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WHEN THERE WAS LIGHT

by Jonathan Davidson

PROLOGUE

Los Alamos Scientific Laboratory, New Mexico

Summer, 1950

Emil Konopinski felt happiest with the men who stole fire from the gods and unleashed it upon the Earth.

He walked along Bathtub Row toward Fuller Lodge with Enrico Fermi, Herbert York, and Edward Teller. They'd grown close during the frenetic years of the Manhattan Project as they struggled to loose the strong force of the atom.

And now that Russia had the bomb years earlier than expected, they'd returned to the towering Ponderosa Pines and sculpted mesas of Los Alamos to build something far more deadly.

Konopinski was thrilled to be back. During the Manhattan Project he'd felt so alive, so consumed by purpose. Working alongside such luminaries on the most complex problems ever tackled by humanity was the greatest privilege of his life. Unlike most people, they spoke his language and thought his thoughts. He felt known, and he loved each of them for it, even Edward Teller.

Such minds thrived on ideas, which ranged from the profound to the absurd. Often the two were difficult to tell apart. Herbert York, who at twenty-eight was by far the youngest, kept the conversation anchored on the absurd. He spoke with enthusiasm that bordered on manic. His arms flailed in wide gyrations. Between his black hair, olive skin, and expressiveness, people often assumed he was Italian instead of Native American.

“Acceleration alone makes it impossible,” York said. “Ignoring relativity, constant acceleration at 1G would require a year to reach light speed. And then what of deceleration? Another year to make it physically bearable?”

Enrico Fermi walked beside York. Despite being an actual Italian, he moved with subdued grace and spoke with gentle eloquence. He strolled with hands clasped behind his back, stooped forward at a slight angle. Recent years hadn't been kind to Fermi. His body, always lithe but strong, now appeared fragile. His thick black hair had thinned to salty wisps that fluttered in the gusts. They seemed in danger of flying away.

Fermi shrugged his thin shoulders. “Perhaps the aliens evolved on a much larger planet and adapted to higher gravitation.”

“Unlikely.” Edward Teller's gloomy voice resonated from beside Konopinski. “We have yet to put a satellite in orbit. Imagine the liftoff delta-v on a large planet.”

Konopinski smiled as he watched Teller's huge eyebrows flutter in the wind. He made a quick calculation, and decided that Teller's eyebrows had a parasitic drag coefficient three times greater than that of an average man.

"If they can reach faster-than-light speeds, they'd have enough power to get off the ground," York said.

"Interstellar travel would be risky and would require enormous resources," Teller said. "Why go through the effort at all?"

Konopinski remembered a New Yorker cartoon. "Aliens developed interstellar travel to steal New York's trash cans."

Everyone laughed but York, who looked confused. "What are you talking about?"

Fermi patted York on the shoulder. "When you grow up and read the New Yorker, you'll get the adult jokes."

Even though Fermi had spoken with his customary warmth, Konopinski felt for the young man. He knew what it was like to be the youngest in such a group.

Fermi looked over his shoulder at Teller. "Edward, what do you feel is the probability that we will discover faster-than-light objects in the next ten years?"

"Ten to the negative six," Teller said without hesitation.

"That's much too low," Fermi said. "The real number is closer to ten percent."

"That is a reasonable guess if one believes in miracles," Teller said.

This led to a flurry of off-the-cuff calculations. Variables were considered and thrown out

at an alarming rate.

As he listened to Teller contradict Fermi, Konopinski felt his body flood with negative emotion. He recalled a conversation from a recent conference. In a rare moment of candor and condemnation, his old colleague Isador Rabi had asked Konopinski why he was helping Teller create the Super.

“Do you not see that Teller is the most dangerous man alive?” Rabi had said. “An enemy of all that is good on this earth?”

Konopinski had defended Teller and his own work, but those words had haunted him for weeks. Did Teller’s unrelenting obsession with building a hydrogen bomb make him the most dangerous man on earth? Or a realist who knew that thermonuclear weapons would be developed no matter what, and that it was his duty to make them first where he might wield some influence over their deployment?

It occurred to Konopinski that the human mind’s capacity for evil was only surpassed by its capacity for justification and self-absolution.

Konopinski decided to think on other things before the darkness took hold. He looked out to the distant mesas and the storm clouds piled up against their red and white rock cliffs. Bright shafts of sunlight punched through the tempests and highlighted random pine groves. The wind rushed through the pine trees and carried the rich scent of summer rain mixed with the pungent odor of fresh asphalt. It was a beautiful day. Fermi was in town. He had much to be grateful for.

