SHORT STORIES

STANLEY G. WEINBAUM

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BY

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Short Stories by Stanley G. Weinbaum.

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He locked the door on the outside, and set about stuffing the crack below it with cotton. It was far from airtight, but that mattered little, he mused, since one had to allow for the escape of the replaced atmosphere.

He returned to Bach's room. "Give me a minute," he whispered. "Then turn it on."

He stepped to a window. Outside was a two-foot ledge of stone, and he crept to this precarious perch. He was visible from the street below, but not markedly noticeable, for he was directly above an areaway between Bach's house and its neighbor. He prayed fervently that he might escape attention.

He crept along the ledge. The two windows of Kyra's chamber were wide, but Bach had done his work. They slid downward, without a creak, and he pressed close against the glass to peer in.

Across the room glowed the faint and steady flame of his little taper. Close beside him, within a short arm's length had no pane intervened, lay Kyra, quite visible in the dusk. She lay on her back, with one arm thrown above her unbelievable hair, and she had drawn only a single sheet over her. He could watch her breathing, quiet, calm, peaceful.

It seemed as if a long time passed. He fancied at last that he could hear the gentle hiss of gas from Bach's window, but he knew that that must be fancy. In the chamber he watched there was no sign of anything unusual; the glorious Kyra slept as she did everything else—easily, quietly, and confidently.

Then there was a sign. The little candle flame, burning steadily in the draughtless air, flickered suddenly. He watched it, certain now that its color was changing. Again it flickered, flared for a moment, then died. A red spark glowed on the wick for a bare instant, then that was gone.

The candle flame was smothered. That meant a concentration of eight or ten per cent of carbon dioxide in the room's temperature—far too high to support ordinary life. Yet Kyra was living. Except that her quiet breathing seemed to have deepened, she gave not even a sign of inconvenience. She had adapted to the decreased oxygen supply.

But there must be limits to her powers. He blinked into the darkness. Surely—surely her breathing was quickening. He was positive now; her breast rose and fell in convulsive gasps, and somewhere in his turbulent mind the scientist in him recorded the fact.

"Cheyne-Stokes breathing," he muttered. In a moment the violence of it would waken her.

It did. Suddenly the silver eyes started open. She brushed her hand across her mouth, then clutched at her throat. Aware instantly of danger, she thrust herself erect, and her bare legs flashed as she pushed herself from the bed. But she must have been dazed, for she turned first to the door.

He saw the unsteadiness in her movements. She twisted the doorknob, tugged frantically, then whirled toward the window. He could see her swaying as she staggered through the vitiated air, but she reached it. Her face was close to his, but he doubted if she saw him, for her eyes were wide and frightened, and her mouth and throat were straining violently for breath. She raised her hand to smash the pane; the blow landed, but weakly, and the window shook but did not shatter.

Again her arm rose, but that blow was never delivered. For a moment she stood poised, swaying slowly, then her magnificent eyes misted and closed, she dropped to her knees, and at last collapsed limply on the floor.

Scott waited a long, torturing moment, then thrust up the window. The rush of lifeless air sent him whirling dizzily on his dangerous perch, and he clutched the casement. Then a slow breeze moved between the buildings, and his head cleared.

He stepped gingerly into the chamber. It was stifling, but near the open window he could breathe. He kicked thrice against Bach's wall.

The hiss of gas ceased. He gathered Kyra's form in his arms, waited until he heard the key turn, then dashed across the room and into the library.

Bach stared as if fascinated at the pure features of the girl. "A goddess overcome," he said. "There is something sinful about our part in this."

"Be quick!" snapped Scott. "She's unconscious, not anesthetized. God knows how quickly she'll readjust."

But she had not yet recovered when Scott laid her on the operating table in Bach's office, and drew the straps about her arms and body and slim bare legs. He looked down on her still, white face and bright hair, and he felt his heart contract with pain to see them darken ever so faintly and beautifully under the brilliant operating light, rich in actinic rays.

"You were right," he whispered to the unhearing girl. "Had I your courage there is nothing we might not have attained together."

Bach spoke brusquely. "Nasal?" he asked. "Or shall I trephine her?"

"Nasal."

"But I should like a chance to observe the pineal gland. This case is unique, and—"

"Nasal!" blazed Scott. "I won't have her scarred!"

Bach sighed and began. Scott, despite his long hospital experience, found himself quite unable to watch this operation; he passed the old man his instruments as needed, but kept his eyes averted from the girl's passive and lovely face.

"So!" said Bach at last. "It is done." For the first time he himself had a moment's leisure to survey Kyra's features.

Bach started violently. Gone was the exquisite aluminum hair, replaced by the stringy, dark, and oily locks of the girl in the hospital! He pried open her eye, silver no longer, but pallid blue. Of all her loveliness, there remained—what? A trace, perhaps; a trace in the saintlike purity of her pale face, and in the molding of her features. But a flame had died; she was a goddess no longer, but a mortal—a human being. The superwoman had become no more than a suffering girl.

An ejaculation had almost burst from his lips when Scott's voice stopped him.

"How beautiful she is!" he whispered. Bach stared. He realized suddenly that Scott was not seeing her as she was, but as she once had been. To his eyes, colored by love, she was still Kyra the magnificent.

THE MAD MOON (1935)

"IDIOTS!" howled Grant Calthorpe. "Fools—nitwits—imbeciles!" He sought wildly for some more expressive terms, failed and vented his exasperation in a vicious kick at the pile of rubbish on the ground.

Too vicious a kick, in fact; he had again forgotten the one-third normal gravitation of Io, and his whole body followed his kick in a long, twelve-foot arc.

As he struck the ground the four loonies giggled. Their great, idiotic heads, looking like nothing so much as the comic faces painted on Sunday balloons for children, swayed in unison on their five-foot necks, as thin as Grant's wrist.

"Get out!" he blazed, scrambling erect. "Beat it, skiddoo, scram! No chocolate. No candy. Not until you learn that I want ferva leaves, and not any junk you happen to grab. Clear out!"

The loonies—*Lunae Jovis Magnicapites*, or literally, Bigheads of Jupiter's Moon—backed away, giggling plaintively. Beyond doubt, they considered Grant fully as idiotic as he considered them, and were quite unable to understand the reasons for his anger. But they certainly realized that no candy was to be forthcoming, and their giggles took on a note of keen disappointment.

So keen, indeed, that the leader, after twisting his ridiculous blue face in an imbecilic grin at Grant, voiced a last wild giggle and dashed his head against a glittering stone-bark tree. His companions casually picked up his body and moved off, with his head dragging behind them on its neck like a prisoner's ball on a chain.

Grant brushed his hand across his forehead and turned wearily toward his stone-bark log shack. A pair of tiny, glittering red eyes caught his attention, and a slinker—*Mus Sapiens*—skipped his six-inch form across the threshold,

bearing under his tiny, skinny arm what looked very much like Grant's clinical thermometer.

Grant yelled angrily at the creature, seized a stone, and flung it vainly. At the edge of the brush, the slinker turned its ratlike, semihuman face toward him, squeaked its thin gibberish, shook a microscopic fist in manlike wrath, and vanished, its batlike cowl of skin fluttering like a cloak. It looked, indeed, very much like a black rat wearing a cape.

It had been a mistake, Grant knew, to throw the stone at it. Now the tiny fiends would never permit him any peace, and their diminutive size and pseudo-human intelligence made them infernally troublesome as enemies. Yet, neither that reflection nor the loony's suicide troubled him particularly; he had witnessed instances like the latter too often, and besides, his head felt as if he were in for another siege of white fever.

