



PROOF

By Gary Lonesborough

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There's a view of Jupiter out of the skylight. It's clear enough to see the clouds shifting across its surface. My mathematics classroom is at half capacity, and the only person in the front row coughs three times before raising his hand.

'Yes?' Miss Mac asks.

'Can I go to medical bay, please?' the boy asks. Miss Mac sighs then nods her head. The boy stumbles out the door, his hand pressed against his chest. I haven't managed to remember his name yet and it's three days into the first week of high school. So many people have been getting sick lately, including my friend, Alisha. There must be a flu going around the outpost. I kind of wish I was sick too, so I could get out of this place.

The bell sounds for lunch and I follow the others out of the classroom, through the corridor and onto the playground, which is covered in plastic grass with a tall replica eucalyptus tree at the centre. The artificial sun burns orange and its warmth sneaks through the glass.

Across the playground, the teacher patrols, surveying everyone. Some kids kick a round ball on the grass. Other groups of friends and couples hang out on the seats and tables. Some laugh and hold their stomachs. Some whisper into each other's ears. Some are pointing upward towards Jupiter. The gassy surface moves like shifting sand of many different colours, blown by the wind.

I fasten the straps of my backpack on my shoulders and head to the end of the playground. I don't want to be here. I push the gate open and walk out of the school.

The road I walk along is paved with recycled materials that are cracked and fading. They usually resurface it every year, but I haven't seen them working on it in ages. I pass by the convenience store, where a sign out the front declares they are having a special on roast beef puree. A waste truck drives by, its gravity wheels make clunking sounds. It booms along the road, headed outside the base to the waste recycling centre beyond the outer fringes. There's no one walking around. Some of the shops are closed. Must be because of the sickness.

I pass the Earth Museum. I wonder what it would be like to be on Earth, and go to school there. Maybe it would be easier to make friends. With that many people, there must be some who are more like me. I glance up at the sky. Beyond the dark-blue hue of the dome, the stars are shining. One of those shining stars could be Earth for all I know.

My house is on the outskirts of town. The dome's edge sits beyond the artificial bush behind our backyard. My house is rectangular, with two square windows at the side of the dining room and the side of the living room.

I head to the front door and let myself inside. In the living room is Masie, my older sister Rachel's android. She's metal and human-shaped, a tad taller than me. She has a red sensor at the tip of her nose for scanning.

'Welcome home, Tanner,' Masie says. 'You're back earlier than expected.' 'School finished early,' I say, throwing my backpack to the floor. I head over to the couch and surrender to the cushions. 'TV on.'

The news is playing on the feed, streamed from the space station near Mars. 'There have been no notifications of school finishing early today,' Masie says. 'Were you provided with the reason for the premature closure?'

'No,' I reply. Masie is always questioning everything, but the thought hasn't even occurred to her that I might have lied. She's an older model, due for an upgrade, but Rachel won't trade her in.

The two women on the news are boring. Their voices are monotonous and they don't blink their eyes, which is weird. Maybe I'm just not noticing their eyes blinking.

'Our congratulations to Shyler Lee in the Mars outpost, who has just celebrated her hundredth-and-fiftieth birthday,' the newsreader says. A picture of Shyler Lee comes onto the screen. There are plenty of wrinkles on her face, but her smile is wide and warm. I can't imagine being that old. I'm only fifteen now. I can't imagine having that many years of memories. I can't imagine having that many wrinkles on my face. I can't imagine my face broadcast across the solar system with an unblinking newsreader congratulating me on turning one hundred and fifty years old.

The back door opens and I hear boots stomping towards the living room.

'Tanner? Why aren't you at school?' It's the voice of my older sister Rachel.

'School has finished early today for an unspecified reason,' Masie says.

I glance over my shoulder to see Rachel standing in the doorway. Her black hair is tied back and she's got her travelling suit on, except for the helmet.

'Why are you *really* home early?' she asks.

