

Flight on Titan

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THE GALE roared incessantly like all the tormented souls since creation's dawn, driving the two sliding and tumbling into the momentary shelter of a ridge of ice. A cloud of glittering ice needles swept by, rainbow-hued in the brilliant night, and the chill of eighty below zero bit through the sponge rubber of their suits.

The girl placed her visor close against the man's helmet and said steadily: "This is the end, isn't it, Tim? Because I'm glad I came with you, then. I'm glad it's both of us together."

The man groaned despairingly, and the blast tore the wood away. He turned aside, thinking regretfully of the past.

The year 2142, as most people recall, was a disastrous one in the financial world. It was the year of the collapse of the Planetary Trading Corporation and the year that ushered in the resultant depression.

Most of us remember the hysterical two years of speculation that preceded the crash. These followed the final development of the Hocken Rocket in 2030, the annexation of the arid and useless Moon by Russia, and the discovery by the international expeditions of a dead civilization on Mars and a primitive one

on Venus. It was the Venus report that led to the formation of the P.T.C. and the debacle that followed.

No one knows now who was to blame. All the members of those intrepid expeditions have suffered under the cloud; two of them were murdered in Paris only a little more than a year ago, presumably by vengeful investors in Planetary. Gold will do such things to men; they will take mad risks with what they have, pursuing a vision of what they hope to have, and, when the crash comes, turn on any scapegoat that's luckless enough to be handy.

At any rate, regardless of responsibility, the rumor started that gold was as common on Venus as iron on Earth—and then the damage was done. No one stopped to reflect that the planet's density is less than the Earth's, and that gold, or any heavy metal, should be even rarer there, if not utterly absent, as on the Moon.

The rumors spread like an epidemic, and stories circulated that the expedition members had returned wealthy. All one had to do, it seemed, was to trade beads and jack-knives to the obliging Venusian natives for golden cups, golden axes, golden ornaments.

The shares of the quickly organized Planetary Trading Corporation skyrocketed from a par of fifty to a peak of thirteen hundred. Vast paper fortunes were made; the civilized world went into a frenzy of speculative fervor; prices of everything shot upward in anticipation of a flood of new gold—food, rent, clothing, machinery.

We all remember the outcome. Planetary's first two trading expeditions looked long and arduously for the gold. They found the natives; they found them eager enough for beads and jackknives, but they found them quite destitute of gold. They brought back neat little carvings and a quantity of silver, scientifically valuable records, and a handful of pearlike stones from Venusian seas—but no gold. Nothing to pay dividends to the avid stockholders; nothing to support the rumor-puffed structure of prices, which crashed as quickly as the shares of Planetary, once the truth was out.

The collapse affected investors and noninvestors alike, and among them, Timothy Vick and his Canadian wife Diane. The spring of 2142 found them staring at each other in their New York apartment, all but penniless, and in the very depths of despair. Jobs were vanishing, and Tim's training as a salesman of 'vision sets was utterly useless in a world where nobody could afford to buy them. So they sat and stared hopelessly, and said very little.

Tim at last broke the gloomy silence. "Di," he said, "what'll we do when it's all gone?"

"Our money? Tim, something will come before then. It has to!"

"But if it doesn't?" At her silence, he continued: "I'm not going to sit and wait. I'm going to do something."

"What, Tim? What is there to do?"

"I know!" His voice dropped. "Di, do you remember that queer gem the government expedition brought back from Titan? The one Mrs. Advent paid half a million dollars for, just so she could wear it to the opera?"

"I remember the story, Tim. I never heard of Titan."

"One of Saturn's moons. United States possession; there's a confirmatory settlement on it. It's habitable."

"Oh!" she said, puzzled. "But—what about it?"

"Just this: Last year half a dozen traders went up there after more. One of 'em returned to-day with five of the things; I saw it on the news broadcast. He's rich, Di. Those things are almost priceless."

Diane began to see. "Tim!" she said huskily.

"Yes. That's the idea. I'm going to leave you all I can, except what money I must have, and go up there for a year. I've read up on Titan; I know what to take." He paused. "It's coming near Perigee now. There'll be a rocket leaving for Nivia—that's the settlement—in a week."

"Tim!" murmured Diane again. "Titan—oh, I did hear of it! That's—that's the cold one, isn't it?"

"Cold as Dante's hell," replied Tim. He saw her lips form a word of protest and his blue eyes went narrow and stubborn.

She changed her unspoken word. "I'm going with you," she said. Her brown eyes narrowed to meet his.

Diane had won. That was over now—the long hours of argument, the final submission, the months of insufferably stuffy air aboard the rocket, the laborious struggle to erect the tiny hemispherical metal-walled shack that served as living quarters. The rocket had dropped them, cargo and all, at a point determined after a long conference back on Earth with Simonds, the returned trader.

He had been an agreeable sort, but rather discouraging; his description of the Titan climate had sounded rather like a word picture of an Eskimo hell. He hadn't exaggerated, either; Tim realized that now and cursed the weakness that had made him yield to Diane's insistence.

Well, there they were. He was smoking his one permitted daily cigarette, and Diane was reading aloud from a history of the world, taken because it had some thousand pages and would last a long time. Outside was the unbelievable Titanian night with its usual hundred-mile gale screaming against the curved walls, and the glitter of ice mountains showing green under the glare of Saturn with its rings visible edgewise from the satellite since it revolved in the same plane.