He entered the shack, closed the door, and stared down at his pet parcat. "Oliver," he growled, "you're a fine one. Why the devil don't you watch out for slinkers? What are you here for?"

The parcat rose on its single, powerful hind leg, clawing at his knees with its two forelegs. "The red jack on the black queen," it observed placidly. "Ten loonies make one half-wit."

Grant placed both statements easily. The first was, of course, an echo of his preceding evening's solitaire game, and the second of yesterday's session with the loonies. He grunted abstractedly and rubbed his aching head. White fever again, beyond doubt.

He swallowed two ferverin tablets, and sank listlessly to the edge of his bunk, wondering whether this attack of *blancha* would culminate in delirium.

He cursed himself for a fool for ever taking this job on Jupiter's third habitable moon, Io. The tiny world was a planet of madness, good for nothing except the production of ferva leaves, out of which Earthly chemists made as many potent alkaloids as they once made from opium.

Invaluable to medical science, of course, but what difference did that make to him? What difference, even, did the munificent salary make, if he got back

to Earth a raving maniac after a year in the equatorial regions of Io? He swore bitterly that when the plane from Junopolis landed next month for his ferva, he'd go back to the polar city with it, even though his contract with Neilan Drug called for a full year, and he'd get no pay if he broke it. What good was money to a lunatic?

The whole little planet was mad—loonies, parcats, slinkers and Grant Calthorpe—all crazy. At least, anybody who ever ventured outside either of the two polar cities, Junopolis on the north and Herapolis on the south, was crazy. One could live there in safety from white fever, but anywhere below the twentieth parallel it was worse than the Cambodian jungles on Earth.

He amused himself by dreaming of Earth. Just two years ago he had been happy there, known as a wealthy, popular sportsman. He had been just that too; before he was twenty-one he had hunted knife-kite and threadworm on Titan, and triops and uniped on Venus.

That had been before the gold crisis of 2110 had wiped out his fortune. And—well, if he had to work, it had seemed logical to use his interplanetary experience as a means of livelihood. He had really been enthusiastic at the chance to associate himself with Neilan Drug.

He had never been on Io before. This wild little world was no sportsman's paradise, with its idiotic loonies and wicked, intelligent, tiny slinkers. There wasn't anything worth hunting on the feverish little moon, bathed in warmth by the giant Jupiter only a quarter million miles away.

If he *had* happened to visit it, he told himself ruefully, he'd never have taken the job; he had visualized Io as something like Titan, cold but clean.

Instead it was as hot as the Venus Hotlands because of its glowing primary, and subject to half a dozen different forms of steamy daylight—sun day, Jovian day, Jovian and sun day, Europa light, and occasionally actual and dismal night. And most of these came in the course of Io's forty-two-hour revolution, too—a mad succession of changing lights. He hated the dizzy days, the jungle, and Idiots' Hills stretching behind his shack.

It was Jovian and solar day at the present moment, and that was the worst of all, because the distant sun added its modicum of heat to that of Jupiter.

And to complete Grant's discomfort now was the prospect of a white fever attack. He swore as his head gave an additional twinge, and then swallowed another ferverin tablet. His supply of these was diminishing, he noticed; he'd have to remember to ask for some when the plane called—no, he was going back with it.

Oliver rubbed against his leg. "Idiots, fools, nitwits, imbeciles," remarked the parcat affectionately. "Why did I have to go to that damn dance?"

"Huh?" said Grant. He couldn't remember having said anything about a dance. It must, he decided, have been said during his last fever madness.

Oliver creaked like the door, then giggled like a loony. "It'll be all right," he assured Grant. "Father is bound to come soon."

"Father!" echoed the man. His father had died fifteen years before. "Where'd you get that from, Oliver?"

"It must be the fever," observed Oliver placidly. "You're a nice kitty, but I wish you had sense enough to know what you're saying. And I wish father would come." He finished with a supressed gurgle that might have been a sob.

Grant stared dizzily at him. He hadn't said any of those things; he was positive. The parcat must have heard them from somebody else—Somebody else? Where within five hundred miles was there anybody else?

"Oliver!" he bellowed. "Where'd you hear that? Where'd you hear it?"

The parcat backed away, startled. "Father is idiots, fools, nitwits, imbeciles," he said anxiously. "The red jack on the nice kitty."

"Come here!" roared Grant. "Whose father? Where have you—Come here, you imp!"

He lunged at the creature. Oliver flexed his single hind leg and flung himself frantically to the cowl of the wood stove. "It must be the fever!" he squalled. "No chocolate!"

He leaped like a three-legged flash for the flue opening. There came a sound of claws grating on metal, and then he had scrambled through.

Grant followed him. His head ached from the effort, and with the still sane part of his mind he knew that the whole episode was doubtless white fever delirium, but he plowed on.

His progress was a nightmare. Loonies kept bobbing their long necks above the tall bleeding-grass, their idiotic giggles and imbecilic faces adding to the general atmosphere of madness.

Wisps of fetid, fever-bearing vapors spouted up at every step on the spongy soil. Somewhere to his right a slinker squeaked and gibbered; he knew that a tiny slinker village was over in that direction, for once he had glimpsed the neat little buildings, constructed of small, perfectly fitted stones like a miniature medieval town, complete to towers and battlements. It was said that there were even slinker wars.

His head buzzed and whirled from the combined effects of ferverin and fever. It was an attack of *blancha*, right enough, and he realized that he was an imbecile, a loony, to wander thus away from his shack. He should be lying on his bunk; the fever was not serious, but more than one man had died on Io, in the delirium, with its attendant hallucinations.

He was delirious now. He knew it as soon as he saw Oliver, for Oliver was placidly regarding an attractive young lady in perfect evening dress of the style of the second decade of the twenty-second century. Very obviously that was a hallucination, since girls had no business in the Ionian tropics, and if by some wild chance one should appear there, she would certainly not choose formal garb.

The hallucination had fever, apparently, for her face was pale with the whiteness that gave *blancha* its name. Her gray eyes regarded him without surprise as he wound his way through the bleeding-grass to her.

"Good afternoon, evening, or morning," he remarked, giving a puzzled glance at Jupiter, which was rising, and the sun, which was setting. "Or perhaps merely good day, Miss Lee Neilan."

She gazed seriously at him. "Do you know," she said, "you're the first one of the illusions that I haven't recognized? All my friends have been around, but

you're the first stranger. Or are you a stranger? You know my name—but you ought to, of course, being my own hallucination."

"We won't argue about which of us is the hallucination," he suggested. "Let's do it this way. The one of us that disappears first is the illusion. Bet you five dollars you do."

"How could I collect?" she said. "I can't very well collect from my own dream."

"That is a problem." He frowned. "My problem, of course, not yours. I know I'm real."

"How do you know my name?" she demanded.

"Ah!" he said. "From intensive reading of the society sections of the newspapers brought by my supply plane. As a matter of fact, I have one of your pictures cut out and pasted next to my bunk. That probably accounts for my seeing you now. I'd like to really meet you some time."

"What a gallant remark for an apparition!" she exclaimed. "And who are you supposed to be?"

"Why, I'm Grant Calthorpe. In fact, I work for your father, trading with the loonies for ferva."

"Grant Calthorpe," she echoed. She narrowed her fever-dulled eyes as if to bring him into better focus. "Why, you are!"

