

Mars Hermitage

Estelo Reyes chuckled as he watched Albert trip over his own foot and tip into a one-third-gravity tumble within the enclosed derrick. Then the well head blew. First, Albert's meter-long clamp wrench punctured the skin of the derrick and promptly vanished in a gush of decompression. Hundreds of meters of plastic pipe, the well casing, launched from beneath the floor, silently carrying with it most of the derrick.

Estelo found himself lying on his back about ten meters from the well, with a geyser of water reaching into the dull pink sky. Most of it seemed to evaporate; the rest drifted westward as a plume of snow. Resonance of continuing eruption rumbled through the heels of his boots and his LSP, the life support pack that separated his back from the rocky Martian soil. Beside him, one of the two Segways that they had parked outside the derrick lay on its side. He spoke into his headset.

"Potts! Albert! You alright? Potts!"

Albert Potts did not answer. Estelo rolled to his stomach and rose to his feet. On the far side of the debris he saw Albert's dust-covered, neon lime pressure suit. Estelo suppressed his anger. It was Potts who always demanded more than his allotment of water. Now he had trashed the well.

"What's going on?" Karen Olsen's voice sounded over the com.

"Hey Boss," Estelo replied, "I need some help out at the well. I think Albert's got hurt." Estelo walked toward Albert's still figure. "He just blew up my well. I'm going to check him right now."

"What do you mean, blew up your well?"

"I'll explain later. Bring out the golf cart."

"We'll be there in about ten minutes. Tell me about Albert."

"Ay jeeze!" Estelo saw clearly that Albert's face shield had been smashed. His dark brown, left cheek gaped in a crescent of frozen white fat with red margins. "He's lost pressure. I got a patch I can try." He immediately felt kinship at a deeper level, now that Potts was unable to pepper him with sarcasm.

Estelo pulled a ten centimeter square of Mylar from his right thigh pocket, peeled its backing and pasted over the ragged opening in Albert's face shield. It immediately domed outward as Albert's LSP attempted to restore pressure. Estelo located Albert's spare patch and added it as reinforcement. He knew the patches were never designed to seal so large a defect.

"His suit's got some small leaks somewhere. I don't think this patch would hold like this if it didn't."

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Estelo leaned against the hallway opposite the closed door to med-1. Through its polycarbonate panel, he could see Dr. Edith Cho hunched over her new patient. Between the doctor and the door, the tall figure of Lt. Col. Karen Olsen paced back and forth.

"So, how bad his injuries?" Yevgeny Zhukov called from the galley at the opposite end of the hall.

"He's a mess," Estelo replied. "He's got head trauma—maybe just a concussion—bruises all over, some broken ribs, a big cut on his face, and carbon monoxide. Plus, he didn't get any air to breathe for a while."

"That sounds not really good," Zhukov said. Now standing beside Estelo, the shorter, though more muscular man brushed his dark hair back over his ears with both hands, and left them clasped behind his neck. "Gas emboli?"

"They didn't say, but he decompressed pretty fast." Estelo looked at the pressure display beside the door. "Looks like Edith took the room pressure up to one bar."

A black and white Boston Terrier pranced toward them from the galley, wagging her rump. Seeming to take a cue from Reyes and Zhukov, she sat in a line beside them, facing the door to med-1. Estelo

patted the pockets of his faded yellow jumpsuit, then accepted a tiny wafer of dog treat from Yevgeny.

"Both of you are reading my mind. Don't make me bend down, Beano," Estelo said, holding the wafer above the boxy head of the six kilogram dog, "I've had a bad day."

Beano tipped her head and leapt straight up, deftly snagging the wafer and swallowing it with hardly a chew. With a lick of her chops and wag of her rump, she looked to Estelo for more. When none was forthcoming, she sat once again and stared into the door of med-1.

"Where's Peter?" Estelo asked.

"He knows," Zhukov answered. "He was in middle of refluxing something. Said he couldn't stop without screwing it."

The door hissed momentarily, then opened. Karen Olsen exited and closed it. "Well, he's lucky to be alive."