The group arrived at Fuller Lodge and went through the lunch line. Despite having eaten many meals in the lodge, Konopinski marveled at the beauty of its walls and vaulted 19-foot ceilings constructed from more than 700 Giant Ponderosa Pines harvested nearby.

The conversation had shifted to whether Einstein's field equations allowed for aliens to use warp bubbles or travel through tubes between distant points to get around the light speed limit.

"This is assuming they even exist," Teller said. "I am far from convinced."

York had worked himself back into an animated frenzy. Konopinski was seated beside York, and worried that his wild gestures would send his plate into low earth orbit.

"It's simple probability," York said. "If there are billions of stars, there may be orders of magnitude more planets—many in habitable zones. There could be millions of advanced societies out there. Perhaps some are much closer to us than we think."

Konopinski felt compelled to join in. "Think of the progress we have made in the past one hundred years. What if they've been working on these problems for a thousand, or a million?"

The group sat in silence for a long moment amid the din of clinking plates and of a dozen conversations at other tables about ideas running the gamut from the absurd to the profound.

Perhaps to mimic York, Fermi raised his hands in a grand gesture of frustration. "Well, then, where is everybody?"

## CHAPTER ONE

Svalbard Global Seed Vault

Spitsbergen Island, Svalbard Archipelago, Norway

Present day

If they'd landed at night—and if she wasn't focused on her immediate survival—Parissa Tousi might have seen the stars warp and shimmer.

But here at the northern extreme of civilization, earth's tilt had stolen the night. The sun arced through the sky 22 hours per day. It set the expanses of snow and ice ablaze with light, yet imparted little warmth. And when the sun took its brief rest below the horizon, the sky dimmed to twilight, bridging dusk and dawn with blue-orange gradients that the landers reproduced with

near-perfect accuracy.

Parissa fought the steering wheel as the Subaru's traction control struggled for purchase on the ice-crusting road. The headlights swept back and forth as the car fishtailed.

"Drive on the side," Dave said. "And keep up your speed."

"I'm trying," Parissa said.

The car slid to the left and the tires bit into loose snow and rocks. The Subaru lunged forward.

"Careful."

"Relax. This is like my driveway at home."

Parissa gunned the engine as they approached the steepest part of the road. Dislodged rocks clattered against the undercarriage and the four-cylinder engine whined as they swerved and bounced along the uneven terrain. Dave clutched the overhead handle.

They'd driven up this road twice per day since they'd arrived a week ago. But fresh snow had fallen and a cruise ship had disgorged hundreds of tourists into the small town of Longyearbyen. Many had come to see "The Vault" and their vehicles had compacted the snow.

Parissa skidded around the final corner and decelerated as the grade leveled off.

"Thanks for not killing us," Dave said.

"You're welcome."

They crested the hill and Parissa felt awed at the scene before her. On the right, the entrance of the Svalbard Global Seed Vault jutted out of the mountainside. Its angular, brutalist



architecture felt otherworldly at any time of day. But in twilight, a fiber optic art installation titled “Perpetual Repercussion” high on its facade scattered green light across the parking lot, and fiber optic strips along its spine threw a purple glow against the mountain.

It looked as if a rave-inspired spaceship had fallen from the sky and wedged itself into the permafrost.

Above the ridge, subtle ribbons of green and purple northern lights danced through the darkest parts of the sky, visible even during twilight. Parissa had seen an alert on the NOAA website that a coronal mass ejection was inbound. She’d hoped it would produce northern lights, which were high on her bucket list of things to see.

Waking up to their glow was magical. But seeing them now, matching the colors from the seed vault above the stark arctic landscape, filled her with wonder.

To the left at the bottom of the mountain, Svalbard airport’s runway lights blinked on and off. Beyond the airport, the water of the Isfjorden inlet was dark as ink when contrasted to the snow-covered slopes of northern Spitsbergen in the distance.

Such views made the 2:30 a.m. wakeup almost worthwhile.

“Are you glad you came?” Dave asked.

“I am,” Parissa said. “Thank you for dragging me up here.”

Dave repeated what she’d said earlier in the week in an exaggerated mimicry of her voice. “Come to the Arctic, he said. It will be fun, he said.”

Parissa punched his arm. “Shut up.”

Dave laughed and pretended to be gravely injured.