Her voice wavered for a moment, and she brushed her hand across her pale brow. "Why should you pop out of my memories? It's strange. Three or four years ago, when I was a romantic schoolgirl and you the famous sportsman, I was madly in love with you. I had a whole book filled with your pictures—Grant Calthorpe dressed in parka for hunting threadworms on Titan—Grant Calthorpe beside the giant uniped he killed near the Mountains of Eternity. You're-you're really the pleasantest hallucination I've had so far. Delirium would be—fun"—she pressed her hand to her brow again—"if one's head—didn't ache so!"

"Gee!" thought Grant, "I wish that were true, that about the book. This is what psychology calls a wish-fulfillment dream." A drop of warm rain plopped on his neck. "Got to get to bed," he said aloud. "Rain's bad for *blancha*. Hope to see you next time I'm feverish."

"Thank you," said Lee Neilan with dignity. "It's quite mutual."

He nodded, sending a twinge through his head. "Here, Oliver," he said to the drowsing parcat. "Come on."

"That isn't Oliver," said Lee. "It's Polly. It's kept me company for two days, and I've named it Polly."

"Wrong gender," muttered Grant. "Anyway, it's my parcat, Oliver. Aren't you Oliver?"

"Hope to see you," said Oliver sleepily.

"It's Polly. Aren't you, Polly?"

"Bet you five dollars," said the parcat. He rose, stretched and loped off into the underbrush. "It must be the fever," he observed as he vanished.

"It must be," agreed Grant. He turned away. "Good-by, Miss—or I might as well call you Lee, since you're not real. Good-by, Lee."

"Good-by, Grant. But don't go that way. There's a slinker village over in the grass."

"No. It's over there."

"It's *there*," she insisted. "I've been watching them build it. But they can't hurt you anyway, can they? Not even a slinker could hurt an apparition. Good-by, Grant." She closed her eyes wearily.

It was raining harder now. Grant pushed his way through the bleeding-grass, whose red sap collected in bloody drops on his boots. He had to get back to his shack quickly, before the white fever and its attendant delirium set him wandering utterly astray. He needed ferverin.

Suddenly he stopped short. Directly before him the grass had been cleared away, and in the little clearing were the shoulder-high towers and

battlements of a slinker village—a new one, for half-finished houses stood among the others, and hooded six-inch forms toiled over the stones.

There was an outcry of squeaks and gibberish. He backed away, but a dozen tiny darts whizzed about him. One stuck like a toothpick in his boot, but none, luckily, scratched his skin, for they were undoubtedly poisoned. He moved more quickly, but all around in the thick, fleshy grasses were rustlings, squeakings, and incomprehensible imprecations.

He circled away. Loonies kept popping their balloon heads over the vegetation, and now and again one giggled in pain as a slinker bit or stabbed it. Grant cut toward a group of the creatures, hoping to distract the tiny fiends in the grass, and a tall, purple-faced loony curved its long neck above him, giggling and gesturing with its skinny fingers at a bundle under its arm.

He ignored the thing, and veered toward his shack. He seemed to have eluded the slinkers, so he trudged doggedly on, for he needed a ferverin tablet badly. Yet, suddenly he came to a frowning halt, turned, and began to retrace his steps.

"It can't be so," he muttered. "But she told me the truth about the slinker village. I didn't know it was there. Yet how could a hallucination tell me something I didn't know?"

Lee Neilan was sitting on the stone-bark log exactly as he had left her with Oliver again at her side. Her eyes were closed, and two slinkers were cutting at the long skirt of her gown with tiny, glittering knives.

Grant knew that they were always attracted by Terrestrial textiles; apparently they were unable to duplicate the fascinating sheen of satin, though the fiends were infernally clever with their tiny hands. As he approached, they tore a strip from thigh to ankle, but the girl made no move. Grant shouted, and the vicious little creatures mouthed unutterable curses at him, as they skittered away with their silken plunder.

Lee Neilan opened her eyes. "You again," she murmured vaguely. "A moment ago it was father. Now it's you." Her pallor had increased; the white fever was running its course in her body.

"Your father! Then that's where Oliver heard—Listen, Lee. I found the slinker village. I didn't know it was there, but I found it just as you said. Do you see what that means? We're both real!"

"Real?" she said dully. "There's a purple loony grinning over your shoulder. Make him go away. He makes me feel—sick."

He glanced around; true enough, the purple-faced loony was behind him. "Look here," he said, seizing her arm. The feel of her smooth skin was added proof. "You're coming to the shack for ferverin." He pulled her to her feet. "Don't you understand? I'm real!"

"No, you're not," she said dazedly.

"Listen, Lee. I don't know how in the devil you got here or why, but I know Io hasn't driven me that crazy yet. You're real and I'm real." He shook her violently. "I'm *real!*" he shouted.

Faint comprehension showed in her dazed eyes. "Real?" she whispered. "Real! Oh, Lord! Then take—me out of this mad place!" She swayed, made a stubborn effort to control herself, then pitched forward against him.

Of course on Io her weight was negligible, less than a third Earth normal. He swung her into his arms and set off toward the shack, keeping well away from both slinker settlements. Around him bobbed excited loonies, and now and again the purple-faced one, or another exactly like him, giggled and pointed and gestured.

The rain had increased, and warm rivulets flowed down his neck, and to add to the madness, he blundered near a copse of stinging palms, and their barbed lashes stung painfully through his shirt. Those stings were virulent too, if one failed to disinfect them; indeed, it was largely the stinging palms that kept traders from gathering their own ferva instead of depending on the loonies.

Behind the low rain clouds, the sun had set and it was ruddy Jupiter daylight, which lent a false flush to the cheeks of the unconscious Lee Neilan, making her still features very lovely.

Perhaps he kept his eyes too steadily on her face, for suddenly Grant was among slinkers again; they were squeaking and sputtering, and the purple loony leaped in pain as teeth and darts pricked his legs. But, of course, loonies were immune to the poison.

The tiny devils were around his feet now. He swore in a low voice and kicked vigorously, sending a ratlike form spinning fifty feet in the air. He had both automatic and flame pistol at his hip, but he could not use them for several reasons.

First, using an automatic against the tiny hordes was much like firing into a swarm of mosquitoes; if the bullet killed one or two or a dozen, it made no appreciable impression on the remaining thousands. And as for the flame pistol, that was like using a Big Bertha to swat a fly. Its vast belch of fire would certainly incinerate all the slinkers in its immediate path, along with grass, trees, and loonies, but that again would make but little impress on the surviving hordes, and it meant laboriously recharging the pistol with another black diamond and another barrel.

He had gas bulbs in the shack, but they were not available at the moment, and besides, he had no spare mask, and no chemist has yet succeeded in devising a gas that would kill slinkers without being also deadly to humans. And, finally, he couldn't use any weapon whatsoever right now, because he dared not drop Lee Neilan to free his hands.

Ahead was the clearing around the shack. The space was full of slinkers, but the shack itself was supposed to be slinkerproof, at least for reasonable lengths of time, since stone-bark logs were very resistant to their tiny tools.

But Grant perceived that a group of the diminutive devils were around the door, and suddenly he realized their intent. They had looped a cord of some sort over the knob, and were engaged now in twisting it!

Grant yelled and broke into a run. While he was yet half a hundred feet distant, the door swung inward and the rabble of slinkers flowed into the shack.

He dashed through the entrance. Within was turmoil. Little hooded shapes were cutting at the blankets on his bunk, his extra clothing, the sacks he hoped to fill with ferva leaves, and were pulling at the cooking utensils, or at any and all loose objects.