"We should wish for such luck," Zhukov quipped.

"Edith should be free in about an hour," she continued, "so we'll meet in the galley then. I'll tell Peter."

An hour later, Estelo was seated at the hexagonal galley table with the other four healthy inhabitants of Mars Hermitage. All brought their personal computer tablets. Karen sat with Albert's tablet, as well as her own. Beano curled up at Estelo's feet. He reached down and scratched the top of her head with the tip of his index finger. The table seemed crowded.

"I've messaged mission control to let them know what's happened," Karen began. "They want our projections and plans when we're done here." She pointed to Dr. Edith Cho. "What's the story on Albert?"

Edith held up one hand and began to enumerate the diagnoses on her fingers. "A severe concussion. No subdural hematoma...yet. Several facial fractures and a deep facial laceration...probably all compound. Three broken ribs. Decompression damage to both retinas. High carbonmonoxyhemoglobin." She switched hands for more fingers. "He's unconscious, though breathing spontaneously. Moderate renal failure...."

"Okay, send over the details," Karen interrupted. "Is he likely to recover?"

Dr. Cho held out the fingers she had been counting. "The fact that he is stable...he has a fair chance of living. It's harder to say much beyond that. I think we'll know a lot more in two or three days. He's going to be out of the line-up for at least a couple of weeks."

Karen turned to Estelo Reyes. "Water situation."

"We have two weeks of stored water," Estelo said. "That should be enough to put down another deep well, but only if you put us back on the conservation regimen."

"From two years ago?" Zhukov asked.

"That's right," Reyes continued. "No more showers. In a week, we'll know if we're gonna have a well in time. If not..." He sighed. "...then we go back to using ice." Estelo allowed the collective groan to run its course. "On the bright side, I think we can reuse most of the stuff from the old well."

"Peter," Karen said, "I need to pull you out of the chem lab to help with the greenhouses and the composting. I'm going to try to get up to speed on all of Albert's projects, but we can't let up on the food."

"Farming?" Peter stared intently at the administrator of Mars Hermitage.

Dr. Cho rolled her eyes. Karen seemed to struggle for a suitable response.

Yevgeny smirked. "Hopefully you can grow things not so toxic as your usual produce."

"Stow it!" Karen snapped. "Major Zhukov, you will be working with Estelo to get us some water."

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Estelo, accompanied by Lt. Col. Olsen and Maj. Zhukov, steered the six-wheel utility rover over the rock-strewn desert, toward the well site. Beano, enveloped in her neon green quadruped suit, ran behind the rover.

"It must have made a ice plug." Estelo had expected the geyser to still be spouting a hundred meter plume of water, but during the time they had gathered in the galley, it seemed to have spontaneously capped itself.

"When we drilled below frozen layer," Zhukov said over the com, "we did not notice pressure differential between liquid and

atmosphere. Skin over derrick prevented...um...release...explosion of water into low pressure. Adiabatic cooling would probably seal breach."

"We could drill a bunch of these holes," Estelo suggested, "and heat the shaft to keep it from freezing. It would be like free terraforming engines. The magma keeps the deep water liquid, and the low air pressure would suck it into the sky."

"Well, we're not doing any terraforming," Karen said. "We don't even know how much water is down there. And even if there was enough, and we drilled holes 'til we died, it would still take 40,000 years."

"That's pessimistic. But it wouldn't cost too much to start," Estelo replied. "Somebody's got to start, and everybody complains about the cost."

"We're here to study the environment," Karen said, "not destroy it. There might be living species down there that would vanish before we even knew they were there."

"If there was," Estelo added, "I hope they learned to fly in a hurry."

They pulled up to where the enclosed derrick had once stood, and disembarked. Plastic angle-spars and fractured panels of translucent skin lay scattered about the area.

Estelo picked up a pipe elbow from the well head. "We'll have to replace more of this than I thought." He gathered some intact pieces and tossed them into the cargo bin of the rover.

"What's this?" Karen took up a handful of porous, crushed rock.

Zhukov crumbled some between his gloved fingers. "Drill waste from rock in ice layer. When ice evaporates, it leaves spaces in rock."

