star were so unlikely as to be miraculous: the chain of research, technology, and industry that led from a single-planet species living in rude shelters to that species encased in a metal capsule of air, light, and life, folding the planes of the galaxy to shoot from one shining world to another....

She'd wondered, as a child, at the thoughtless egocentricity that could lead a sapient species to decide the stars existed within the context of pictures they'd made up solely because they had decided the resemblance mattered. Now, facing the unfathomable size of the universe, she knew better. Without that breezy anthropocentrism, without that ability to decide that they would impose on the universe until it suited them, there would be none of the wonders she took for granted.

Maybe it was all of one piece—creativity and rigor, the laws that governed people's hearts and the laws of the universe. No, certainly it was, like a Mobius strip that twined in on itself infinitely.

She stared a while longer into that dark, occasionally letting her vision blur and the sea encroach her from all sides. Then she woke the thrusters and sent herself floating back.

"We're about done," Niclas said.

"I'll do check-out," Alastar replied, and switched to the team channel to begin querying everyone's status.

Thankfully, the team made it through the evolution with no errors and no accidents. Alastar and Niclas were the last inside again, but this time, at least, they were entering the ship the normal way, through an airlock. As she released the catches that held her harness on, the Hinichi said, "So, did you come up with a constellation?" At her quizzical expression, he said, "No excuses this time... you were looking long enough, and we didn't have a team to worry about."

Alastar considered, found herself smiling. "Do I still have a chance at winning one of your hand-made milk teas?"

"Sadly if what you seek is the dopamine high of winning, I have already distributed the prizes. But I'll happily whip up a tea for you from my personal stores anytime. We few lieutenant commanders need to stick together."

"What you're implying is that I need not deliver on a constellation..."

He snorted, racking the helmet. "Don't try to weasel out of it, Al-Alet."

"Then..." She thought of the darkness and the worlds scattered in them like gleaming archipelagos. "A ship. Like the ones that crossed the oceans, that had multiple masts and sails."

He barked a laugh. "A spectral ship for us had we turned actual Dutchmen? Why, Alastar Virgil! I had no idea you had such a dramatic streak! Or a spooky one? Both?"

His mirth was infectious, and now that he'd made the connection, it did seem absurd. "Not intentionally. I was more thinking of the first ships, and whether their captains dreamed of ships like ours."

"And starry seas like ours? From dramatic to poetic! What unexpected depths you have. I should have known!" He grinned. "I like the original version better. We're a Ghost class, after all. We should have ghostly companions."

“Niclas—”

“Shadowing us like a haunted memory of what could have been...”

“Niclas!”

“Aren’t you glad we waited to have this conversation until everyone else left?” he said. “Imagine how badly we could have disturbed them!”

“They’ll be fine,” Alastar said. “Except maybe for Phoebus, but I’ll check on him in a week.”

“Caught that, did you.”

She had, which pleased her, particularly since the evidence had been so subtle: Phoebus was a chatty type, and his patter had been subdued during this spacewalk. The second commander would have been delighted: “You see? Observing people is as useful as observing natural phenomena!” As Alastar finished stowing her suit, she said, “I concede your interpretation of my constellation also works. Because space is both dangerous and rewarding, and would not be the one without the other. The ship that aspires to the stars, and the ship that runs afoul of them, are the same ship.”

“But we sail her anyway,” Niclas said, satisfied. “Very deep. I like it.” He grinned. “You might have won with that one.”

“Who did?” she wondered, because she hadn’t asked.

“Oh, I gave it to Beanie for the watermelon.”

“The... watermelon?” She glanced at him, baffled. “Isn’t a watermelon an oval?”

“Yes, that’s why it was funny. Hearing him try to explain how his constellation was like a watermelon, but backwards because the seeds were white stars instead of black seeds, and the flesh was dark instead of bright, and also you can’t see the seeds anyway because oh, he forgot, you have to cut a watermelon into pieces to see the middle, and yes, it’s just an oval but it’s an *interesting* oval... well, you see, after he twisted his tail into that many knots, and everyone else was wrecking their ribs laughing, I didn’t have a choice.”

Alastar shook her head. “For losing to a watermelon, I require two milk teas.”

“You missed the deadline, but since I like you so much... done. Also, I’m sick of EVA. Have I said that lately?”

“Yes,” Alastar said. “And you will say it again, in a handful of days, when we’re due for the next. After you, arii.”

Niclas preceded her out of the locker, and she followed, smiling.