He bellowed and kicked at the swarm. A wild chorus of squeaks and gibberish arose as the creatures skipped and dodged about him. The fiends were intelligent enough to realize that he could do nothing with his arms occupied by Lee Neilan. They skittered out of the way of his kicks, and while he threatened a group at the stove, another rabble tore at his blankets.

In desperation he charged the bunk. He swept the girl's body across it to clear it, dropped her on it, and seized a grass broom he had made to facilitate his housekeeping. With wide strokes of its handle he attacked the slinkers, and the squeals were checkered by cries and whimpers of pain.

A few broke for the door, dragging whatever loot they had. He spun around in time to see half a dozen swarming around Lee Neilan, tearing at her clothing, at the wrist watch on her arm, at the satin evening pumps on her small feet. He roared a curse at them and battered them away, hoping that none had pricked her skin with virulent dagger or poisonous tooth.

He began to win the skirmish. More of the creatures drew their black capes close about them and scurried over the threshold with their plunder. At last, with a burst of squeaks, the remainder, laden and empty-handed alike, broke and ran for safety, leaving a dozen furry, impish bodies slain or wounded.

Grant swept these after the others with his erstwhile weapon, closed the door in the face of a loony that bobbed in the opening, latched it against any repetition of the slinker's trick, and stared in dismay about the plundered dwelling.

Cans had been rolled or dragged away. Every loose object had been pawed by the slinkers' foul little hands, and Grant's clothes hung in ruins on their

hooks against the wall. But the tiny robbers had not succeeded in opening the cabinet nor the table drawer, and there was food left.

Six months of Ionian life had left him philosophical; he swore heartily, shrugged resignedly, and pulled his bottle of ferverin from the cabinet.

His own spell of fever had vanished as suddenly and completely as *blancha* always does when treated, but the girl, lacking ferverin, was paper-white and still. Grant glanced at the bottle; eight tablets remained.

"Well, I can always chew ferva leaves," he muttered. That was less effective than the alkaloid itself, but it would serve, and Lee Neilan needed the tablets. He dissolved two of them in a glass of water, and lifted her head.

She was not too inert to swallow, and he poured the solution between her pale lips, then arranged her as comfortably as he could. Her dress was a tattered silken ruin, and he covered her with a blanket that was no less a ruin. Then he disinfected his palm stings, pulled two chairs together, and sprawled across them to sleep.

He started up at the sound of claws on the roof, but it was only Oliver, gingerly testing the flue to see if it were hot. In a moment the parcat scrambled through, stretched himself, and remarked, "I'm real and you're real."

"Imagine that!" grunted Grant sleepily.

When he awoke it was Jupiter and Europa light, which meant he had slept about seven hours, since the brilliant little third moon was just rising. He rose and gazed at Lee Neilan, who was sleeping soundly with a tinge of color in her face that was not entirely due to the ruddy daylight. The*blancha* was passing.

He dissolved two more tablets in water, then shook the girl's shoulder. Instantly her gray eyes opened, quite clear now, and she looked up at him without surprise.

"Hello, Grant," she murmured. "So it's you again. Fever isn't so bad, after all."

"Maybe I ought to let you stay feverish," he grinned. "You say such nice things. Wake up and drink this, Lee."

She became suddenly aware of the shack's interior. "Why—Where is this? It looks—real!"

"It is. Drink this ferverin."

She obeyed, then lay back and stared at him perplexedly. "Real?" she said. "And you're real?"

"I think I am."

A rush of tears clouded her eyes. "Then—I'm out of that place? That horrible place?"

"You certainly are." He saw signs of her relief becoming hysteria, and hastened to distract her. "Would you mind telling me how you happened to be there—and dressed for a party too?"

She controlled herself. "I was dressed for a party. A party. A party in Herapolis. But I was in Junopolis, you see."

"I don't see. In the first place, what are you doing on Io, anyway? Every time I ever heard of you, it was in connection with New York or Paris society."

She smiled. "Then it wasn't all delirium, was it? You did say that you had one of my pictures—Oh, that one!" She frowned at the print on the wall. "Next time a news photographer wants to snap my picture, I'll remember not to grin like—like a loony. But as to how I happen to be on Io, I came with father, who's looking over the possibilities of raising ferva on plantations instead of having to depend on traders and loonies. We've been here three months, and I've been terribly bored. I thought Io would be exciting, but it wasn't—until recently."

"But what about that dance? How'd you manage to get here, a thousand miles from Junopolis?"

"Well," she said slowly, "it was terribly tiresome in Junopolis. No shows, no sport, nothing but an occasional dance. I got restless. When there were dances in Herapolis, I formed the habit of flying over there. It's only four or five hours in a fast plane, you know. And last week—or whatever it was—I'd planned on flying down, and Harvey—that's father's secretary—was to take me. But at the last minute father needed him and forbade my flying alone."

Grant felt a strong dislike for Harvey. "Well?" he asked.

"So I flew alone," she finished demurely.

"And cracked up, eh?"

"I can fly as well as anybody," she retorted. "It was just that I followed a different route, and suddenly there were mountains ahead."

He nodded. "The Idiots' Hills," he said. "My supply plane detours five hundred miles to avoid them. They're not high, but they stick right out above the atmosphere of this crazy planet. The air here is dense but shallow."

"I know that. I knew I couldn't fly above them, but I thought I could hurdle them. Work up full speed, you know, and then throw the plane upward. I had a closed plane, and gravitation is so weak here. And besides, I've seen it done several times, especially with a rocket-driven craft. The jets help to support the plane even after the wings are useless for lack of air."

"What a damn fool stunt!" exclaimed Grant. "Sure it can be done, but you have to be an expert to pull out of it when you hit the air on the other side. You hit fast, and there isn't much falling room."

"So I found out," said Lee ruefully. "I almost pulled out, but not quite, and I hit in the middle of some stinging palms. I guess the crash dazed them, because I managed to get out before they started lashing around. But I couldn't reach my plane again, and it was—I only remember two days of it—but it was horrible!"

"It must have been," he said gently.

"I knew that if I didn't eat or drink, I had a chance of avoiding white fever. The not eating wasn't so bad, but the not drinking—well, I finally gave up and drank out of a brook. I didn't care what happened if I could have a few moments that weren't thirst-tortured. And after that it's all confused and vague."

"You should have chewed ferva leaves."

"I didn't know that. I wouldn't have even known what they looked like, and besides, I kept expecting father to appear. He must be having a search made by now."

"He probably is," rejoined Grant ironically. "Has it occurred to you that there are thirteen million square miles of surface on little Io? And that for all he knows, you might have crashed on any square mile of it? When you're flying from north pole to south pole, there *isn't* any shortest route. You can cross any point on the planet."

Her gray eyes started wide. "But I—"

"Furthermore," said Grant, "this is probably the *last* place a searching party would look. They wouldn't think anyone but a loony would try to hurdle Idiots' Hills, in which thesis I quite agree. So it looks very much, Lee Neilan, as if you're marooned here until my supply plane gets here next month!"

"But father will be crazy! He'll think I'm dead!"

"He thinks that now, no doubt."

"But we can't—" She broke off, staring around the tiny shack's single room. After a moment she sighed resignedly, smiled, and said softly, "Well, it might have been worse, Grant. I'll try to earn my keep."

"Good. How do you feel, Lee?"