"This would be a good fill for Beano's poop tray," Karen said. "We could mix it with the plant debris for the composter."

"Ah, yes." Zhukov said. "Albert's poop tray project. Way above my pay grade."

"Filler's got to go into the composter if we want to keep eating. It aerates it." Karen scooped a mound of the porous rock tailings onto

a scrap of panel, and dumped it into the rover. "So, do we re-drill here, or do we start fresh?"

"We don't know if it stopped because it froze," Zhukov said, as he peered into the dark hole of the well, "or because all water used up at this location."

"The biggest job is the derrick, Boss," Estelo said. "We gotta build that, no matter what. We may as well do a fresh drill site." Beano wagged the tail of her pressure suit against Estelo's leg. He reached down and patted the puffy back of her suit. "Poor dog. In that suit, the whole world smells like a dog, everywhere she goes."

"Can you do the derrick in a week," Karen asked, "and then complete the new well in a week?"

Estelo looked at Yevgeny. "I don't know, Boss."

"Yes," Zhukov said. "Better to bust our ass drilling new well instead of setting up ice transport again and bust our ass drilling new well anyway. We don't need skin on derrick until we get below frozen layer. We build derrick and begin to drill hole. Attach skin same time as drilling."

Estelo hooked the two abandoned Segways to their brackets on the rear of the rover and locked them in place. "One of the wheelies got a bent handlebar and the basket bar is kind of crooked, but I think we can fix it. The other one looks okay."

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On the eighth day following the accident, Estelo placed Albert Potts' body into a vented drum and wheeled it outside to freeze and desiccate in Mars' niggardly atmosphere. Yevgeny helped him lower the drum into a stone trench. Then all five of the inhabitants of Mars Hermitage stood in a neon green line while Lt. Col. Olsen eulogized him. The words seemed hollow to Estelo. All of them had traveled to this hostile speck of rock. Albert had simply been the first to die, a misfortune Estelo considered second only to being the last one alive. He wondered if any of them would be here to greet the next crew when it arrived in eighteen months. Their counter-entropic enclave seemed far too tenuous—the survivable options too few.

They stacked red slabs of Mars rock over the drum to create the planet's first barrow. On a plastic angle-spar, Yevgeny placed the

shattered helmet of their friend and anchored it. Over the forehead, it read, "A. Potts."

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Estelo resealed his toasted soy wafers in a zipper lock bag, stowed them in his personal galley cabinet and headed for his room—the room he had shared with Albert Potts.

"I'm telling you, she won't use it." Peter O'Neil stood in the center of the library, his arms crossed, his attention directed to Karen, who pedaled furiously on an exercise bike.

"Maybe she's finally found some termites," Karen quipped.

"Don't ask me to clean it up when she leaves a pile on the floor."

To reach his room from the galley, Estelo needed to pass through the library, an exercise area which also served as a hub from which the three sleep domes branched. Immediately before the library, in a corridor to the right, Beano sat erect facing the doggie door leading into the head. Usually, she just tapped her nose on a triangular button beside the door to pass through. Estelo turned toward the head. "Your door broken, Beano?" He noted that the occupancy panel showed, "vacant," on a rectangle of green. Estelo tapped the yellow triangle beside the doggie door. It glided open, but Beano did not move. With a twist of the latch, he slid the main door to his left and entered. "Come on, Beano."

The boxy little dog looked up at Estelo, but remained seated. Brown eyes centered attentively in symmetrical black patches on her white face. "Beano, come!" Estelo repeated, as he entered the head. Following him through the main door, the Boston Terrier walked directly to a position in front of her litter tray and sat at alert. The tray, which served to collect her urine and feces, contained a clean spread of shredded plant stems and crushed Mars rock. Its location beside the crew's composting toilet allowed it to be manually tipped into a chute for feeding filler into the compost tank situated two meters below the floor of the head.

"You don't like that new stuff?" Estelo asked. He tipped the tray, then refilled it from just the bin of plant litter, omitting Karen's crushed rock. "There you go."