Beyond the Mountains of the Damned—so named by Young, the discoverer—a hundred miles away, lay Nivia, the City of Snow. But they might as well have been on a planet of Van Maanen's star so far as human contacts went; surely no one could survive a cross-country journey here through nights that were generally eighty below zero, or even days that sometimes attained the balmy warmth of just above freezing. No; they were marooned here until the rocket returned next year.

Tim shivered as the grinding roar of a shifting mountain sounded above the scream of the wind. That was common enough here; they were always shifting under the enormous tidal pull of the giant Saturn and the thrust of that incredible wind. But it was disquieting, none the less; it was an ever-present danger to their little dwelling.

"Br-r-r!" he shuddered. "Listen to that!"

Diane looked up. "Not used to it yet, after three months?"

"And never will be!" he returned. "What a place!"

She smiled. "I know what'll cheer you," she said, rising.

From a tin box she poured a cascade of fire. "Look, Tim! Six of them. Six flame-orchids!"

He gazed at the glowing eggs of light. Like the flush of life itself, rainbow rings rolled in a hundred tints beneath their surfaces. Diane passed her hand above them, and they responded to its warmth with a flame of changing colors that swept the entire keyboard of the spectrum, reds merging into blues, violets, greens, and yellows, then orange and scarlet of blood.

"They're beautiful!" Tim whispered, staring fascinated. "No wonder rich women bleed themselves dry for them. Diane, we'll save one out—the prettiest—for you."

She laughed. "There are things I'd rather have, Tim."

A pounding sounded above the windy bellowing. They knew what it meant; Tim rose and peered through the reinforced window into the brilliant night, and, after a moment of blinking, made out the four-foot-long body of a native sprawled before his door, his coned claws hooked into the ice. On Titan, of course, no creature stood erect against those perpetual howling blasts, no creature, that is, save man, a recent arrival from a gentler world.

Tim opened the door, slipping it wider notch by notch on its retaining chain, since muscular power would have been inadequate to hold it. The wind bellowed gleefully in, sweeping the hanging utensils on the walls into a clanging chorus, spinning a loose garment into a mad dance, chilling the air to bitterness.

The native slithered through like a walrus, his streamlined body seal-like and glistening with its two-inch protective layer of blubbery flesh. As Tim cranked the door shut, the creature raised the filmy underlids from its eyes, and they showed large, luminous, and doglike.

This was a Titanian native, not much more intelligent than a St. Bernard dog, perhaps, but peacable and inoffensive, beautifully adapted to its forbidding environment, and the highest form of life yet known on Titan.

He reached into the pouch opening on his rubbery back. "Uh!" he said, displaying a white ovoid. As the comparatively warm air of the room struck it, the flame-orchid began to glow in exquisite colors.

Diane took it; against her palms the tints changed more quickly, deepened gloriously. It was a small one, no larger than a robin's egg, but perfect except where it had been attached to some frigid rock.

"Oh!" she exclaimed. "What a beauty, Tim!"

He grinned. "That's no way to bargain."

He pulled out the black case that contained their trade goods, opening it to display the little mirrors, knives, beads, matches, and nondescript trinkets.

The coal-black eyes of the native glittered avidly; he glanced from one article to the next in an agony of longing indecision. He touched them with his clawed, three-fingered hands; he cooed huskily. His eyes wandered over the room.

"*Huss!*" he said abruptly, pointing. Diane burst into a sudden laugh. He was indicating an old and battered eight-day clock, quite useless to the pair since it lacked the adjustment to permit them to keep other than Earth time. The ticking must have attracted him.

"Oh, no!" She chuckled. "It's no good to you. Here!" She indicated a box of trinkets.

"*Ugha! Huss!*" The native was insistent.

"Here, then!"

She passed him the clock; he held it close to his skin-shielded ears and listened. He cooed.

Impulsively, Diane picked a pocketknife from the box. "Here," she said, "I won't cheat you. Take this, too."

The native gurgled. He pried open the glittering blade with his hooked claws, closed it and slipped it carefully into his back pouch, stuffing the clock after it. The pouch stood out like a miniature hump as he turned and scuttled toward the door.

"Uh!" he said.

Tim led him out, watching through the window as he slipped across the slope, his blunt nose pointed into the wind as he moved sideways.

Tim faced Diane. "Extravagance!" He grinned.

"Oh, a fifty-cent knife for this!" She fondled the gem.

"Fifty cents back home," he reminded her. "Just remember what we paid for freight, and you'll see what I mean. Why, look at Nivia; they mine gold there, pure, virgin gold right out of the rocks, and by the time the cost of shipping it back to Earth is deducted, and the insurance, it barely pays—just barely."

"Gold?"

"Yes. That's simple to understand. You know how little freight a rocket can carry when it has to be fueled and provisioned for a flight from the Earth to Titan, or vice versa. A mere jaunt of seven hundred and eighty million miles and plenty of chance for trouble on the way. I think the insurance on gold is thirty per cent of the value."

"Tim, shall we have to insure these? How shall we ever manage?"

"We won't. We won't insure these because we'll be going with 'em."

"But if they're lost?"

"If they're lost, Diane, insurance wouldn't help us, because, then, we'll be lost, too."

Three more months dragged by. Their little hoard of flame-orchids reached fifteen, then eighteen. They realized, of course, that the gem wouldn't command the fabulous price of that first one, but half that price, even a tenth of it, meant wealth, meant leisure and luxury. It was worth the year of sacrifice.