Parissa sighed as she thought about going into the depths of the vault, where permafrost and cooling systems conspired to keep the temperature at a constant -18°C. “Let’s get this over with.”

She pulled forward and parked under the green glow of the vault’s entrance. From the back seat, she grabbed a hot water bottle and stuffed it into the interior pocket of her down jacket—the only way that she could survive the temperatures inside the vault. She was about to get out when Dave said, “Don’t forget your sidepiece.”

“Oh, yeah.” Parissa reached under her seat and found her flare gun in its holster. She strapped it to her thigh. “I still can’t believe they make us carry them between the car and the vault.”

Carrying a weapon still felt foreign to Parissa. She was terrified of guns and had never shot one. But on Svalbard, where the number of polar bears equaled the island’s population of 3,000 humans, carrying a firearm was mandatory outside of downtown Longyearbyen. For those who didn’t wish to carry a deadly weapon, flare guns were allowed. Dave was a gun enthusiast, but he’d opted for a flare gun out of deference to Parissa, a gesture that surprised and impressed her.

They got out of the warm car. The Arctic air sawed at their exposed faces while they made a quick scan for bears. Seeing none, they retrieved the Pelican sample cases from the trunk and stepped up to the seed vault entrance.

Parissa punched in their security code and the door lock clicked open. She smiled at the security camera, knowing that officers in the Statsbygg Security Office were watching.

Dave opened the door for her and they stepped into the dark entranceway. Motion-

activated lights clicked on in rapid succession, illuminating the 100-meter tunnel that led into the heart of the mountain.

Statsbygg Security Station

Longyearbyen, Norway

A single chime sounded from the overhead speakers, announcing that the seed vault's front door had opened.

Sebastian Nilsen looked up from his tablet at the wall of screens. High-definition streams from inside and outside angles showed two figures in down jackets crossing the threshold into the vault's tunnel. Sebastian full-screened the interior camera's feed. He recognized the faces of Parissa Tousi and Dave Wolfe, the PhD students from Cornell University. He glanced down at the log and noted that they'd arrived on schedule.

The control room door opened and Noah Balke stepped inside. He carried a coffee mug in one hand and his phone in the other, which was playing something loud and obnoxious—probably one of the countless TikTok videos through which he doomscrolled all night.

“The students arrived,” Sebastian announced loud enough to be heard over the video.

“Why they'd want to go to the vault at 3:00 a.m. is beyond me,” Noah said.

“They probably have experiments that need monitoring,” Sebastian said.

Noah looked up from his phone. “Did you get promoted?”

“No. Why do you ask?”

“Apparently you were put in charge of the obvious desk.”

Sebastian shook his head and looked back at the monitors. Noah’s harsh laughter ricocheted around the room.

“Seriously though,” Noah said, “I can’t believe they got permission to do their research here. Do you know they’re experimenting with cold-tolerant fungi and bacteria? It’s like inviting someone to train foxes in the world’s most valuable henhouse.”

Sebastian ignored Noah’s rant by going on Cornell University’s website and looking at their PhD programs. Since transferring to Svalbard, he’d met many scientists who’d come to study marine life, glaciers, geology, and other niche subjects. He wondered what it would be like to earn a PhD and work as an academic. It seemed like a cushy and adventurous lifestyle. Perhaps he could study in America, where there would be more women his age.

He glanced again at the monitor. The students were close to the end of the tunnel. He hoped to meet them before they left. Especially Parissa.

The students arrived at the end of the tunnel, where they would need to enter another passcode before gaining access to the lobby that connected the vault’s three 9.5-by-27-meter storage halls, only one of which was currently in use. Vault 1 held almost one million orthodox seed samples from most of the nations on Earth.

It’d been said that the “Doomsday Vault” was the most important room in the world.

Tunneled into solid rock high on a mountainside above the Arctic Circle, managed by a

stable country, and kept at extremely low temperatures and humidity, the vault kept backups of the world's most valuable seed crops safe from wars, natural disasters, and even catastrophic climate change.

A double chime sounded as the students passed into the lobby. Sebastian switched camera feeds to continue monitoring their progress. He turned up the lobby microphone and heard Parissa saying, "Even though I know what to expect, it's just so freaking cold. I could scream."

Sebastian smiled. He knew exactly what she meant. The lobby was burrowed deep into the mountain and there were no walls—just exposed rock sealed with spray-on foam to keep water from leaking through. The temperature plunged from around three degrees Celsius at the end of the tunnel to -18 in the lobby.