Beano wagged her rump and immediately relieved herself on the fresh plant litter. She shuffled her rear paws in the litter, then happily exited the doggie door, even though the main door remained open. Estelo headed back to the corridor, closing the door behind him. He turned into the library.

"Beano doesn't like that rock stuff in the tray," Estelo said to Karen. "She alerts on it, like a drug dog. I dumped it and put in just the stem shreds. Now she's happy."

"Put that in the next report: dog happy," Peter said. He pivoted and entered the bunk room he shared with Yevgeny and closed the door behind him.

"She ever been trained for drugs?" Estelo asked.

"No," Karen answered, still pedaling her bike. "Her first owner was an insect exterminator in Houston. He tried to train her for finding termites, but she flunked. That's how I ended up with her for the quadruped program."

"Then I guess your rocks got termites," Estelo said. "Anyway, she won't go on the rock litter."

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"Whatcha need, Boss?" Estelo walked through the line of interconnected greenhouse spheres. He passed trays of Napa cabbage, soybeans, dwarf maize, sunflowers, and dozens of plant varieties that he did not recognize. Many stood in groups separated by lifecycle stage. Karen, who had taken over duties from Albert Potts after the accident, had called him to greenhouse-5, a storage dome that cantilevered over the edge of an escarpment running alongside Mars Hermitage.

Lt. Col. Olsen's head peeped out from the helical stairway beneath the floor of greenhouse-5. "Estelo, I need some help with the composter." She beckoned with her hand, then vanished down the steps.

Only during its construction had Estelo been down to the suspended corridor that connected the composter below the toilet to the compost elevator below greenhouse-5. He descended the polymer wedges to the floor of the corridor. To his left, a hand-drawn sign resembling a city street sign identified the sixteen meter passage as La

Bonne Route. The heavy odor was primarily that of fertile soil, though he noticed a disconcerting hint of hydrogen sulfide. Along the side closest to the domes of Mars Hermitage, an idle conveyor track supported three empty compost trays. Estelo followed Karen toward the far end, passing two small windows on his right that provided spectacular views into the stratified, red ravine below the escarpment.

"The composter has gone crazy with methane." She stood beside the closed composting tank below the head. An embossed metal tag on the tank labeled it as Phoenix Composting Space Latrine. "I think that crushed rock from the well tailings has caused some sort of reaction." She pointed to a complex digital display. "It's been filtering out hundreds of times more methane than usual."

"We analyzed that rock a couple of months ago," Estelo said.

"I know. Peter said it has the same composition as most of the sedimentary surface rock. And Edith cultured it and did some EM...electron microscope views. Nothing special. But even after we pasteurize the compost, it continues to put out gobs of methane."

"Did they look at it again?"

"They're doing samples now." Karen cycled through the digital display options. "For the moment, we need to empty the composter and get it all outside the Hermitage."

"And you want me to take care of that? Peter still being a pain in the butt?"

"Hmmp. Some PhDs are more equal than others. At any rate, we don't know what's going on, so don't leave it where it can blow around."

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"Right there." Dr. Edith Cho indicated a spherical detail on the EM display. "This is from the original rock sample. I must have missed this before. I think it may be a spore form of an organism. There appears to be a cell membrane. Some kind of archea. It won't grow in culture. When I add water to the crushed rock, it emits only a tiny amount of methane."

Estelo stood with Yevgeny, Peter and Karen in a tight semi-circle behind Dr. Cho in medlab. Beano sat at Estelo's feet. The group maintained an electrified silence. The impact of Dr. Cho's simple

statement struck Estelo like a physical blow. Somehow they had missed their greatest discovery. Now it was coming back to bite them.

"And here," Dr. Cho continued, displaying recalled images from EM storage, "...well...yes, this one. Here is what I found in the pasteurized compost." She pointed to what appeared to be several cells. "The membrane structure is not what I would expect. I think it may be some sort of terpene structure that differs from archea. So I think it is not terrestrial. What is peculiar is that it has this extra plasmid. It has a packet of DNA."

"What are you saying?" Karen asked.