Titan swung endlessly about its primary. Nine-hour days succeeded nine-hour nights of unbelievable ferocity. The eternal wind howled and bit and tore, and the shifting ice mountains heaved and roared under Saturn's tidal drag.

Sometimes, during the day, the pair ventured into the open, fought the boisterous winds, dung precariously to frigid slopes. Once Diane was swept bodily away, saving herself miraculously on the verge of one of the deep and mysterious crevasses that bounded their mountain slope, and thereafter they were very catitious.

Once they dared to penetrate the grove of rubbery and elastic whiplash trees that grew in the shelter of the nearest cliff. The things lashed out at them with resounding strokes, not violent enough to fell them, but stinging sharply even through the inch-thick layer of sponge rubber that insulated their bodies from the cold.

And every seven and a half days the wind died to a strange and oddly silent calm, was still for half an hour or so, and then roared with renewed ferocity from the opposite direction. Thus it marked Titan's revolution.

At almost equal intervals, every eight days, the native appeared with the clock. The creature seemed unable to master the intricate problem of winding it and always presented it mournfully, brightening at once as Diane set it ticking again.

There was one impending event that worried Tim at times. Twice in its thirty-year period Saturn eclipses the Sun, and for four Titanian days, seventy-two hours, Titan is in utter darkness. The giant planet was nearing that point now and would reach it long before the rocket ship, speeding from the Earth at perigee, was due.

Human occupation dated back only six years; no one knew what four days of darkness might do to the little world of Titan.

The absolute zero of space? Probably not, because of the dense and xenon-rich atmosphere, but what storms, what titanic upheavals of ice, might accompany that night of eclipse? Glowing Saturn itself supplied a little heat, of course, about a third as much as the distant Sun.

Well, worry was futile. Tim glanced at Diane, mending a rip in the furry face-mask of her outdoor garment, and suggested a stroll. "A stroll in the sunlight," he phrased it sardonically. It was August back on Earth.

Diane agreed. She always agreed, cheerfully and readily. Without her this project would have been utterly unbearable, and he wondered amazedly how Simonds had stood it, how those others scattered around Titan's single little continent were standing it. He sighed, slipped into this thick garment, and opened the door into the roaring hell outside.

That was the time they came near disaster. They crawled, crept, and struggled their way into the lee of an ice hummock, and stood there panting and gasping for a moment's rest. Tim raised his head to peer over the crest and saw through his visor's protecting goggles something unique in his experience on Titan. He frowned at it through the dense refractive air of the planet; it was hard to judge distances when the atmosphere made everything quiver like heat waves.

"Look, Di!" he exclaimed. "A bird!"

It did look like one, sailing on the wind toward them, wings outspread. It grew larger; it was as large as a pterodactyl, bearing down on them with the force of that hundred-mile wind behind it. Tim could make out a fierce, three-foot beak.

Diane screamed. The thing was headed for them; it was diving now at airplane speed. It was the girl who seized and flung a jagged piece of ice; the thing veered higher, swept like a cloud above them, and was gone. It could not fly upwind.

They looked it up in Young's book at the shack. That intrepid explorer had seen and named the creature; it was a knife-kite, the same sort of beast that had accounted for the death of one of his men. It wasn't a bird; it didn't really fly; it just sailed like a kite before the terrific blasts of Titan, and touched ground only during the weekly calm or when it had succeeded in stabbing some prey.

But life was scarce indeed on the icy little world. Except for the occasional natives, who came and went mysteriously as spirits, and that single knife-kite, and the whiplash trees near the cliff, they saw nothing living. Of course the crystal bubbles of the ice-ants marked the glacial surface of the hills, but these creatures never emerged, laboring incessantly beneath their little domes that grew like mushrooms as they melted within and received fresh deposits of ice crystals without. A lonely world, a wild, bizarre, forbidding, and unearthly little planet.

It never actually snowed on Titan. The chill air could absorb too little water vapor for condensation as snow, but there was a substitute. During the days,

when the temperature often passed the melting point, shallow pools formed on the frozen oceans, augmented sometimes by mighty eruptions of frigid brine from below. The ferocious winds swept these pools into a spindrift that froze and went rushing as clouds of icy needles around the planet.

Often during the darkness Diane had watched from the window as one of these clouds loomed glittering in the cold-green Saturn-light, sweeping by with a scream and slithering of ice crystals on the walls, and seeming to her mind like a tall, sheeted ghost. At such times, despite the atom-generated warmth of the tiny dwelling, she was apt to shiver and draw her garment closer about her, though she was careful that Tim never observed it.

So time passed in the trading shack, slowly and dismally. The weather, of course, was uniformly, unvaryingly terrible, such weather as only Titan, nearly nine hundred million miles from the moderating Sun, can present. The little world, with its orbital period of fifteen days and twenty-three hours, has no perceptible seasons; only the recurrent shifting of the winds from east to west marks its swing about gigantic Saturn.

The season is always winter—fierce, bitter, unimaginable winter, to which the earthly storms of desolate Antarctica are as April on the Riviera. And little by little, Saturn edged closer to the Sun, until one day the western streak of its rings knifed a dark gash across the reddish disk. The eclipse was at hand.