I sigh. I can lie to Masie like a reflex, but I can't lie to Rachel.

'My friend is sick,' I say. 'She's been sick all week and no one else there likes me. I didn't want to be there anymore.'

'Tanner,' Rachel sighs. She walks over to me and sits on the armrest of our couch. 'You shouldn't skip school. School's important.'

'Where are you going?' I ask.

'Oh,' she says, looking down at her travel suit. 'I'm heading out to the research centre, to the filtration system. I have a hunch about something, but I need to test the water first.'

'Maybe I could come. It would be good field learning for me,' I say. She sees me looking over her suit. I widen my eyes and smile. Whatever she's doing will be more interesting than the news.

'Get your suit, then,' Rachel says. I jump from the couch and run outside to the shed. Mum and Dad never let me leave the base. My travel suit is pretty much sitting in the backyard growing old.

I take my suit from the hooks. I climb into the bottom half and shuffle my feet into the boots. I pull the top half over my body and zip the top and the bottom together at my waist. I take my helmet from its hook and race back inside, where Rachel and Masie are waiting by the front door.

‘Don’t rush off anywhere without me,’ Rachel says. ‘And do whatever I say. Got it?’

‘Yessssss.’

I follow Rachel and Masie to the garage and we climb into her Explorer. The big gravity wheels sound like rumbling rocks as we head along the road through town, past school and to the outer gates. Rachel shows her pass to the guard. The wall comes down behind us and we put on our helmets. The gate opens in front of us, raising above our heads.

‘Adjusting temperature,’ the AI in my travel suit says. It’s a robotic voice, unlike Masie’s. Her voice has more personality. She’s not just reading lines – I swear she actually thinks before she speaks. My suit adjusts my temperature as small icy marks appear on the windows of the Explorer.

The sky looks different outside the outpost. It’s darker and deeper, less filtered when not covered by the dome.

‘I haven’t been out of the base for so long,’ I say. I gaze out the window as we drive around one of the deepest craters on Callisto’s surface. The light doesn’t reach into the very centre and all I see is shadow.

We follow the road until we reach the borders of the Valhalla crater. At the centre of the crater is the research centre. It’s a big square building that looks like a silver box on the outside. Beside the garage are big trucks filled with filtered and purified water. We follow the icy road down Valhalla.

I’m first out of the Explorer. My body is lighter outside the outpost and each step feels like a little jump on the rocky surface.

Rachel and Masie get out and I follow them to the front door. My breath is warm inside the helmet. I can feel the cold of outside threatening to break through my suit.

Rachel stops at the control panel and the red light comes on. 'Rachel Lantly,' she says. The red light turns blue.

'Identity verified,' the robotic voice from the control panel says. The door opens and we step into the pressure room. The door closes behind us and oxygen floods the room. The beep signals to us that it's safe to take our helmets off. The air is warm and thick inside the research centre. It feels like I've got a warm blanket around my body.

'Come on, we need to check the water,' Rachel says. I follow her and Masie to a door with *Filtration* written on it. Inside, a machine churns and chugs in the centre of the big room, which is more like a warehouse.

Rachel presses a button and the machine slows to a silent stop. She takes a test tube and a syringe from a drawer and opens a small hose on the machine.

'This is where the water passes through before it begins the filtration cycle,' she says.

'Your grandparents were the pioneers,' Masie says. 'When the population began to boom on Callisto, so did the need for a more sophisticated water purification system. Your grandparents led the team who created this incredible machine.'

'Yeah, I've heard this story before,' I sigh. I know my grandparents were smart. I know my parents are smart. I know my sister is smart, and I know I'm not.

Rachel uses the syringe to draw out some of the water, which she then deposits into the test tube. She takes a dipstick from the desk and places it into the test tube.

'Have you been noticing there's a sickness going around?' Rachel asks me. 'Yeah. Lots of people at school are off sick.'

'I think it's got to do with the water,' Rachel says. 'The filters should be purifying the water as it's pumped up from beneath the surface, but something's *off*.'