"The original spore contains what I believe are unusual nucleic acids. It has its own brand of DNA. These cells seem to have both that—I'll call it Martian DNA—as well as a plasmid of terrestrial DNA. If this is a Martian organism, then it has incorporated a plasmid of Earth DNA from the gut organisms of the compost mixture. And the Martian cells prevent the Earth DNA from being denatured by the heat of pasteurization."

"Wait...wait," Karen said, holding up both hands in an apparent attempt to halt the implications of this news. "We failed to detect a life form that was in the rock from the ice strata. We've mixed it with gut biota from humans...and a dog." Beano looked up. Karen's raised hands and white-rimmed eyeballs discouraged interruption. "It is not killed by pasteurization. And you're suggesting that it has incorporated genes from Earth?" She folded her arms.

Dr. Cho hesitated for a moment, then answered with a simple, "Yes."

A chill in Estelo's abdomen rose to encompass his chest and arms. His mind raced. "Boss, I dumped that compost stuff into the old well shaft."

Karen turned to him with alarm, and seemed about to speak, but she said nothing.

"It was pasteurized. I figured it could vent the methane. I thought it was better than letting it blow around the surface."

"Edith," Karen said, taking on the visage of top administrator, "preserve samples of the original and the new organisms. Peter, I want

a chemical that will destroy whatever went down the well, but it's got to be something that has zero risk of contaminating the aquifer."

"I'll have to think about that," Peter said. "There aren't too many oxidizers that will be effective at that temperature and almost no pressure."

"Do it now," Karen ordered. "And then get Estelo something that can sterilize the composter without ruining it. Estelo, you might need to break it down and remove all the sensors."

When Estelo left medlab, he and Yevgeny made it half-way down the corridor to the galley when he felt a brief rumble in the floor. Beano began to bark from somewhere beyond their view. He looked at Yevgeny, then ran after him through the galley and out to admin to check the alarm displays. Karen and Peter followed close behind.

In admin, the alarm panels displayed all green. "That felt like an explosion," Estelo said. "I better check the well."

"Major Zhukov," Karen said, "Go with Estelo. Take the wheelies." Beano could still be heard barking from somewhere beyond the galley. "Peter, see what Beano's problem is. She's probably just nervous."

Peter tilted his head. "So your priority is for me to do doggie care instead of preparing an oxidant?"

"Peter...." Her face reddened.

Estelo and Yevgeny suited up at the north entrance and rode the two Segways out the airlock. As soon as Estelo turned eastward, past the freestanding domes of the power shop and wind turbine, and saw the geyser on the horizon, he knew that the old well, the one he had used for dumping the pasteurized compost, had blown again.

"It's the old one," he said into the com.

"I don't give a damn about old well. We go check new one," Zhukov replied. He veered to the north of the geyser.

Estelo always found the jostling of the Segway exhausting. Although its suspension absorbed much of the vibration and prevented the two-wheel vehicle from becoming airborne in the low gravity, its rigid wheels seemed to transmit some acknowledgment of contact with every pebble it met. They climbed a long, gentle slope, stopping at the ridge to take in the view. A kilometer ahead, the derrick of the new

well stood intact. Further to the right, a half kilometer south of the derrick, a continuous plume reached skyward from the site of the old well.

"Could be frozen plug just cracked," Zhukov's said. "Maybe not related to compost."

"The compost stuff is spread all over everywhere now. A dio santo, I hope it can't do anything when it's frozen." His expletive triggered a memory of his grandmother, who was fluent in English, but swore only in Ladino.

They made it half-way to the new well when a flash of light and flame obliterated the derrick. By the time Estelo recognized it as a gas explosion, the ball of light had vanished into the top of a second geyser.

"Xorosho! I guess we buy bottles of spring water at supermarket."

Estelo watched the two geysers in silence. He knew they had built up a two week supply of water from the new well. He also knew that most of the plastic angle-spars from the derrick were probably destroyed by the heat of the explosion. When they rode the remainder of the distance to the new well, Estelo was certain that none of the melted and mangled components were usable.

