

**Nitrogen Plus**  
by Jack Williamson

**We are delighted to have a new story by Jack Williamson. In his ninety-third year, Mr. Williamson continues to produce remarkable work. A recent novella, “The Ultimate Earth” (*Analog*, December 2000), is currently a Hugo finalist, and his latest novel, *Terraforming Earth*, has just been released by Tor Books.**

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Some optimist in the Star Survey christened the planet New Earth. It was warmed by a Sun-like star. The mass and gravity were only slightly less than Earth's, the day very slightly longer. The oceans were water, and water ice capped the poles. The surface air pressure was near Earth normal.

“A perfect world!” my uncle boasted. “Except for one odd feature. The atmosphere is nearly pure nitrogen, with a whiff of carbon dioxide but hardly a trace of oxygen. A survey lander discovered that, and never returned. Tough luck for the crew, but good news for me. I got the planet for a song.”

He wanted me to terraform it.

“A slice of apple pie,” he scoffed when I shrank from the problems. “Just sow the seas with engineered algae spores. Wait for photosynthesis to release oxygen out of the water.”

“How long would that take?”

“What's time?” His pudgy fingers snapped the years away. “Fly home for a holiday and back there again. Ninety-seven light-years each way. Two centuries for the spores to work. Only a weekend for you, what with the relativistic time contraction. You'll have a paradise planet ready to welcome our colonists and get home again with your own ticket to immortality.”

Immortality? I wanted to strangle him.

He is immortal, with his own imperial sense of time, but the members of his tight little fellowship are jealous of their secrets and slow to admit outsiders. Not that I'd longed to become his eternal handyman or abandon my own place and time for a life of interstellar adventure.

Yet he is my uncle. He's a legendary interstellar tycoon, enormously wealthy. His enemies like to paint him as a devouring octopus with a thousand arms writhing though the galaxy. As a child I had dreaded his sudden fits of rage when some unlucky flunky failed to please him. Yet I had learned to tolerate him.

Hard enough to love, he's a short, shrewd, dynamic man with a round baby face. His fat cheeks are pink and hairless from the precious micro-machines in his

blood, which sharpen his wits and preserve him from illness or age. He can seem genial and generous enough, so long as you please him.

My father, two years younger, had been the unlucky brother. A disappointed idealist, a failed artist, an ill-starred lover. When my uncle offered him a chance at immortality, he refused it because he thought people should be equal. His avant-garde art found no buyers. My mother left him for another eternal. He vanished from Earth the year I was five. My uncle adopted me, sent me through expensive schools, promised me a fine future in his companies. When he named me his personal agent on New Earth, I knew I had to go.

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I found a crew at the Skipper's Club. That's an ancient building inhabited by ancient starmen who run a sort of hiring hall and retirement home for skipship crews. Long halls in the basement crypt are lined with cold lockers labeled with the fading names of men and women who had planned to be back after decades or centuries to open them again.

The pilot I hired was Buzz Bates, a lanky, bald, and ageless veteran of half a hundred flights. His copilot was an anxious young apprentice who had never been beyond the solar system. I spent an evening with them in the bar, listening to his tales of desperate adventure on far-off worlds, and even here on Earth.

Home from his first voyage on the eve of the great New England disaster, he barely got off again before the impact. His birth city, ancient New York, was gone when he got back again, Atlantica standing on the site. The apprentice listened uneasily and drank too much until Bates finally had to help him up to his room.

I rented a cold crypt box for myself and left a few documents and holos I didn't want to lose. We took off in a little quantum-wave cruiser with a load of engineered algae spores and gear for their dispersal. Our staff biologist was Elena Queler. A lively brunette with a wry wit and a voice I liked. She laughed at my regrets at having to abandon all I had known.

"No grief for me! My own life had gone sour. Wrong guy living with me. Research funds dried up. Thumbs turned down on my nano-nurse project. Nitrogen or spitrogen, New Earth has got to be better than the hell I've had here."

We scanned the planet from space.