I shake my head. 'Maybe the moon is melting.'

Rachel glances up at me and then back to the results.

'My biggest worry was that the radiation belt from Jupiter was messing with the system, but maybe you're right.'

'What?' I ask. 'You think I'm right about the moon melting?'

'No,' Rachel chuckles. 'I mean, I think you're onto something about the moon. The answer is *here*. Our ancestors were the oldest living culture on Earth. They survived for thousands of years because they listened to the land. We need to do the same here. We have to listen to Callisto. She's telling us she's sick.' Rachel leans into me. 'Last week I trailed one of the waste trucks to the outer regions. Something's wrong, because the recycling facility was dead. There were no aircraft and no activity inside that Masie could detect. The lights were off. The waste truck continued past the centre.'

'What are you saying?'

'Nothing,' Rachel says. 'I just have a hunch.'

Rachel takes her tablet device from the pocket of her suit. She places it on the table. Lines and shapes cover the tablet screen in spirals and strokes.

'Feel like going on an adventure?' Rachel asks me. I nod.

We fasten our helmets and head back to the Explorer. Rachel has the glint in her eye that tells me she's excited about something.

'So, where are we going?' I ask.

'There's this network of caves I found two years ago, when I first started at the research centre,' Rachel says. She follows the digital map on the navigator and we drive away, along the road and further from the base. 'I was trying to map them, but then I was ordered to stop. They didn't give me much more of a reason than it's unsafe. I've always wondered why.'

Rachel drives us to the side of one of the craters.

We park and ahead of us I see the entrance to the cave. Rachel is first out of the Explorer with her backpack. I follow her and Masie.

Rachel ignites her torch and we walk into the cave. Darkness quickly falls all around us.

‘We need to start listening to Callisto,’ Rachel says again.

‘It’s a dead moon,’ I say. My voice echoes inside my helmet.

‘So they said,’ Rachel replies. ‘We know that the surface has no activity, but beneath, there’s a whole world to explore.’

The cave slopes downward. Rachel’s steady as she follows the path, but my boot slips and I skid along the icy ground. I knock Rachel and we slide down the tunnel like a slippery dip. Masie’s lights come on as she rolls behind us. Rachel’s torch disappears into a dark hole and I fall down another with Masie right behind me.

Masie grips a spike and stops above me. I slide further down but I reach out my hand and manage to grip a rock.

I’m hanging from the rock, trapped in the dark tunnel.

‘Rachel!’ I call out. ‘Rachel!’

There’s no answer. The light from Masie brightens in the tunnel and small pieces of ice pitter-patter over my suit.

‘Are you hurt, Tanner?’ Masie asks. My heart is pounding in my chest and my fast breathing is fogging my helmet.

‘No, I’m okay,’ I reply. ‘Where’d Rachel go?’

‘She fell down another chute. I’m tracking her now.’

The light on Masie’s chest dims, then brightens, then dims.

‘I’ve located her,’ Masie says. ‘We must continue down the pathway.’

'No way!' I say.

A splintering sound rings out beside my head. I turn to see the ice cracking like an egg. A piece of it chips away from the wall.

There's something moving where the crack has formed. It breaks through the next layer of ice. It's small but meaty, and wriggly. Its skin is white with tiny black spots. It looks like something I saw in one of our Earth Studies classes – like a worm.

My eyes open wider than they've ever opened before and I worry my eyeballs might fall out. I'm still. I don't want to move in case I scare it. The light glistens on its slimy-looking skin, like melting ice. I grip the rock tighter and gaze at the Callisto worm.

'Life beyond Earth,' Masie says. '*Natural* life beyond Earth.'

The worm springs onto my helmet. The surprise makes me lose my grip on the rock and I slide down the tunnel. Masie falls after me and grips the suit at my chest. Her other arm spears the wall and she holds me there. More ice begins to split beside us and another worm leaps onto Masie's body, then another and another.