"Boss," Estelo said into the com. There was no reply. He tried several more times to get Karen's attention during their drive back to Mars Hermitage. As they moved past the power shop, the com crackled.

"Major Zhukov," Karen's voice sounded.

"Yes, colonel," Yevgeny replied.

"I need both of you back here immediately."

"Beside windmill," he answered. "We get there soon."

"Keep your suits on," she urged.

As Estelo rotated the lever on the exterior airlock door, the ground rumbled again. Still standing on the Segway, he rotated it in a tight circle to view the horizon. A new geyser had appeared near the old well, this one further east, on the opposite side from the new well. "We didn't drill anything there."

"Must have very high pressure," Yevgeny said. "It finds fault cracks between rock layers."

Estelo opened the airlock and rode in with Yevgeny, who closed and latched the door. Once the air pressure had equalized, they entered the corridor and parked the Segways at their charging docks.

Dr. Cho ran toward them. "We have methane inside the domes!" she shouted, though it came through Estelo's helmet muffled.

Estelo switched on his external mic and speaker. "How bad is it?"

"Back by the head and the library," she answered while stepping into her pressure suit. "Peter and Karen are shutting down the electrical. They think it's seeping up through the floor."

Yevgeny sprinted down the corridor and vanished to the left. At the same time, Beano came into view, barking and circling.

"Beano," Estelo shouted, motioning with his hand, "come here. You got to get dressed." When Estelo knelt with the dog's pressure suit, she ran to him, wagging her rump. "Are the others suited up?" He proceeded to dress Beano.

"Not yet," Dr. Cho answered.

"Here. You finish with Beano. I'm going to take their suits to them." Estelo removed the two suits and helmets from their hangers and headed down the corridor. Straight ahead, beyond the intersection to the galley on the left and admin on the right, the greenhouses extended in a line toward the escarpment. Estelo turned left.

At an open access panel between the galley and the library, Peter, Karen and Yevgeny crowded intently. Yevgeny held a portable, high-pressure air tank. Karen read from a notebook of diagrams. When Karen stated a specific circuit name, Yevgeny flushed it with air and Peter immediately switched the circuit.

"Hey, Boss," Estelo said. "You guys got to put these on now." He placed the suits and helmets on the floor. "I'm going to go to greenhouse-5 and see what I can close off."

"Good idea," she said, paying no attention to the pressure suits.

"If everybody suits up," Estelo added, "we can just vent the domes." Estelo ran back to the intersection, turned left into greenhouse-1, and continued through to greenhouse-5. At the bottom of the helical stairway, he moved down the corridor to its end by the composter. There he disconnected the conveyor track. After briefly

releasing an external vent to evacuate the air, he switched off the composter power and closed the door separating the composting room from the corridor.

Running back to the stair, Estelo was knocked to the floor by an intense wave of pressure and heat coming from the greenhouse above. "What happened?" he asked into the com. "Boss?" He scrambled to his feet and ascended the steps. "Yevgeny! Dr. Cho! Peter!"

Greenhouse-5 appeared to be intact, but beyond it lay a broad debris field. Overhead, a sooty cloud rose rapidly into the open Martian sky. The hallways were mostly gone, as were the central domes of Mars Hermitage. Estelo guessed at where the galley had been and picked his way through the debris. As he moved, a shower of dust and polymer shards drizzled down.

He found a large portion of an empty, neon green pressure suit, its seals wide open. Closer to the galley, he recognized a cleanly amputated forearm and hand, apparently of a woman. "Can anybody hear me?" Next he found the upper torso of Yevgeny Zhukov, his suit shredded and partially burnt. Then he recognized Peter O'Neal's head resting alone, face up. Estelo suppressed a wave of nausea.

A portion of the outer wall of the latrine remained, as did medlab, but the bunk rooms, the library, galley, galley storage and both infirmary rooms were completely destroyed. Admin was gone. To the northeast, the corridor to chemlab and the main outside airlock seemed to be fairly intact. Twenty meters beyond the ruin of admin, Estelo could see that the power shop and wind turbine were untouched.