"Another Eden!" Excitement lit her piquant face. "Waiting to be created."

The seas were a pure and brilliant blue, the two great continents rimmed with bare earth in many different shades, but never a hint of green chlorophyll. Most of the land shone with a strange and brilliant white.

"Snow?" I wondered.

"In the tropics?" She laughed at the question and turned serious. "The

spectrometer boggles me. Odd signatures of silicon and carbon. Not a trace of free oxygen. I want a closer look.”

As we dropped closer, Pilot Bates discovered a tiny satellite in low orbit. It turned out to be the lost lander. The copilot got into space gear to go aboard. He was gone a long time.

“All dead.”

Back at last, peeling off his gear, he looked sick and shaken.

“The crew. The automatics. Everything.” He shivered and stood silent till Bates made him go on. “I got through the lock with a laser torch. No air inside. The bodies are freeze-dried mummies, brittle as glass. I found a quarter-ton of some queer crystal stuff they’d loaded in the cargo bay. It must have killed them.”

“How?”

“Just a hunch.” He shrugged and went silent for an instant. “If you’d seen the bodies! Mouths gaping open. Oxygen masks still in their hands, but I think they died fighting for breath.

“I found these.”

He tossed a plastic bag that rattled when the pilot caught it.

“Don’t ask where they got them.” He shivered. “Bait, I imagine, to tempt them out of their wits.”

The bag held half a kilo of diamonds. Perfect white octahedral crystals weighing up to a dozen carats, they glittered like a shattered rainbow when he let us see them. The pilot goggled at them and battered him with questions.

“I never touched the white stuff,” he said. “I don’t know what it is. I don’t want to. I did look for records, a logbook, anything. Not a clue. I think all they thought about was how to get away alive. My own luck was better, but I don’t want to stretch it.”

\* \* \*

“We have to land,” Bates told me. “If we don’t, your uncle would only send us back.”

The diamonds had captured Elena.

“So many!” She stirred a handful of the great gems with a finely tapered forefinger, her own eyes shining. “So big! So perfect. All almost identical. I’ve got to know how they came to be.”

She wanted to see that strange white stuff for herself. The copilot was still fighting his funk. Bates was cautious, but he set us down on the western shore of a

narrow mountain peninsula that ran south across the equator from the largest continent. She ran tests and pronounced the nitrogen harmless, so long as we didn't try to breathe it.

With oxypacks and breathing masks, we cycled out of the air lock. A breeze off the sea felt warm enough for T-shirts, but the white sand beach sloped up to what looked like banks of snow. Dark cliffs stood beyond them, cut with a sheer-walled canyon that came down from a mountain ridge. The cliffs were topped with something white.

We had come prepared for work outside, with nuclear power for the oxygen generators. To sow the algae, we had brought four light rocket-driven drones. The pilots went to work at once, assembling them. I climbed down to a tidal pool for a sample of the native sea water when Elena wanted to test the spores in it and tramped with her up the beach for a closer look at the white stuff.

"Frost!" She knelt with a pocket lens to study films of it on the rocks. The mask muffled her voice. "But growing like something alive."

Under the sun, it did glitter like frost.

"Hexagonal crystals," she said. "Like snowflakes, but—" She leaned closer. "Each one has a bright point at the center. Something that glints like a tiny diamond."

Higher up the beach it had grown thicker, finally into something like crystal fur, ankle deep. Fascinated with it, she was still disappointed.

"I had a glimpse of something taller, farther inland, as we came down. I'd like to see it."

"I don't want you to kill yourself."

"Not with all these riddles around us!" Dark eyes shining, she shrugged danger away. "I could work here forever."

\* \* \*

In the months we stayed to watch the spores at work, I came to love her. Back on Earth, I'd begun a very modest academic career, planning a historical monograph on my uncle's interstellar enterprises. No woman had ever held me long, but her fascination with the exotic mysteries of the planet gave Elena herself a bit of its hazardous allure. Perhaps I gave her an escape from too much strangeness. She began to share her cabin with me.