That night saw the catastrophe. Tim was dozing on the bunk; Diane was dreaming idly of green fields and warm sunlight. Outside roared a gale more than usually vociferous, and a steady parade of ice ghosts streamed past the windows. Low and ominous came the roar of shifting glacial mountains; Saturn and the Sun, now nearly in a direct line, heaved at the planet with a redoubled tidal pull. And then suddenly came the clang of warning; a bell rang ominously.

Diane knew what it meant. Months before, Tim had driven a row of posts into the ice, extending toward the cliff that sheltered the whiplash grove. He had foreseen the danger; he had rigged up an alarm. The bell meant that the cliff had shifted, had rolled upon the first of the stakes. Danger!

Tim was springing frantically from the bunk. "Dress for outside!" he snapped. "Quickly!"

He seized her lunacy sponge-rubber parka and tossed it to her. He dragged on his own, cranked the door open to the pandemonium without, and a fierce and bitter blast swept in, upsetting a chair, spinning loose articles around the room.

"Close the emergency pack!" he yelled above the tumult. "I'll take a look."

Diane suppressed her upsurging fear as he vanished. She strapped the pack tightly, then poured the precious eighteen flame-orchids into a little leather pouch, and suspended this about her throat. She forced calmness upon herself; perhaps the ice cliff had stopped, or perhaps only the wind itself had snapped the warning post. She righted the chair and sat with her visor open despite the knife-sharp blasts from the door.

Tim was coming. She saw his gloved hand as he seized the doorframe, then his fur-masked face, eyes grins behind the non-frosting goggles.

"Outside!" he yelled, seizing the pack.

She rose and scrambled after him into the howling inferno just as the second bell clanged.

Barely in time! As the tornado sent her sprawling and clutching, she had a sharply etched glimpse of a mighty pinnacle of glittering ice looming high above

the shack; there was a rumble and a roar deeper than the winds, and the shack was gone. One iron wall, caught by the gale, swept like a giant bat above her, and she heard it go clanging and clattering along the slope to the east.

Dazed and horribly frightened, she clawed her way after Tim into the shelter of a ridge, watching him while he wrestled the pack that struggled in the blast like something living. She was calm when at last he got it strapped to his shoulders.

"This is the end, isn't it, Tim?" she said, putting her visor close against his helmet, "Because I'm glad I came with you, then. I'm glad it's both of us together."

Tim groaned despairingly, and the blast tore the sound away. He turned suddenly, slipping his arms around her figure. "I'm sorry, Di," he said huskily.

He wanted to kiss her—an impossibility, of course, in a Titanian night. It would have been a kiss of death; they would have died with lips frozen together. He put away the thought that maybe that might be a pleasanter way, since death was inevitable now, anyway. Better, he decided, to die fighting. He pulled her down into the lee of the ridge and sat thinking.

They couldn't stay here; that was obvious. The rocket wasn't due for three months, and long before then they'd be frozen corpses, rolling away before the hurricane or buried in some crevasse. They couldn't build a habitable shelter without tools, and if they could, their atomic stove was somewhere under the shifting cliff. They couldn't attempt the journey to Nivia, a hundred miles away across the Mountains of the Damned—or could they? That was the only possible alternative.

"Di," Tim said tensely, "we're going to Nivia. Don't be startled. Listen. The wind's just shifted. It's behind us; we have almost eight Earth days before it changes. If we can make it—twelve, thirteen miles a day—if we can make it, we'll be safe. If we don't make it before the wind shifts—" He paused. "Well, it's no worse than dying here."

Diane was silent. Tim frowned thoughtfully behind his goggles. It was a possibility. Pack, parka, and all, he weighed less than Earth weight; not as much less as one would think, of course. Titan, although no larger than Mercury, is a dense little world, and, besides, weight depends not only on a planet's density, but also on distance from its center. But the wind might not hinder them so much, since they were traveling with it, not against it. Its terrible thrust, fiercer than even an equal Earth wind because the air contained thirty per cent of the heavy gas xenon, would be dangerous enough, but—Anyway, they had no choice.

"Come on, Di," Tim said, rising. They had to keep moving now; they could rest later, after sunrise, when the danger of a frozen sleep was less.

Another terrible thought struck Tim—there would be only three more sunrises. Then for four Titanian days, the little satellite would be in the mighty shadow of Saturn, and during that long eclipse, heaven alone knew what terrific forces might attack the harassed pair crawling painfully toward Nivia, the City of Snow.

But that had to be faced, too. There was no alternative. Tim lifted Diane to her feet, and they crept cautiously out of the shelter of the ridge, bowing as the cruel wind caught them and bruised them, even through their thick suits, by flying ice fragments.

It was a dark night for Titan; Saturn was on the other side of the little world, along with the Sun it was soon to eclipse, but the stars shone brilliant and

twinkling through the shallow, but very dense and refractive, atmosphere. The Earth, which had so often lent a green spark of cheer to the lonely couple, was not among them; from the position of Titan, it was always near the Sun and showed only just before sunrise or just after sunset. Its absence now seemed a desolate omen.

They came to a long, smooth, wind-swept slope. They made the error of trying to cross it erect, trusting to their cleated shoes for secure footing. It was misjudgment; the wind thrust them suddenly into a run, pressed them faster and faster until it was impossible to stop, and they were staggering through the darkness toward unknown terrain ahead.

Tim flung himself recklessly against Diane; they fell in a heap and went sliding and rolling, to crash at last against a low wall of ice a hundred feet beyond.