He was about to return to reading about Cornell when a single chime sounded.

Sebastian knotted his eyebrows. The single charm indicated the exterior door opening. Two chimes were for the lobby door and three for the vault doors.

Scanning the mosaic of feeds, he saw that the front door hung open. But he didn't see anyone in the tunnel, so he full-screened the parking lot camera. The student's Subaru was its lone occupant.

"What's with the chime?" Noah had set down his phone. His eyes searched the monitors.

"They must have left the front door open."

"It's a self-closing door."

Sebastian expanded the exterior view that pointed at the front door. The door was definitely open.

“They can’t close a door, but we’re letting them bring pathogens into the vault.” Noah stood and stepped closer to the screens on the wall. “Show the interior cam.”

Sebastian made the correct keystrokes. Even through the camera in the low light, they could see that the front door hung open and the door handle and latch were missing. The gas cylinder and self-closing hinge were buckled in half.

“Scrub back.” Noah said.

Sebastian rewound the footage to fifteen seconds before the door opened. What he saw made no sense. A light near the door handle flickered with such intensity that it overwhelmed the camera’s sensor and the screen only showed a pure white sphere. Streams of what looked like sparks cascaded onto the floor.

“Exterior cam.” Noah’s voice had lost all its humorous cynicism. In its place emerged forceful professionalism, which made Sebastian feel an uprising of fear.

The exterior view showed the same phenomenon, but this time, the flashes of light were less intense and didn’t overwhelm the sensor. A ball of white light hovered near the door’s handle and the surrounding metal glowed orange as it melted. Sparks fell to the ground and bounced to all sides, becoming dramatically brighter as they scattered across the ground.

Sebastian couldn’t understand what was happening. It reminded him of seeing his father weld car parts in the garage. But he couldn’t see anything standing near the door. Perhaps the bright light was an electrical arc?

“Turn up the audio,” Noah said.

Sebastian cranked the volume. A sound like high-pitched, sustained screaming mixed

with the pop and sizzle of molten metal filled the control room.

The vault door's handle and latch melted and fell away. A moment later, the white light turned off, the screaming stopped, and the door burst open as if it were kicked in. But Sebastian couldn't see anyone in the camera feed.

"We're going over," Noah said.

Fear crawled across Sebastian's skin and his chest tightened.

Noah sprang into action. "Transferring to remote monitoring. Send a code blue to the whole team."

Sebastian did as he was told. Noah picked up the red phone to report the incident to headquarters.

As they strapped on their bullet-proof vests and checked their HK 416 assault rifles, Noah said, "Call the students."

Parissa was struggling to open a sample case with her gloved hands when her phone vibrated. She exhaled loudly and her breath condensed into a pillar of steam that billowed out into the cavernous hall of "Vault 2" where they were conducting their research. It was probably her mom calling. She didn't seem to grasp the concept of different time zones.

Parissa let it vibrate for a few seconds, but decided she should answer in case it was an emergency. She wrestled her phone out of her pocket. The caller ID read *Statsbygg*. She picked up.

“This is officer Sebastian Nilsen with the Svalbard Statsbygg station. There has been a security breach at the seed vault. Someone is breaking in. Do you understand?”

Parissa felt her skin prickle. “Umm, yes. Someone is breaking in right now?”

Dave, who was visually inspecting agar culture disks, turned and stared at her.

Parissa switched to the phone’s speaker.

“They are already inside the entrance tunnel and are cutting through the door into the utility room,” Sebastian said. “I need you to listen carefully. Do you have weapons with you?”

Parissa’s hands trembled and breathing became difficult. “We only have flare guns.”

Two voices exchanged words. Parissa couldn’t follow their conversation through the phone. Sebastian came back on the line. “Are you willing to defend the seed room until we get there? You don’t have to accept, but if you barricade the door we might be able to get there before they get in.”

Parissa’s mind raced through her options. Her first instinct begged her to turn out the lights and hide in Vault 2. But she also knew the seed vault’s contents were invaluable. The botanist in her wanted to defend them at all costs. And whoever was attacking the seed vault knew that someone was inside. People willing to break into government facilities weren’t peaceful souls. They might not want any witnesses and would find them no matter where they hid.

Parissa met Dave’s eyes. He looked terrified, but he said, “Let’s do it.” Dave dropped the agar plate and stripped off his rubber gloves.

“We’ll go to the seed vault.” Parissa’s heart raced.