"Quite normal. I'll start right to work." She flung off the tattered blanket, sat up, and dropped her feet to the floor. "I'll fix dinn—Good night! My dress!" She snatched the blanket about her again.

He grinned. "We had a little run-in with the stinkers after you had passed out. They did for my spare wardrobe too."

"It's ruined!" she wailed.

"Would needle and thread help? They left that, at least, because it was in the table drawer."

"Why, I couldn't make a good swimming suit out of this!" she retorted. "Let me try one of yours."

By dint of cutting, patching, and mending, she at last managed to piece one of Grant's suits to respectable proportions. She looked very lovely in shirt and trousers, but he was troubled to note that a sudden pallor had overtaken her.

It was the *riblancha*, the second spell of fever that usually followed a severe or prolonged attack. His face was serious as he cupped two of his last four ferverin tablets in his hand.

"Take these," he ordered. "And we've got to get some ferva leaves somewhere. The plane took my supply away last week, and I've had bad luck with my loonies ever since. They haven't brought me anything but weeds and rubbish."

Lee puckered her lips at the bitterness of the drug, then closed her eyes against its momentary dizziness and nausea. "Where can you find ferva?" she asked.

He shook his head perplexedly, glancing out at the setting mass of Jupiter, with its bands glowing creamy and brown, and the Red Spot boiling near the western edge. Close above it was the brilliant little disk of Europa. He frowned suddenly, glanced at his watch and then at the almanac on the inside of the cabinet door.

"It'll be Europa light in fifteen minutes," he muttered, "and true night in twenty-five—the first true night in half a month. I wonder—"

He gazed thoughtfully at Lee's face. He knew where ferva grew. One dared not penetrate the jungle itself, where stinging palms and arrow vines and the deadly worms called toothers made such a venture sheer suicide for any creatures but loonies and slinkers. But he knew where ferva grew—

In Io's rare true night even the clearing might be dangerous. Not merely from slinkers, either; he knew well enough that in the darkness creatures crept out of the jungle who otherwise remained in the eternal shadows of its depths—toothers, bullet-head frogs, and doubtless many unknown slimy, venomous, mysterious beings never seen by man. One heard stories in Herapolis and—

But he had to get ferva, and he knew where it grew. Not even a loony would try to gather it there, but in the little gardens or farms around the tiny slinker towns, there was ferva growing.

He switched on a light in the gathering dusk. "I'm going outside a moment," he told Lee Neilan. "If the *blancha* starts coming back, take the other two tablets. Wouldn't hurt you to take 'em anyway. The slinkers got away with my thermometer, but if you get dizzy again, you take 'em."

"Grant! Where—"

"I'll be back," he called, closing the door behind him.

A loony, purple in the bluish Europa light, bobbed up with a long giggle. He waved the creature aside and set off on a cautious approach to the neighborhood of the slinker village—the old one, for the other could hardly have had time to cultivate its surrounding ground. He crept warily through the bleeding-grass, but he knew his stealth was pure optimism. He was in exactly the position of a hundred-foot giant trying to approach a human city in secrecy—a difficult matter even in the utter darkness of night.

He reached the edge of the slinker clearing. Behind him, Europa, moving as fast as the second hand on his watch, plummeted toward the horizon. He paused in momentary surprise at the sight of the exquisite little town, a hundred feet away across the tiny square fields, with lights flickering in its hand-wide windows. He had not known that slinker culture included the use of lights, but there they were, tiny candles or perhaps diminutive oil lamps.

He blinked in the darkness. The second of the ten-foot fields looked like—it was—ferva. He stooped low, crept out, and reached his hand for the fleshy, white leaves. And at that moment came a shrill giggle and the crackle of grass behind him. The loony! The idiotic purple loony!

Squeaking shrieks sounded. He snatched a double handful of ferva, rose, and dashed toward the lighted window of his shack. He had no wish to face poisoned barbs or disease-bearing teeth, and the slinkers were certainly aroused. Their gibbering sounded in chorus; the ground looked black with them.

He reached the shack, burst in, slammed and latched the door. "Got it!" he grinned. "Let 'em rave outside now."

They were raving. Their gibberish sounded like the creaking of worn machinery. Even Oliver opened his drowsy eyes to listen. "It must be the fever," observed the parcat placidly.

Lee was certainly no paler; the *riblancha* was passing safely. "Ugh!" she said, listening to the tumult without. "I've always hated rats, but slinkers are worse. All the shrewdness and viciousness of rats plus the intelligence of devils."

"Well," said Grant thoughtfully, "I don't see what they can do. They've had it in for me anyway."

"It sounds as if they're going off," said the girl, listening. "The noise is fading."

Grant peered out of the window. "They're still around. They've just passed from swearing to planning, and I wish I knew what. Some day, if this crazy little planet ever becomes worth human occupation, there's going to be a showdown between humans and slinkers."

"Well? They're not civilized enough to be really a serious obstacle, and they're so small, besides."

"But they learn," he said. "They learn so quickly, and they breed like flies. Suppose they pick up the use of gas, or suppose they develop little rifles for their poisonous darts. That's possible, because they work in metals right now, and they know fire. That would put them practically on a par with man as far as offense goes, for what good are our giant cannons and rocket planes against six-inch slinkers? And to be just on even terms would be fatal; one slinker for one man would be a hell of a trade."

Lee yawned. "Well, it's not our problem. I'm hungry, Grant."

"Good. That's a sign the *blancha's* through with you. We'll eat and then sleep a while, for there's five hours of darkness."

"But the slinkers?"

"I don't see what they can do. They couldn't cut through stone-bark walls in five hours, and anyway, Oliver would warn us if one managed to slip in somewhere."

It was light when Grant awoke, and he stretched his cramped limbs painfully across his two chairs. Something had wakened him, but he didn't know just what. Oliver was pacing nervously beside him, and now looked anxiously up at him.

"I've had bad luck with my loonies," announced the parcat plaintively. "You're a nice kitty."

"So are you," said Grant. Something had wakened him, but what?

Then he knew, for it came again—the merest trembling of the stone- bark floor. He frowned in puzzlement. Earthquakes? Not on Io, for the tiny sphere had lost its internal heat untold ages ago. Then what?

Comprehension dawned suddenly. He sprang to his feet with so wild a yell that Oliver scrambled sideways with an infernal babble. The startled parcat leaped to the stove and vanished up the flue. His squall drifted faintly back.

"It must be the fever!"

Lee had started to a sitting position on the bunk, her gray eyes blinking sleepily.

"Outside!" he roared, pulling her to her feet. "Get out! Quickly!"

"Wh-what—why—"

"Get out!" He thrust her through the door, then spun to seize his belt and weapons, the bag of ferva leaves, a package of chocolate. The floor trembled again, and he burst out of the door with a frantic leap to the side of the dazed girl.

"They've undermined it!" he choked. "The devils undermined the—"

He had no time to say more. A corner of the shack suddenly subsided; the stone-bark logs grated, and the whole structure collapsed like a child's house of blocks. The crash died into silence, and there was no motion save a lazy wisp of vapor, a few black, ratlike forms scurrying toward the grass, and a purple loony bobbing beyond the ruins.

"The dirty devils!" he swore bitterly. "The damn little black rats! The—"

A dart whistled so close that it grazed his ear and then twitched a lock of Lee's tousled brown hair. A chorus of squeaking sounded in the bleeding-grass.

"Come on!" he cried. "They're out to exterminate us this time. No—this way. Toward the hills. There's less jungle this way."