They struggled up, and Diane moaned inaudibly from the pain of a bruised knee. They crept cautiously on; they ended a bottomless crevasse from the depths of which came strange roarings and shriekings; they slipped miserably past a glittering cliff that shook and shifted above them. And when at last the vast hulk of Saturn rose over the wild land before them, and the tiny reddish Sun followed like a ruby hung on a pendant, they were near exhaustion.

Tim supported Diane to a crevice facing the Sun. For many minutes they were silent, content to rest, and then he took a bar of chocolate from the pack and they ate, slipping the squares hastily through visors opened for each bite.

But under the combined radiance of Saturn and the Sun, the temperature rose rapidly more than a hundred degrees; when Tim glanced at his wrist thermometer it was already nearly thirty-eight, and pools of water were forming in the wind-sheltered spots. He scooped some up with a rubber cup, and they drank. Water at least was no problem.

Food might be, however, if they lived long enough to consume that in the pack. Humans couldn't eat Titanian life because of its arsenical metabolism; they had to exist on food laboriously transported from the Earth, or, as did the Nivian settlers, on Titanian creatures from whose substance the arsenic had first been chemically removed. The Nivians ate the ice-ants, the whiplash trees, and occasionally, it was sometimes whispered, the Titanian natives.

Diane had fallen asleep, lying huddled in a pool of icy water that flowed off into the open and then was whirled into sparkling spray by the wind. He shook her gently; they couldn't afford to lose time now, not with the shadow of the eclipse looming ominously so few hours away. But it tore his heart to see her eyes crinkle in a weary smile as she rose; he damned himself again for ever bringing her to this.

So they plodded on, haltered and trampled by the fierce and ruthless gale. He had no idea how far they had traveled during the night; from the crest of a high ridge he looked back, but the shifting hills of ice made localities hard to recognize, and he could not be sure that the grim escarpment far behind was actually the cliff that had crushed their shack.

He let Diane rest again from noon until sunset, nearly five hours. She regained much of the strength spent in the struggle of the night, but when the dropping sun set his wrist thermometer tumbling far toward the hundred-below-zero mark, it seemed to her as if she had not rested at all. Yet they survived another night of inferno, and the gray of dawn found them still staggering and stumbling before the incredible ferocity of that eternal wind.

During the morning a native appeared. They recognized him; in his clawed hands was the battered case of the eight-day clock. He sidled up to them, head toward the wind, and held out his short arms to display the mechanism; he whined plaintively and obviously thought himself cheated.

Tim felt an unreasoning hope at the sight of him, but it vanished immediately. The creature simply couldn't understand their predicament; Titan was the only world he knew, and he couldn't conceive of beings not adapted to its fierce environment. So the man stood silently as Diane wound the clock and responded dully to her smile as she returned it.

"This time, old fellow," she said to the native, "it's ticking away our lives. If we're not in Nivia by the time it stops again—" She patted the blunt head; the creature cooed and sidled away.

They rested and slept again during the afternoon, but it was a weary pair that faced the inferno of night. Diane was nearing exhaustion, not from lack of nourishment, but simply from the incessant battering she had received from the wind, and the terrific struggle that every step required. Tim was stronger, but his body ached, and the cold, striking somehow through the inch-thick parka had left him with a painfully frostbitten shoulder.

By two hours after sunset, he perceived hopelessly that Diane was not going to survive the night. She was struggling bravely, but she was unequal to the effort. She was weakening; the pitiless wind kept lashing her to her knees, and each time she rose more slowly, leaned more heavily on Tim's supporting arm. All too quickly came the moment he had foreseen with despairing heart, when she did not rise at all.

He crouched beside her; tears misted his goggles as he distinguished her words above the screaming of the blast.

"You go on, Tim," she murmured. She gestured toward the bag on her throat. "Take the flame-orchids and leave me."

Tim made no answer, but cradled her tired body in his arms, shielding her as best he could from the furious winds. He thought desperately. To remain here was quick death; at least he might carry Diane to some more sheltered spot, where they could sink more slowly into the fatal sleep of cold. To leave her was unthinkable; she knew that, too, but it had been a brave offer to make.

She clung weakly to him as he lifted her; he staggered a dozen steps before the wind toppled him, and the last struggle brought him to the lee of a low hillock. He dropped behind it and gathered the girl into his arms to wait for the cold to do its work.

He stared hopelessly ahead. The wild splendor of a Titanian night was before him, with the icy stars glittering on cold and glassy peaks. Just beyond their hillock stretched the smooth surface of a wind-swept glacier, and here and there were the crystalline bubbles of the ice-ants.

The ice-ants! Lucky little creatures! He remembered Young's description of them in the book at the shack. Within those domes it was warm; the temperature was above forty. He stared at them, fragile and yet resisting that colossal wind. He knew why; it was their ovoid shape, the same principle that enables an egg to resist the greatest pressure on its two ends. No one can break an egg by squeezing it endways.

Suddenly he started. A hope! He murmured a word to Diane, lifted her, and staggered out on the mirror-surface of the ice. There! There was a dome large enough—fully six feet across. He circled to the lee side and kicked a hole in the glittering roundness.

Diane crawled weakly through. He followed, crouching beside her in the dusk. Would it work? He gave a long cry of relief as he perceived the scurrying three-inch figures of the ice-ants, saw them patching the dome with crystal fragments.