“Thank you,” Sebastian said. “I’ll unlock the door when you reach it. Block the door with everything you can. Threaten to shoot them if they come through. Stand clear of the door in case they shoot through it.”

“Understood.”

“Call back once you’ve barricaded the door.”

Parissa and Dave ran out of Vault 2, burst into the lobby, and sprinted to the ice-coated door of Vault 1.

As they waited for the door to unlock, Parissa looked at the lobby’s reinforced metal door that led to the entrance tunnel. It was closed and she couldn’t see anything amiss through its narrow window.

She turned back to the vault door just as a red LED on the lock flipped to green. Dave threw open the door and the lights inside flickered on. They stepped in and closed the door.

“What can we block the door with?” Parissa said.

“I don’t know.”

Parissa scanned the room. Unlike Vault 2, which was empty until they set up their experiments, Vault 1 was filled with rows of twelve-foot-high metal shelves stacked with sealed black boxes of seed samples.

They split up and ran between the shelves. They met at the far side, neither finding anything but seed boxes.

“The boxes would be too light,” Parissa said.

“Let’s clear a shelf and see if we can move it.”

Parissa heard a strange sound over their heavy breaths. “Quiet.”

A distant, high-pitched, continuous scream filtered into vault. The sound sent shivers of dread down Parissa’s spine.

“Hurry!” Dave sprinted back toward the entrance. Parissa followed close behind.

They went to the shelf nearest the door. They ripped seed boxes off the shelf and tossed them down the isles where they bounced along the black stone floors, creating a deafening cacophony.

The shelf was half empty when the lights went out, plunging the vault into darkness. Dave cursed aloud. Parissa prayed silently.

The air conditioners in the ceiling wound down and total silence descended on the vault. Dave turned on his phone’s flashlight and propped it on the opposite shelf. They resumed throwing boxes.

They finished clearing the shelf and were about to try toppling it over when Dave noticed that it was bolted to the neighboring shelf on each of its four levels. Uttering a steady stream of curses, he pulled out his multitool and climbed up the shelf. He used the pliers in his tool to start unscrewing the top bolt.

Then came the scream.

Before it had been distant and faint. Now it was loud and close.

Parissa looked to the vault’s door. Bright light flickered through the window. “Hurry!”

“I’m trying!”

The metal around the door’s handle turned from darkness to deep red, and moments later orange. As she watched, a hole opened in the metal and a shower of white-hot metal droplets burst into the vault. The rushing scream tripled in volume and a jet of white-blue flame stabbed through the door. It was so bright Parissa had to turn away.

“They’re coming through!” Parissa yelled.

Dave dropped down from the shelf. “I won’t get it unscrewed in time. Get your gun out.”

Parissa’s stomach cramped and tears stung her eyes as she opened the holster and tugged out her flare gun. She’d never shot a gun of any kind before. Its metallic weight felt foreign and terrifying in her hand. She pulled the hammer back until it clicked and pointed the gun’s fat barrel at the melting door.

The rest of the handle and latch liquified and cascaded down the door. The scream stopped and the vault plunged back into darkness. Only a glowing circle of yellow-hot metal was visible.

“Stop or we’ll shoot!” Dave yelled, his voice breaking.

The door burst open.

Dave fired. A streak of light exploded from his barrel and struck the stone wall to the left of the door. The flare bounced back into the vault where it spun and hissed as it spewed smoke and turned into a ball of red flame. It lit the vault bright as day with blood-red light.

“Shoot at the door!” Dave said.

Parissa squinted to see through the blinding light and clouds of acrid smoke stinging her

eyes. She squeezed the trigger. Anticipating the recoil, she jerked the gun downward as it fired. Its kick startled her.

The flare skipped off the black stone floor and hit the wall above the door, bounced off the ceiling, and landed close to the doorframe. The flare ignited and burned with a frantic sizzle.

Parissa was about to reload when something caught her attention. Unlike the previous flare, which was far too bright to look at directly, this one appeared dim. Yet the light it cast on the walls was brighter than the flare itself.

And then something shifted to the right, and the flare returned to its full intensity.

“Did you see that?” Parissa said.

“I did.” Dave raised his flare gun and fired to the right of Parissa’s flare. His shot bounced off the wall and skidded into the shelves.

Something hit Parissa from the left. The impact knocked her airborne. Her feet caught and she flopped to the black stone floor. Before she could register what had happened, something heavy was on top of her. A sharp object bit into her leg.

She screamed, but something warm clamped over her mouth.

And everything faded to darkness.