The copilot was jealous; he had dated her before we left Earth. To fend him off, she announced that we were engaged. We made a little ceremony of it. The pilot had brought wine. I had no ring. Instead, I gave her a keepsake coin. A farewell gift from my father before he went away, it was a worn silver dollar minted in ancient America. He told me to carry it for luck, though it had brought no luck to him.

Cheerfully enough, the copilot lifted his glass to us and the future of New Earth.

\* \* \*

That did look bright. Testing sea water, Elena found free oxygen. She planted seed in a patch of dry silt by the stream, had us dig an irrigation ditch, took holos for my uncle as they sprouted and grew. She served us a feast of ripe red tomatoes and golden cantaloupe and fresh green corn, and begged the pilots to move our ship farther inland.

The copilot hunched to something like a shudder. “If you’d seen those mummies in the survey craft—”

“Let’s leave that till later,” the pilot urged her, more tactfully. “A skipship’s not a taxi. We need a level spot like this beach for any safe landing, not any sort of forest. We should have an oxygen atmosphere by the time we get back, and vehicles for surface exploration.”

She wanted to study the planet in its native state, before the liberated oxygen could change it. If we couldn’t move the ship, she was going inland on foot.

“Up those cliffs?” The pilot shook his head. “With your gear to carry? I wouldn’t try.”

“Give me a chance,” she urged him. “I had a glimpse as we came down. Something—” We were off the ship, standing in our camp on the beach. She stopped to shake her head at the banks of snow white crystals above us. “I can’t imagine what, but it’s not too far. The oxypack should last to get me up there and back again, with time enough to spare.”

She had told me she was pregnant. I begged her to think of the child, but the challenge of the planet meant more to her than anything. She showed the pilot a letter of authority from my uncle. He agreed to wait for her, with a warning that he could mount no rescue effort if she ran into trouble.

She thanked him, hugged me, and tramped away across the silicon frost, stumbling sometimes under the weight of the oxypack on her back. We watched till she was finally gone beyond a bend in the canyon wall. After a sleepless night, I told the pilot I wanted to follow.

“Forget it.” He set his gray-stubbled jaw, scowling at me. “Your responsibility is to your uncle. And, if you’ll excuse me, she’s more fit than you are. She knows the hazards. The best we can do is hope she gets back on her own.”

She didn’t. We waited till her oxypack was surely dead. The pilot said we had to go. Whatever the copilot had felt for her, he seemed happy enough at the final feast he made us out of her garden. The pilot poured what was left of the wine.

“Don’t blame yourself.” He tried to ease my self-reproach. “We all tried to

warn her.”

We went home to Earth.

\* \* \*

None of my friends or other relatives had been immortal, and Atlantica had become a strange and lonely place for me. My uncle had grown his hair longer, changed to a lilac cologne, found a stranger tailor. Yet he was always the imperious eternal. His smooth moon face still flushed red at any opposition or delay, but the diamonds had him oozing charm.

“They’ll double my worth,” he exulted. “And make you immortal.”

I was to stay on Earth as head of the new corporation set up to exploit the planet. The pilot was to command the expedition and become the governor. He launched the project with a lavish banquet for his dazzled investors. There were toasts to him, to the pilot, to me. In the glow of the wine, I did feel almost immortal.

Next day, a little hung over, I found my way through new streets back to the Skipper’s Club. The old building looked shabbier and smaller than ever, dwarfed now by a forest of towers around it. I paid the rent due and opened Elena’s cold crypt box.

Inside, I found a little green jade Buddha, holo shots of her home and her parents and her kid sister, a hand-written diary with entries about her school friends and a young hyperspace engineer who had taken her out to Neptune Station on the first trial flight of a new skipship and broken her heart when he left on an eighty-year cruise. One of the holos, made at the dig, showed her squinting happily into the Indian sun, holding the little jade figure up to the camera.

“A wonderful omen!” she had captioned it. “Of enlightenment to come!”