Steam misted his nonfrothing goggles. He drew Diane against him and then opened his visor. Warm air! It was like balm after the bitter air without; it was musty, perhaps—but warm! He opened Diane's; she was sleeping in exhaustion and never stirred as he uncovered her pale, drawn features.

His eyes grew accustomed to the gloomy starlight that filtered through the dome. He could see the ice-ants, little three-legged ruddy balls that run about with a galloping motion. They weren't ants at all, of course, nor even insects in the terrestrial sense; Young had named them ants because they lived in antlike colonies.

Tim saw the two holes that pierced the saucerlike floor; through one, he knew, warm air came up from the mysterious hive below, and the other drained away the melting water of the dome. That dome would grow until it burst, but the ants didn't care; they'd sense the bursting point and have a new dome already started above the holes.

For a time he watched them; they paid no attention at all to the intruders, whose rubber suits offered nothing edible. They were semicivilized little creatures; he observed them curiously as they scraped a gray mold from the ice, loaded it on tiny sledges that he recognized as leaves of the whiplash tree, and tugged the load to one of the holes, dumping it in, presumably, to a handling crew below. And after a while he fell asleep, and precious time trickled away.

Hours later something awakened him to daylight. He sat up; he had been lying with his head pillowed on his arm to keep his face from the water, and he rubbed the half-paralyzed limb ruefully as he stared about. Diane was still sleeping, but her face was more peaceful, more rested. He smiled gently down on her, and suddenly a flicker of motion caught his eye and, at the same time, a flash of brilliance.

The first was only an ice-ant scurrying across the rubber of her parka. The flash was—he started violently—it was a flame-orchid rolling sluggishly in the stream of water to the vent, and there went another! The ants had cut and carried away for food the little leather bag, exposed on Diane's breast by the opening of her visor.

He snatched the rolling gem of flame from the trickling water and searched desperately for the others. No use. Of their eighteen precious ovoids, he had retrieved exactly one—the small but perfect one for which they had traded the clock. He gazed in utter despondency at the flaming little egg for which they had risked—and probably lost—everything.

Diane stirred, sat up. She saw at once the consternation in his face. "Tim!" she cried. "What's wrong now?"

He told her. "It's my fault," he concluded grimly. "I opened your suit. I should have foreseen this." He slipped the lone gem into his left gauntlet, where it nestled against his palm.

"It's nothing, Tim," said Diane softly. "What use would all eighteen be to us, or a hundred? We might as well die with one as with all of them."

He did not answer directly. He said: "Even one will be enough if we get back. Perhaps eighteen would have glutted the market; perhaps we'll get almost as much for one as we would have for all."

That was a lie, of course; other traders would be increasing the supply, but it served to distract her mind.

Tim noticed then that the ice-ants were busy around the two vents at the center; they were building an inner dome. The crystal egg above them, now eight feet through, was about to crack.

He saw it coming, and they closed their visors. There was a jagged streak of light on the west, and suddenly, with a glistening of fragments, the walls collapsed and went spinning away over the icy floor, and the wind howled down upon them, nearly flattening them to the glacier! It began to thrust them over the ice.

They slid and crawled their way to the jagged crags beyond. Diane was strong again; her young body recovered quickly. In a momentary shelter, he noticed something queer about the light and glanced up to see gigantic Saturn almost half obscuring the Sun. He remembered then. This was the last day; for seventy-two hours there would be night.

And night fell far too quickly. Sunset came with the red disk three quarters obscured, and the bitter cold swept out of the west with a horde of ice ghosts, whose sharp needles clogged the filters of their masks and forced them to shake them out time after time.

The temperature had never been higher than forty below all day, and the night air, coming after that cold day, dropped rapidly to a hundred below, and even the warming filters could not prevent that frigid air from burning in their lungs like searing flame.

Tim sought desperately for an ice-ant bubble. Those large enough were rare, and when at last he found one, it was already too large, and the ice-ants didn't trouble to repair the hole he kicked, but set at once to build a new dome. In half an hour the thing collapsed, and they were driven on.

Somehow, they survived the night, and dawn of the fourth day found them staggering all but helpless into the lee of a cliff. They stared hopelessly at that strange, sunless, Saturn-lighted dawn that brought so little warmth.

An hour after the rising of the eclipsed Sun, Tim glanced at his wrist thermometer to find the temperature risen only to seventy below. They ate some chocolate, but each bite was a burning pain for the moment that their visors were open, and the chocolate itself was numbing cold.

When numbness and drowsiness began to attack his limbs, Tim forced Diane to rise, and they struggled on. Day was no better than night now, except for the cold Saturn light. The wind battered them more fiercely than ever; it was scarcely mid-afternoon, when Diane, with a faintly audible moan, collapsed to her knees and could not rise.

Tim stared frantically about for an ice bubble. At last, far over to the right, he saw a small one, three feet through, perhaps, but big enough for Diane. He could not carry her; he took her shoulders and dragged her painfully to it. She managed to creep wearily in and he warned her to sleep with her visor closed, lest the ants attack her face. A quarter of a mile downwind he found one for himself.

It was the collapse of the bubble that wakened him. It was night again, a horrible, shrieking, howling, blasting night when the temperature on his thermometer showed a hundred and forty below. Stark fear gripped him. If

Diane's shelter had fallen! He fought his way madly against the wind to the spot and shouted in relief. The dome had grown, but still stood; he kicked his way in to find Diane trembling and pallid; she had feared him lost or dead. It was almost dawn before the shelter collapsed.