They could outrun the tiny slinkers easily enough. In a few moments they had lost the sound of squeaking voices, and they stopped to gaze ruefully back on the fallen dwelling.

"Now," he said miserably, "we're both where you were to start with."

"Oh, no." Lee looked up at him. "We're together now, Grant. I'm not afraid."

"We'll manage," he said with a show of assurance. "Well put up a temporary shack somehow. We'll——"

A dart struck his boot with a sharp *blup*. The slinkers had caught up to them.

Again they ran toward Idiots' Hills. When at last they stopped, they could look down a long slope and far over the Ionian jungles. There was the ruined shack, and there, neatly checkered, the fields and towers of the nearer slinker town. But they had scarcely caught their breath when gibbering and squeaking came out of the brush.

They were being driven into Idiots' Hills, a region as unknown to man as the icy wastes of Pluto. It was as if the tiny fiends behind them had determined that this time their enemy, the giant trampler and despoiler of their fields, should be pursued to extinction.

Weapons were useless. Grant could not even glimpse their pursuers, slipping like hooded rats through the vegetation. A bullet, even if chance sped it through a slinker's body, was futile, and his flame pistol, though its lightning stroke should incinerate tons of brush and bleeding-grass, could no more than cut a narrow path through the horde of tormentors. The only weapons that might have availed, the gas bulbs, were lost in the ruins of the shack.

Grant and Lee were forced upward. They had risen a thousand feet above the plain, and the air was thinning. There was no jungle here, but only great stretches of bleeding-grass, across which a few loonies were visible, bobbing their heads on their long necks.

"Toward—the peaks!" gasped Grant, now painfully short of breath. "Perhaps we can stand rarer air than they."

Lee was beyond answer. She panted doggedly along beside him as they plodded now over patches of bare rock. Before them were two low peaks, like the pillars of a gate. Glancing back, Grant caught a glimpse of tiny black forms on a clear area, and in sheer anger he fired a shot. A single slinker leaped convulsively, its cape flapping, but the rest flowed on. There must have been thousands of them.

The peaks were closer, no more than a few hundred yards away. They were sheer, smooth, unscalable.

"Between them," muttered Grant.

The passage that separated them was bare and narrow. The twin peaks had been one in ages past; some forgotten volcanic convulsion had split them, leaving this slender canyon between.

He slipped an arm about Lee, whose breath, from effort and altitude, was a series of rasping gasps. A bright dart tinkled on the rocks as they reached

the opening, but looking back, Grant could see only a purple loony plodding upward, and a few more to his right. They raced down a straight fifty-foot passage that debouched suddenly into a sizable valley—and there, thunderstruck for a moment, they paused.

A city lay there. For a brief instant Grant thought they had burst upon a vast slinker metropolis, but the merest glance showed otherwise. This was no city of medieval blocks, but a poem in marble, classical in beauty, and of human or near-human proportions. White columns, glorious arches, pure curving domes, an architectural loveliness that might have been born on the Acropolis. It took a second look to discern that the city was dead, deserted, in ruins.

Even in her exhaustion, Lee felt its beauty. "How—how exquisite!" she panted. "One could almost forgive them—for being—slinkers!"

"They won't forgive us for being human," he muttered. "We'll have to make a stand somewhere. We'd better pick a building."

But before they could move more than a few feet from the canyon mouth, a wild disturbance halted them. Grant whirled, and for a moment found himself actually paralyzed by amazement. The narrow canyon was filled with a gibbering horde of slinkers, like a nauseous, heaving black carpet. But they came no further than the valley end, for grinning, giggling, and bobbing, blocking the opening with tramping three-toed feet, were four loonies!

It was a battle. The slinkers were biting and stabbing at the miserable defenders, whose shrill keenings of pain were less giggles than shrieks. But with a determination and purpose utterly foreign to loonies, their clawed feet tramped methodically up and down, up and down.

Grant exploded, "I'll be damned!" Then an idea struck him. "Lee! They're packed in the canyon, the whole devil's brood of 'em!"

He rushed toward the opening. He thrust his flame pistol between the skinny legs of a loony, aimed it straight along the canyon, and fired.

Inferno burst. The tiny diamond, giving up all its energy in one terrific blast, shot a jagged stream of fire that filled the canyon from wall to wall and

vomited out beyond to cut a fan of fire through the bleeding-grass of the slope.

Idiots' Hills reverberated to the roar, and when the rain of debris settled, there was nothing in the canyon save a few bits of flesh and the head of an unfortunate loony, still bouncing and rolling.

Three of the loonies survived. A purple-faced one was pulling his arm, grinning and giggling in imbecile glee. He waved the thing aside and returned to the girl.

"Thank goodness!" he said. "We're out of that, anyway."

"I wasn't afraid, Grant. Not with you."

He smiled. "Perhaps we can find a place here," he suggested. "The fever ought to be less troublesome at this altitude. But—say, this must have been the capital city of the whole slinker race in ancient times. I can scarcely imagine those fiends creating an architecture as beautiful as this—or as large. Why, these buildings are as colossal in proportion to slinker size as the skyscrapers of New York to us!"

"But so beautiful," said Lee softly, sweeping her eyes over the glory of the ruins. "One might almost forgive—Grant! Look at those!"

He followed the gesture. On the inner side of the canyon's portals were gigantic carvings. But the thing that set him staring in amazement was the subject of the portrayal. There, towering far up the cliff sides, were the figures, not of slinkers, but of—loonies! Exquisitely carved, smiling rather than grinning, and smiling somehow sadly, regretfully, pityingly—yet beyond doubt, loonies!

"Good night!" he whispered. "Do you see, Lee? This must once have been a loony city. The steps, the doors, the buildings, all are on their scale of size. Somehow, some time, they must have achieved civilization, and the loonies we know are the degenerate residue of a great race."

"And," put in Lee, "the reason those four blocked the way when the slinkers tried to come through is that they still remember. Or probably they don't actually remember, but they have a tradition of past glories, or more likely

still, just a superstitious feeling that this place is in some way sacred. They let us pass because, after all, we look more like loonies than like slinkers. But the amazing thing is that they still possess even that dim memory, because this city must have been in ruins for centuries. Or perhaps even for thousands of years."

"But to think that loonies could ever have had the intelligence to create a culture of their own," said Grant, waving away the purple one bobbing and giggling at his side. Suddenly he paused, turning a gaze of new respect on the creature. "This one's been following me for days. All right, old chap, what is it?"

The purple one extended a sorely bedraggled bundle of bleeding-grass and twigs, giggling idiotically. His ridiculous mouth twisted; his eyes popped in an agony of effort at mental concentration.

"Canny!" he giggled triumphantly.

"The imbecile!" flared Grant. "Nitwit! Idiot!" He broke off, then laughed. "Never mind. I guess you deserve it." He tossed his package of chocolate to the three delighted loonies. "Here's your candy."

A scream from Lee startled him. She was waving her arms wildly, and over the crest of Idiots' Hills a rocket plane roared, circled, and nosed its way into the valley.

The door opened. Oliver stalked gravely out, remarking casually. "I'm real and you're real." A man followed the parcat—two men.

"Father!" screamed Lee.

It was some time later that Gustavus Neilan turned to Grant. "I can't thank you," he said. "If there's ever any way I can show my appreciation for——"

"There is. You can cancel my contract."

"Oh, you work for me?"

"I'm Grant Calthorpe, one of your traders, and I'm about sick of this crazy planet."