I read the words through a blur of tears, still dreaming of things I had failed to do that might have saved her. When my mind had cleared, along with my vision, I renewed the lease on my own box and left her diary and the Buddha in it. Next day I told my uncle to keep the desk job. I was returning to New Earth.

His baby face flushed crimson, he raved at me for half an hour. What sort of idiot would give up eternal life for a woman dead a hundred years ago? All I knew was that I had to go. In the end he controlled his wrath and agreed to make me his personal agent on the new expedition.

“The diamonds are your first priority. Locate the source. Determine its extent. Secure it from any hazards, on or off the planet.” His charm came on. “Do that, my boy, and you may still live forever.”

\* \* \*

His organization was already busy. A passenger vessel could carry a hundred pioneer families. A huge freighter would remain in orbit, ferrying supplies and

equipment down to support the colony. He had arranged for a military escort, prepared for space or surface operations.

Again we studied New Earth from space. The science team found the algae at work, free oxygen everywhere. Green life had tinted some of the tropic coasts, though most of the land was still white with that anomalous silicon stuff.

If my uncle wanted diamonds, where were we to find them?

The dead men on the survey lander had left us no clue. We did know, however, that their planned landing site had been on that equatorial peninsula, where the planet's rotation would help lift them back into orbit. Its backbone was a rugged mountain chain, covered with what looked like a dense jungle of the silicon crystals. East of the mountains, the ground sloped down to a delta plain that was only lightly frosted.

The pilot set us down there, on level ground between two narrow rivers. The science team found the air breathable, though the oxygen content was still too low to support sustained exertion. Bulldozers came down to scrape the frost from building sites, and equipment to build oxygen generators.

For the diamond hunt, Bates brought down a heavy, wide-tracked armored crawler that looked able to go anywhere. The oxygen was too thin for combustion engines, and of course the planet had not grown anything to form coal or oil to fuel them. The crawler had nuclear power and oxygen boosters.

We struck west across the peninsula on a bright early morning, with a crew of five. I sat beside the driver on a high seat shielded with armor glass. The steam turbine ran silently, the caterpillar tracks crunching the silicon growth. The cool west wind that blew had a dry dust-scent when I slipped my mask aside. The silicon stuff grew thicker and taller as we climbed. Crystal feathers and fans and spikes had grown ankle-high, knee-high, waist-high, finally into a fragile jungle, blindingly white under the sun. The driver stopped to find dark glasses for us, and stopped again to change them for heavy goggles.

The level plain gave way to hills that slowed us. Shattering into dust under the tracks, the crystal tangle was no problem in itself, but it hid the ground. We lurched and jolted over rocks we hadn't seen, pitched and wallowed through hidden ravines. My stomach knotted from the motion.

We made only forty miles on that first day. Nightfall stopped us. The planet was moonless, the sky utterly black, yet the silicon shone with a faint and ghostly phosphorescence. The wind had stopped. Nothing around us moved or made a sound. We had found no diamonds, no trace of the surveyor landing, nor anything we understood. The men were tired and jittery. The engineer climbed up into the cockpit to try the strange air and come down again shaking his head.

"I don't like it. Too damn dark. Too damn dead."

Hard liquor had been forbidden, but he rummaged in the science locker and filled a beaker with something that had more fire than flavor. We passed it and finished our ration packs. The men crawled into their narrow berths. I went back to the cockpit and called Bates to report.

We had hardly spoken when something cut off his voice. I shouted into the microphone, but all I got was a quavery hum that rose and fell and died finally into silence. I was shouting again when I heard a sharp and anxious voice.

*Father! Come to me!*

It sent a chill down my spine. A child's high voice, it seemed utterly strange, yet somehow hauntingly familiar. In a moment, when it came again, I thought it seemed like Elena's, the voice she might have had when she was three. It seemed desperately urgent, desperately distressed.

*Father, you must!*

My mind blanked out till I heard that hum again. Almost musical, faint at first, it rose and fell and ceased. I sat there in the dead silence, staring around me at the faint white glow of the dead black hills under the dead black sky, till I heard Bates again.