Aiming toward the main airlock, he waded through the debris. "Dr. Cho!" He could see her unmoving figure leaning against the wall. She appeared to be in one piece. As he approached, her eyes stared blankly past him. Only when he was close enough to touch her did Estelo notice that one handlebar of a Segway penetrated the back of her helmet, and held her in an upright position.

He trudged back to the remnants of admin to see if the Earthcom radio might have miraculously avoided the fate of everything else. The components he located were heavily damaged, but, he thought, possibly repairable. As he rummaged through admin, the

ground rumbled again. Yet another geyser had erupted to the East. The first three continued to fume unabated.

At an intellectual level, Estelo recognized that his companions were dead and that he was the only human within a range of two hundred million miles. But he felt no emotion. He was neither sad nor lonely. A relief crew, if he remembered correctly, would arrive in about seventeen months. Looking toward the wind turbine and power shop, he acknowledged that he could survive for a time, assuming that further methane eruptions spared those structures. He estimated that alone, the water stored within the windmill tower would last him about three months. Food would be a less certain issue.

His casual inventory of the remaining assets of Mars Hermitage included a medical lab, a chemistry lab and its storage, the machine shop, the power shop with the wind turbine, and a water tank. Estelo waded back through the rubble toward the galley area. Near where he thought fresh storage had been, he saw what appeared to be an alluvial fan of freeze-dried vegetables spreading away from the center of the blast. His mind registered the fact that none of the scattered food would spoil. Even though the galley had been obliterated, he located three polymer food drums intact. One contained ten kilos of salted soy wafers, a second held four liters of safflower oil, and the third, heavily scorched, seemed from the feel of shaking it to be half-filled with dog wafers.

Estelo scanned the ruins for any sign of Beano. Leaving the drums resting in the rubble, he returned to the machine shop, where he had found Dr. Cho. Lifting angle-spars and fractured panels, he tossed them out to the rocky red surface. Within a minute, he located the dog, dressed in her diminutive, neon green quadruped suit. She lay on her side, beyond the machine shop and near the far end of the corridor to chemlab. The suit and its bubble helmet seemed to be intact. He placed his gloved hand against her and felt movement of her chest.

He sensed no relief at this discovery. He had yet to feel any distress at the catastrophe. Estelo simply lifted the animal and carried her to the airlock of the wind turbine and power shop. Once inside, he

opened his helmet and undressed the unconscious Boston Terrier. Her bones seemed okay, but she was unresponsive.

Estelo climbed out of his own suit and carefully hung it near the airlock, along with his helmet. His arms and legs began to tremble. He sat on the floor and wept in great heaving sobs. His mind turned to the question of burial. He could bury his dead companions, but who would bury him? He recalled videos of climbers on Everest finding the bodies of those who had perished decades earlier. Their bodies, like the vegetables, were freeze-dried. When exhaustion finally overtook him, Estelo lay down and closed his eyes.

He awoke to the wet lapping of Beano's tongue on his cheek. Sitting up, Estelo oriented his mind to where he was and what had happened.

"It's just you and me, Beano." He scratched the back of her neck.

Beano wagged her rump, begging to play.

"Okay. You can be Boss today."

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"I would like to thank Dr. Reyes for sharing with us his role in the development of the remarkable Hermitage terraforming method and the historic discovery of *Marsarchaea terraformis pottsii*." When the polite applause ended, the soft-spoken man at the podium glanced at the wall clock, then continued. "We will now take any questions from the audience. Please wait for the microphone once you've been recognized."

Estelo looked out over the subdued assembly of students and professors. He noted that the enthusiastic crowds of his first year back on Earth had, over the span of four years, faded to this modest turnout of a few dozen.

"Yes. Thank you." A young woman in the audience tapped a finger on a microphone. "Oh! I guess this is working. Dr. Reyes, can you tell us more about the dog?"

Estelo stepped closer to the podium mic. "The dog?" He turned toward the side of the stage. "Beano, come!"

A black and white Boston Terrier pranced onto the stage and stood beside Estelo, facing the audience. Everyone rose to their feet in applause. Beano wagged her rump.

END