"Of course, if you wish," said Neilan. "If it's a question of pay—"

"You can pay me for the six months I've worked."

"If you'd care to stay," said the older man, "there won't be trading much longer. We've been able to grow ferva near the polar cities, and I prefer plantations to the uncertainties of relying on loonies. If you'd work out your year, we might be able to put you in charge of a plantation by the end of that time."

Grant met Lee Neilan's gray eyes, and hesitated. "Thanks," he said slowly, "but I'm sick of it." He smiled at the girl, then turned back to her father. "Would you mind telling me how you happened to find us? This is the most unlikely place on the planet."

"That's just the reason," said Neilan. "When Lee didn't get back, I thought things over pretty carefully. At last I decided, knowing her as I did, to search the least likely places first. We tried the shores of the Fever Sea, and then the White Desert, and finally Idiots' Hills. We spotted the ruins of a shack, and on the debris was this chap"—he indicated Oliver—"remarking that Ten loonies make one half-wit.' Well, the half-wit part sounded very much like a reference to my daughter, and we cruised about until the roar of your flame pistol attracted our attention."

Lee pouted, then turned her serious gray eyes on Grant. "Do you remember," she said softly, "what I told you there in the jungle?"

"I wouldn't even have mentioned that," he replied. "I knew you were delirious."

"But—perhaps I wasn't. Would companionship make it any easier to work out your year? I mean if—for instance—you were to fly back with us to Junopolis and return with a wife?"

"Lee," he said huskily, "you know what a difference that would make, though I can't understand why you'd ever dream of it."

"It must," suggested Oliver, "be the fever."

SMOTHERED SEAS (1936)

The sea crept with green. It crawled up the shores and smothered the hills!

I.

IT was the year 2000. America was at war, fighting for her very life against the Asiatic Union. And yet the American people—even army officers—found time for recreation. Recreation was a necessity, to take one's mind off the titanic struggle.

Lieutenant Richard Lister, clad in swimming trunks, sat on a beach rug, staring moodily out across the Pacific Ocean toward the Seal Rocks and beyond, his hands clasped across his tanned knees, his bronzed face tense.

"Let's not talk about the war; let's talk about us!" he exclaimed to Sally Amber, who sat beside him.

The girl turned her strange, dark eyes inquisitively upon him.

"You shouldn't feel that way, Dick," she said seriously. "Particularly as you're in such an important branch of the service. I'm not kidding; I mean it. Where would the country be without your Bureau of Military Biology and Bacteriology? We'd all be wiped out by the Asiatic Union's germs!"

"Sure. And if it weren't for their bacteriologists, they'd be wiped out by our germs. It's a deadlock, I tell you, like this whole war. Look at Alaska: For more than a year now the Khan has been holding that little corner from Rocky Point to Cape Espenberg, and we haven't been able to budge his line a single inch, nor has he been able to budge ours. Each army is protected by one of those impenetrable Beckerley electrical fields.

"Alaska is the key to the whole situation, with the Khan there in person. If we could just get through his Beckerley field, and put an end to him, the whole Asiatic Union would crumble. It's only his personality that can hold together such naturally hostile groups as the Siberian Russians, the Japs, the

Chinese, the Tartars, and so forth. Without him, they'd be at each other's throats in a few hours!"

"Well, why doesn't somebody do something about it?" asked Sally, impishly.

"Lord knows we've tried!" Lister exclaimed. "Ten or a dozen brave Americans have gotten through the enemy lines, and tried to assassinate him, only to be captured, and subjected to horrible torture and death."

The girl shuddered, and pulled one corner of the beach rug up around her shoulders.

"I don't suppose I'd rate as a 'brave American,' " she said.

"I'd take a chance on your bravery," Lister declared.

"Why doesn't America land troops in Asia?" Sally asked.

Lister stared at her sharply.

"You know as well as I do," he said. "Although America controls the seas ever since we annihilated the Khan's fleet off the Marianas six months ago, yet he has ten million men under arms in Asia. What good would it do us to land our five million against such odds? No, we've got to lick the mad Khan in Alaska—somehow."

"He isn't mad!" snapped Sally, unexpectedly.

"How do you know?"

"I've—I've—well, I've seen him."

"I didn't know you'd ever been in Asia."

"There are lots of things about me that you don't know," she retorted. "My father is dead, and I am quite wealthy. I've traveled a lot. Three years ago I was in the eastern capital—Harbin; and, what's more, I've been in Moscow, the western capital, too."

"So you've seen the mad Khan," mused Lister. "Did you ever see the woman they call Princess Stephanie? What's she like? She's supposed to be very beautiful."

Sally shrugged. "Oh, she's all right, if you like that type," she replied airily. "She's dark and has Khazar blood in her, and she's about my age—and anyway, why are you questioning me? Go on with your little lecture."

"About us?" he asked hopefully.

"No." She reached out one slim hand, and gently patted his knee. "About the Beckerley electrical fields. What are they? How do they operate?"

HE FROWNED thoughtfully, trying to phrase his answer in words that a girl would understand.

"It's an application of Morelle's experiment with electrical eddy currents," he said. I'm a botanist, not an electrical engineer, but I know that the idea involves the refraction of lines of magnetic force.

"It works like this: Over each army on the Alaskan front the scientists have created a dome of electrical tension—a magnetic field. Any shell or drop bomb passing through this magnetic field is instantly heated to white heat by the electrical eddy currents induced in it by the field, and is thus caused to explode in mid-air.

"Every city is likewise protected by a Beckerley field. You know how each autocopter, on leaving the city limits of San Francisco, has to stop and be pushed through an iron-shielded subway until it's beyond the Beckerley field? Well, that's because the gasoline in the tank would be heated to the flash point by the walls of its container."

"How about solid shot?" asked Sally.

"That can pass through a field, of course, but what chance has solid shot of doing much damage? Our own copters could down any possible fleet of enemy planes long before they could drop enough solid missiles to do appreciable harm to a city; and as for the Alaskan front, the most that either side could do would be to chip a few rocks in the Yukon Hills.

"No, the situation's a deadlock; the Khan is swept from the sea, but his enormous army prevents our invading Asia, and neither side can advance an inch in Alaska because of the Beckerley fields. It can't even become a war of

attrition, because both the Asiatic Union and the United States are entirely self-supporting, and can never be starved into submission."

"Do you think so?" asked Sally Amber in an odd voice. Suddenly she shrugged her smooth, brown shoulders as if to change the subject. "Will Admiral Allen be here Saturday?" she asked casually.

"Why, no, I don't think—" Lister caught himself abruptly. Allen had told him, in the very strictest of confidence, of a proposed attempt to cut the Asiatic supply line to Alaska by a concentrated attack on Behring Strait, The Pacific fleet, idle since the engagement near the Marianas, was to sail secretly before dawn on Saturday.

He glared. "Why do you ask such a question?" he snapped. "If I knew, I shouldn't tell, and you know it."

Sally laughed. "Silly!" she chided. "It was just that I was considering having him and you and that flying detective, Jim Cass, to a little dinner at my apartment Saturday. You see, I still haven't met Jim Cass, and you've spoken of him so often that I'm curious. After all, if he's a friend of yours, Dick—"

She smiled very tenderly at him.

Lister shook his head. "Captain Cass is no friend of mine," he declared. "He's just an officer of the military intelligence who breezes into my laboratory from time to time, and pokes around looking for clues and trouble. He gives me the creeps. I never knew such a cold-blooded man! He'd turn his own mother over to a firing squad, if he thought it would help win the war."