The worm on my helmet is stuck right above my eyes. Its mouth opens and its small teeth bite at my helmet. I scream and Masie releases her hold on the wall.

We continue sliding down the tunnel. The worm on my helmet detaches. Masie crashes into me and her lights are like sparks in the blackness. We roll and slide and then we fall.

I land bum-first. Masie lands beside me. My back stings hot but I don't have time to be hurt. The worms fall from the tunnel and rain down on us. I use my elbows to lift myself up and struggle to my feet. I shuffle backwards as the worms begin to slither along the icy ground. They're not interested in me anymore, though. I watch them as they wriggle slowly away towards the shadows.

I hear the scuff of a boot and the beam of a torch appears. Rachel is standing in the far corner of the cave. Frozen icicles stand spiky along the ground and hang from the ceiling.

I race towards her, pointing to the ground behind me. 'Rachel, there are worms here! Have you seen them?' I say.

'They're harmless,' Rachel replies. 'We've known about them for a while. We thought they were dead all this time, but they're alive.'

Rachel removes a container from her bag and places the open side over one of the worms. She slides the lid underneath and packs the worm into her bag. 'They're not used to the temperatures. It's not as cold as it once was. The temperature of Callisto has risen since humankind arrived here, and that must be how they've woken up.'

Nearby, Masie moves towards one of the walls, and her light penetrates the ice. There, frozen within it, I can see cans and bags, bottles, old food scraps. Rubbish.

'Disgusting, isn't it?' Rachel says. 'The recycling facility is out of order, just as I thought. They've been using the caves to dispose of waste.'

She takes out a pickaxe and hammers it into the ice floor. 'I think I've figured out why sickness is ravaging the outpost.'

She makes a hole in the ice, and beneath is slow-flowing, gel-like water.

'The underground ocean of Callisto?' I ask. Rachel nods. She removes a netted pan from her backpack and lowers it into the water. Water flows through the net steadily.

'The filtration system grandma and grandpa made purifies the water from the underground ocean so that it can be drinkable. It remodels the water molecules to copy the fresh water from Earth. But the water doesn't change without these.'

Rachel removes the pan from the water. Caught within the netting are small rocks, half the size of my pinkie fingernail.

'What are those?' I ask.

'Callisto crystals,' Rachel says. 'They're kind of like a *technician* for the water here. The crystals tell the water how to behave. When we modify the crystals with our coding, they tell the water how to change so that we can drink it. The crystals glow, in their natural state.'

I take one of the crystals from the net and hold it in the palm of my glove. 'These aren't glowing,' I say.

'No. It's like they've lost their power.'

'They're dormant,' Masie says.

Rachel rushes to the cave walls, shining her light over the waste frozen into the ice. She follows the trail downward to the corner of the cave. 'It's us,' she says. 'It's our waste that's shutting down the crystals. They've gone to sleep, because they're not coping. And because the crystals are sick, so are the people who drink the water.'

'That's why everyone's getting sick?' I ask. Lights flash from Masie's eyes over the crystals, then the walls.

'Masie's taking photographs,' Rachel says. 'We'll show them to the research centre. These photos are our proof that the waste recyclers have been storing our waste in the caves instead of recycling.' Rachel places the crystals into the small pouch of her backpack.

'If these crystals are what is making people sick, there must be a way to use them to make people better,' I say.

'It's possible,' Rachel replies. 'There's a purifying power in these crystals. We'll learn how to harness it.'

Masie detaches two ropes from her back casing, and Rachel and I hold onto them as Masie climbs to the surface. We load back into the Explorer and start for the research centre. Rachel steers us around the cave crater and we head onto the road. I think about that boy at school who was sick this morning. So many people are sick.

We'll get the caves clean. We'll get the crystals glowing again. The worms will return to their place in the ice and the sickness in the outpost will end. When I get back to school, I'll remember that boy's name. I'll make sure of it.

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