"Did you hear it?" He startled me. "What the hell was it?"

"I don't know." My voice was a whisper. "I wish I did."

"Who could be here, light-years from anywhere?"

I hung up, with no more to say. He had heard the voice; it had to be more than imagination. But I had no child. I'd had no love affair except with Elena, and that two hundred years ago. I sat there half the night in the dead stillness and the eerie glow of the silicon, groping for answers I never found.

\* \* \*

Next morning our spirits rose with the sun and fell again when we came to a long escarpment that held us up. We turned to blunder through the crystal jungle along its foot until we reached a break where we could climb it. At the top we came out on a flat plateau covered with an actual silicon forest.

Straight white stalks towered out of a dense white crystal undergrowth. They had no leaves or branches, but each stalk was topped with something like a huge bloom. The petals were daisy-like, mirror-bright, tipped and cupped to focus sunlight on a black mass at the center.

I had the driver stop to let me make holos for my uncle, and let him push ahead. The stalks were far taller than our crawler, but slender and fragile. They shattered like glass. Fragments rained around us. The driver stretched his hand to catch one that fell into the cockpit, and stopped to blink at it. A perfect white



octagonal carbon crystal the size of a walnut.

“Diamonds!” he yelled at the men below. “Diamonds! Grown on trees!”

They scrambled back along our trail, digging great gems out of the shattered trash. Twice the driver pulled ahead to crush through another strip. That night I called Bates again to report that we had gathered a hundred kilograms of perfect carbon crystals. He was elated, but anxious when he remembered the dead surveyors.

“That’s enough,” he told me. “Get on back before something—”

Again he was cut off. Again that musical tone rose and faded.

*Father, do you hear me? Elena’s urgent child-voice came again. Come on to me. I’ll show you the way.*

The hum came back, lifted, ceased.

“Get back here!” Bates was yammering. “While you can.”

Next morning I told the driver to take us back to the landing and called Bates to tell him we were on the way. The hum cut us off before he could answer.

*You can’t leave now, the child-voice cried. You are almost here. Let me guide you on.*

I had the driver turn again and take us farther west, crashing through an ice-like forest that grew taller and denser as we went. Bits of broken silicon rained down around us. The driver caught another diamond. The engineer wanted to stop and gather more, but I kept the headphones on. The voice stayed with us, almost as if the child had been with us in the cockpit, guiding us around rocks and pits. I found the driver staring at me.

“The diamonds, sir? Don’t you think we have enough?”

I shook my head and waved him on. It was late afternoon when the child made me stop the driver on a rocky shelf in the shadow of a cliff. I climbed down to the ground and stumbled over Elena’s bones, bleached white as the silicon. Shreds of her clothing lay around her, with her mask and the oxypack. Among the bones of her fingers, I found the old silver dollar.

She had come a long way from the western beach. Lost, I suppose, and wandering blindly through the crystal tangle. Her compass had been useless; the planet had no magnetic field. I took the darkly tarnished coin and climbed back into the crawler. The voice had ceased. I told the driver to take us back to the landing.

“Thank you, sir!” Relief had warmed his haggard, unshaven features. “I hope you’re okay now.”

We went back down our trail. Here and there we caught the glint of a fallen diamond lying in the dust. The engineer wanted to gather more, but the uneasy drivers voted to hurry on. We were near the escarpment before darkness stopped us.

Sleeping that night with the old dollar clutched in my hand, I dreamed of Elena. Alive and lovely again, she was happy to see me. We were back on the clean white beach, breathing sweet air with no need of oxygen gear. The surf was murmurous music. We made love. Again she was wonderful.

But suddenly we were back where I had found her bones, standing beside the crawler in the ghostly phosphorescence of the forest. Still nude, she had great diamonds tangled in her long black hair. I reached to embrace her, but she pushed me away. I saw her own bones at her feet.

“You must go.” Her eyes were dark with tragic sadness. “Get off the planet. You and all your people.”