Strangely, that day was easier. It was bitterly cold, but they had reached the foothills of the Mountains of the Damned, and ice-covered crags offered shelter from the winds. Diane's strength held better; they made the best progress they had yet achieved.

But that meant little now, for there before them, white and glittering and cold, loomed the range of mountains, and Tim despaired when he looked at them. Just beyond, perhaps twenty-five miles away, lay Nivia and safety, but how were they ever to cross those needle peaks?

Diane was still on her feet at nightfall. Tim left her standing in the shelter of a bank of ice and set out to find an ant bubble. But this time he failed. He found only a few tiny six-inch domes; there was nothing that offered refuge from a night that promised to be fiercer than any he had seen. He returned at last in despair.

"We'll have to move farther," he told her.

Her grave, weary eyes frightened him.

"No matter," she said quietly. "We'll never cross the Mountains of the Damned, Tim. But I love you."

They moved on. The night dropped quickly to a hundred and forty below, and their limbs turned numb and slow to respond. Ice ghosts whirred past them; cliffs quaked and rumbled. In half an hour they were both nearing exhaustion, and no crystal shelter appeared.

In the lee of a ridge Diane paused, swaying against him, "No use, Tim," she murmured. "I'd rather die here than fight longer. I can't." She let herself sink to the ice, and that action saved their lives.

Tim bent over her, and as he did a black shadow and glistening beak cleaved the air where his head had been. A knife-kite! Its screech of anger drifted faintly back as it whirled away on that hundred-mile wind.

"You see," said the girl, "it's hopeless."

Tim gazed dully around, and it was then that he saw the funnel. Young had mentioned these curious caves in the ice, and sometimes in the rocks, of the Mountains of the Damned. Opening always north or south, he had thought them the homes of the natives, so placed and shaped to prevent their filling with ice needles. But the traders had learned that the natives have no homes.

"We're going in there!" Tim cried.

He helped Diane to her feet and they crept into the opening. The funnellike passage narrowed, then widened suddenly into a chamber, where steam condensed instantly on their goggles. That meant warmth; they opened their visors, and Tim pulled out his electric torch.

"Look!" gasped Diane. In the curious chamber, walled half by ice and half by rock of the mountain, lay what was unmistakably a fallen, carved column.

"Good Heaven!" Tim was startled momentarily from his worries. "This iceberg harbored a native culture once! I'd never have given those primitive devils credit for it."

"Perhaps the natives weren't responsible," said the girl. "Perhaps there was once some higher creature on Titan, hundreds of thousands of years ago, when Saturn was hot enough to warm it. Or perhaps there still is."

Her guess was disastrously right. A voice said, "*Um, uzza, uzza,*" and they turned to stare at the creature emerging from a hole in the rock wall. A face—no, not a face, but a proboscis like the head end of a giant earthworm, that kept thrusting itself to a point, then contracting to a horrible, red, ringed disk.

At the point was the hollow fang or sucking tooth, and above it on a quivering stalk, the ice-green, hypnotic eye of a Titanian threadworm, the first ever to be faced by man. They gazed in horrified fascination as the tubular body slid into the chamber, its ropelike form diminishing at the end to the thickness of a hair.

"*Uzza, uzza, uzza,*" it said, and strangely, their minds translated the sounds. The thing was saying "Sleep, sleep, sleep," over and over.

Tim snatched for his revolver—or intended to. The snatch turned into a gentle, almost imperceptible movement, and then died to immobility. He was held utterly helpless under the glare of the worm's eye.

"*Uzza, uzza, uzza,*" thrummed the thing in a soothing, slumberous buzz. "*Uzza, uzza, uzza.*" The sound drummed sleepily in his ears. He was sleepy anyway, worn to exhaustion by the hell without. "*Una, uzza, uzza.*" Why not sleep?

It was the quick-witted Diane who saved them. Her voice snapped him to wakefulness. "We are sleeping," she said. "We're both asleep. This is the way we sleep. Don't you see? We're both fast asleep."

The thing said "*Uzza, uzza,*" and paused as if perplexed.

"I tell you we're sleeping!" insisted Diane.

"*Vera!*" buzzed the worm.

It was silent, stretching its terrible face toward Diane. Suddenly Tim's arm snapped in sharp continuation of his interrupted movement, the gun burned cold through his glove, and then spat blue flame.

A shriek answered. The worm, coiled like a spring, shot its bloody face toward the girl. Unthinking, Tim leaped upon it; his legs tangled in its ropy length and he crashed on his hands against the rocky wall. But the worm was fragile; it was dead and in several pieces when he rose.

"Oh!" gasped Diane, her face white. "How—how horrible! Let's get away—quickly!" she swayed and sat weakly on the floor. "It's death outside," said Tim grimly.

He gathered the ropy worm in his hands, stuffed it back into the hole whence it had emerged. Then, very cautiously, he flashed his beam into the opening, peered through. He drew back quickly.

"Ugh!" he said, shuddering.

"What, Tim? What's there?"

"A—a brood of 'em." He raised the broken end of the column in his arms; the shaft fitted the hole. "At least that will fall if another comes," he muttered. "We'll be warned. Di, we've got to rest here a while. Neither of us could last an hour out there."