“They won’t,” I told her. “They’re diamond-mad.”

“You have no choice.” She gestured at her skull. “You are killing us. We must protect ourselves.”

“Elena,” I whispered, “can you explain—”

Before I could finish, she had dissolved into the faint white glow of the forest around us. I woke inside the crawler, chilled with sweat and trembling, the oxygen generator whispering faintly above me and the engineer snoring in the berth beneath. Lying there till dawn, I wrestled for some sort of sanity.

What had she been?

Who was the child?

Or was it all hallucination?

No answer offered much comfort. I knew nothing of the silicon life, if the stuff was in any sense alive, but the tall stalks were shaped like exotic plants. Now I had to wonder if Elena had met some kind of silicon mind before she died. Had the child in her womb become some kind of bridge to it? I found no way to know.

\* \* \*

Dawn came. We found our trail down the escarpment and followed it through the forest and the frost, back to the site. Most of the settlers were still aboard the passenger ship, out in orbit, but scores of workers were already busy at the landing. Bates gathered the leaders into a temporary hall. Displaying the diamonds and our holos of the diamond forest, he got a roar of applause and asked me to speak.

Standing there before the eager workers, thinking of Elena’s skeleton and my

dreams of her, if dreams were all they had been, I was groping uncertainly for what to say until suddenly I heard the child speaking with my own voice.

“The diamonds are there,” it said. “But they are not for us. We must leave the planet and forget them.”

The applause fell to silence and became a roar of anger. The child was gone. Left there without comprehension or direction, I stumbled through the story of our drive, the crystal trees, Elena’s bones, the warning from the child.

“It’s only a dream,” I had to admit. “But I do believe the crystals have some kind of sentience. It sees us as a threat, and it doesn’t want us here.”

Bates took the lectern to preside over a furious debate. The diamonds were real. The supply was endless. Only idiots or cowards would give them up for any crazy dream. Yet perhaps there was actual danger, he agreed. Out of respect for my uncle and his investors, we should be prudent.

After all, the terraforming process was far from complete. He asked for a show of hands by those who might want to fly to Earth and back while the algae released oxygen enough to make the planet habitable.

No hands rose.

“We came for diamonds,” the engineer spoke for the crowd. “I say damn the danger.”

\* \* \*

A pilot from the freighter took me back to Earth in a little escape craft, with my uncle’s share of the diamonds. Elated with them, he floated a new company given title and a charter to occupy the second continent on New Earth. Free land, a fine climate, rich soil, trees that grew diamonds! He wanted me to go as his high commissioner.

Remembering Elena and the child’s voice, I hesitated.

“You and your idiot father!” He shook his head in astonished pity for me. “Nothing to it. Just get your fleetload of suckers into orbit. Drop down to the planet for a quick look around. Collect data for the sales staff. Pick up the diamonds due me. And you’ll come back eternal!”

I left Elena’s dollar with her green jade Buddha in my cold box at the Skipper’s Club and went back to New Earth one last time, with almost a dozen vessels in our flotilla. Calling from low orbit, we got no response. The passenger craft and the freighter were still in orbit, but lifeless as the survey lander. We did not approach them.

Dropping to scan the peninsula, we found bright white frost grown back over the landing strip and the lonely little huddle of buildings beside it, unmarked by

anything. No trace was left of our track though the crystal jungle. The injured planet had healed itself.

The spectrometers showed no free oxygen left in the atmosphere, and only traces of carbon dioxide. That had been replaced with cyanogen, the molecule of nitrogen and carbon that forms deadly 'prussic acid. Nobody who breathed it would leave the planet alive.

We came back home.

"So things go." Unperturbed, my uncle shrugged the failure off. He had bought another planet. "A cosmic anomaly, they call it. Earth-like, but tossed out of its mother system by some odd freak of orbital mechanics. It's twenty light-years from its mother star. Sunless, frozen, dead a billion years. The holos look a little dismal, but I got it for nothing. A great chance for you. Terraform it for successful development, and you can still earn your own immortality."

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