She smiled wanly. "What's the difference, Tim? I'd rather die in clean cold than by—by those things." Rut in five minutes she was sleeping.

As soon as she slept, Tim slipped the glove from his left hand and stared gloomily at their lone flame-orchid. He had felt it shatter when he struck the wall, and there it lay, colorless, broken, worthless. They had nothing left now, nothing but life, and probably little more of that.

He cast the pieces to the rock-dusty floor and then seized a fragment of stone and viciously pounded the jewel into dull powder and tiny splinters. It vented his feelings.

Despite his determination, he must have dozed. He woke with a start, glanced fearfully at the plugged hole, and then noticed that dim green light filtered through the ice wall. Dawn. At least, as much dawn as they'd get during the eclipse. They'd have to leave at once, for to-day they must cross the peaks. They must, for to-night would see the shifting of the wind, and when that occurred, hope would vanish.

He woke Diane, who sat up so wearily that his eyes felt tears of pity. She made no comment when he suggested leaving, but there was no hope in her obedience. He rose to creep through the funnel, to be there to help her when the wind struck her.

"Tim!" she shrieked. "Tim! What's that?"

He spun around. She was pointing at the floor where he had slept and where now flashed a thousand changing colors like rainbow fire. Flame-orchids! Each splinter he had cracked from the ruined one was now a fiery gem; each tiny grain was sprouting from the rock dust of the floor.

Some were as large as the original, some were tiny flames no bigger than peas, but all glowed perfect and priceless. Fifty of them—a hundred, if one counted the tiny ones.

They gathered them. Tim told her of their origin, and carefully wrapped a few grains of the rock dust in tinfoil from their chocolate.

"Have it analyzed," he explained. "Perhaps we can raise 'em back on Earth."

"If we ever—" began Diane, and then was silent. Let Tim find what pleasure he could in the discovery.

She followed him through the passage into the howling inferno of Titanian eclipse weather.

That day gave both of them all the experience of souls condemned to hell. They struggled hour after hour up the ice-coated slopes of the Mountains of the Damned. The air thinned and turned so cold that the hundred and fifty below which was the minimum on Tim's thermometer dial was insufficient and the needle rested full against the stop.

The wind kept flinging them flat against the slopes, and a dozen times the very mountains heaved beneath them. And this was day; what, he wondered fearfully, would night be like, here among the peaks of the Mountains of the Damned?

Diane drove herself to the limit, and even beyond. This was their last chance; at least they must surmount the crest before the wind shifted. Again and again she fell, but each time she rose and clambered on. And for a time, just before evening, it seemed that they might make it.

A mile from the summit the wind died to that wierd, unnatural calm that marked, if you care to call it so, the half-hour Titanian summer season. They bunt into a final effort; they rushed up the rugged slope until their blood pounded in their ears. And a thousand feet short of the summit, while they hung helplessly to a steep icy incline, they heard far off the rising whine that meant failure.

Tim paused; effort was useless now. He cast one final glance over the wild magnificence of the Titanian landscape, then leaned close to Diane.

"Good-by, ever valiant," he murmured. "I think you loved me more than I deserved."

Then, with a bellow of triumph, the wind howled down from the peaks, sending them sliding along the crag into darkness.

It was night when Tim recovered. He was stiff, numb, battered, but living. Diane was close beside him; they had been caught in a cupped hollow full of ice crystals.

He bent over the girl. In that roaring wind he couldn't tell if she lived; at least her body was limp, not yet frozen or set in the rigor of death. He did the only thing possible to him; he clutched her wrist and started clawing his way against that impossible gale, dragging her behind him.

A quarter mile away showed the summit. He ascended a dozen feet; the wind hurled him back. He gained fifty feet; the wind smashed him back into the hollow. Yet, somehow, dazed, all but unconscious, he managed to drag, push, roll Diane's body along with him.

He never knew how long it took, but he made it. While the wind bellowed in colossal anger, somehow, by some miracle of doggedness, he thrust Diane across the ridge of the summit, dragged himself after, and gazed without comprehension on the valley beyond, where glowed the lights of Nivia, the City of Snow.

For a while he could only cling there, then some ghost of reason returned. Diane, loyal, courageous Diane, was here dying, perhaps dead. Doggedly, persistently, he pushed and rolled her down the slope against a wind that sometimes lifted her into mid-air and flung her back against his face. For a long time he remembered nothing at all, and then suddenly he was pounding on a metal door, and it was opening.

Tim couldn't sleep yet. He had to find out about Diane, so he followed the government man back through the sunken passage to the building that served Nivia as hospital. The flame-orchids were checked, safe; theft was impossible in Nivia, with only fifty inhabitants and no way for the thief to escape.

The doctor was bending over Diane; he had stripped off her parka and was flexing her arms, then her bared legs.

"Nothing broken," he said to Tim. "Just shock, exposure, exhaustion, half a dozen frostbites, and a terrific mauling from the wind. Oh, yes—and a minor concussion. And a hundred bruises, more or less."

"Is that all?" breathed Tim. "Are you sure that's all?"

"Isn't that enough?" snapped the doctor.

"But she'll—live?"

"She'll tell you so herself in half an hour." His tone changed to admiration. "I don't see how you did it! This'll be a legend, I tell you. And I hear you're rich, too," he added enviously. "Well, I've a feeling you deserve it."