"Well, wouldn't you or I do as much for our country?" asked Sally. "And, besides, his very coldness intrigues me. I want to meet him."

"Suit yourself," said Lister. "Have we time for another swim?"

She puckered her lips disapprovingly. "Oh, no!' she exclaimed decidedly. "The water's so full of that horrible green slime that it's no pleasure to swim. Let's start back to town."

"It is bad," he agreed. "It's just a variety of confervae—what we commonly call algae. There have been some complaints of it in the drinking water, too.

It's harmless, but they ought to chlorinate the city reservoir." He rose and stretched. "Let's dress and get started, then."

It was not quite 2:00 p. m. when they landed Sally's convertible helicopter in front of the building near the Presidio that served as the office and laboratory of the local unit of the Bureau of Military Biology and Bacteriology. Lister stepped reluctantly out of the machine, and turned to Sally at the wheel.

"Tonight?" he asked hopefully.

She shook her head. "Sorry. I have to dine with some family friends."

"Tomorrow night, then?"

"I shouldn't. I—"

"But you will," he stated positively. "Heaven knows if I'll be stationed here long, and I don't want to waste a moment."

"Why?" she asked sharply. "Do you expect to be transferred?"

He bit his tongue. "No, but—"

Needed distraction came. He whirled and saluted a dark, sinister-looking army officer descending the steps of the building.

"Sally, here's Captain Cass at last. I thought he'd be in today! Sir, this is the Sally Amber you've heard me talking about so much."

Jim Cass took the hand Sally extended. "No wonder Dick's been raving," he said, staring at her appraisingly with his cold, blue eyes. "I apologize for thinking he was nuts. I didn't believe he had the good taste—"

His stare changed to a puzzled frown. "Say, haven't we met before?"

"If we had," said Sally, "I wouldn't have forgotten it."

But Captain Cass stood staring, long after her copter was indistinguishable among the cross currents of traffic.

CASS was no closer to the solution when he dropped in on Lister the following day. The biologist, in laboratory smock, was busy with the war-

time routine of checking water samples from half a dozen coastal cities, and had but little time to listen to his superior.

"Oakland," he muttered, "bacterial count seven per c. c.; that's normal. Monterey, eleven; that's safe. Vera Cruz—say, did you ever see so much algae in the drinking water? Look at that beaker on the window sill. That's after two hours' exposure to sunlight, and it's as green as pea soup already. What's more, I saw reports from Chicago that it's just the same there. And —this is queer—from London as well."

"What's that fuzz on the trees?" asked Cass thoughtfully, looking idly out of the window. "I never saw that here before."

"Yeah. I noticed that. It's just a tree lichen, something like Spanish moss. A cryptogamous plant—that is, a spore-breeder. It's related to——By the Lord! It's confervae, too, just like the alga!"

"Well? So what?"

"So nothing, except that whatever has stimulated the algae in the sea and in the drinking water, has also stimulated the lichens and the fungi. The cryptogamoids are the sort of plants that grew on earth during the carboniferous age, the age of coal."

"Maybe we're in for another age of coal, huh?"

"Hardly." said Lister, laughing. "There are several theories as to what caused the carboniferous age, such as a higher concentration of carbon dioxide in the air, or a world-wide tropical climate, or intense sun-spot activity, which would induce frequent and violent electrical storms on the earth, and hence produce an abnormal amount of ozone in the air. Ozone is a particularly dense form of oxygen, and is able to filter out the death rays—"

"Death rays?" exclaimed Cass, pricking up his ears. He had been paying very little attention to Lister, but here was something in his own line—something the military intelligence ought to know about. "Death rays?"

Lister laughed again. "Not the kind of death rays the army is interested in," he said. "But there are certain invisible rays of sunlight which have a fatal effect on living creatures. Ozone filters them out.

"It's one of the remarkable instances of the balance of nature that there is normally just enough ozone in the outer layers of the atmosphere to keep out the quantity of that invisible light which would be fatal to human life, and yet let in just enough to keep the algae within reasonable bounds. Now if—Say! I wonder!"

"You wonder what?"

"Nothing! Nothing at all!"

"Lister," said Cass pointedly, "you seem to be able to be very close-mouthed about some things, and to some people. I wonder how you are with women."

"What do you mean?" asked Lister, with a guilty premonition.

"Well, for example, you didn't happen to say anything to Miss Amber about the sailing of the fleet, did you?"

Lister flushed. He hadn't, of course; and yet she might have gathered it from some of his remarks. But then, what if she had?

"Of course not," he growled. "Speaking of the fleet," he added, "I'm going over to see Admiral Allen right now."

ARRIVED at the admiral's quarters, Lister came directly to the point. "Sir," he said, "I've been thinking about all these algae. At the rate they are increasing, you may find your whole fleet stalled in a mass of jelly before you get to Behring Strait."

"I've thought of that," Admiral Allen replied soberly, and yet with a twinkle in his eyes which Lister couldn't quite fathom.

"But have you heard the latest reports, sir?" Lister persisted. "The Chicago River is clogged. The stuff is beginning to plug the water mains everywhere. I know it's becoming a nuisance here in San Francisco. In Texas, the Spanish moss is beginning to collect in masses heavy enough to break tree branches.

"All over the country railroad ties are turning into pulpy beds of assorted fungi, puffballs, and a hundred other varieties. The resulting decay has even caused derailings. In the moister areas, trains actually have to plow their

way through vast accumulations of lichens, which have found the shaded cuts and half-decayed ties an ideal environment in which to exercise their new vitality."

"It's even worse in Asia," the admiral replied. "They say that on the tundras the lichens are growing into heaps like haystacks on the railroads, and that the algae have blocked rivers and caused floods. That's why, even at the risk of getting our entire fleet stuck in the slime, we must attack the Khan while this unexplainable growth of plants is endangering his source of supplies."

"I didn't know that," said Lister.

"Well, keep it under your hat, and don't breathe it to a soul. It is secret information that has just come in from the intelligence service. Have you any idea as to the reason for all this? I was just going to send for you, when you showed up."

"Something may have caused an abnormal increase in the ozone of the outer layers of the atmosphere, and this ozone may be filtering out those wave lengths of sunlight which ordinarily hold algae in check."

But Admiral Allen was one of those practical men who have little patience with scientific explanations of anything. So he suggested, "Might it not be some new device of Asiatic warfare?"

"I hardly think so, sir. The Khan wouldn't use this weapon which appears to be hurting him even worse than it is us."

II.

THAT EVENING, when Dick Lister and Sally Amber were seated in a restaurant, she again broached the subject of the algae.

"I hear it's even worse in Asia than in America," she said.

"How do you happen to know that?" he asked in surprise.

"It's so, then? Oh, everybody isn't so close-mouthed as you, Dick," she replied demurely. She raised her lovely dark, innocent eyes.

"Do you suppose it might be an Asiatic weapon? Or perhaps—since it seems to be even worse in Siberia than here—an American weapon?"

Embarrassed, he mumbled, "How should I know?"

"But you do know something about it, don't you?" she shot at him.

Caught off guard, he stumbled. "Eh ? Oh—why, yes. The Beckerley fields –" He broke off, frowning in irritation.

"Sally," he growled, "that curiosity of yours is going to get you into trouble one of these days. This is wartime, and feminine curiosity is no excuse for pumping officers. I know that you are O. K., but others might not trust you. How'd you like to stand court-martial as an Asiatic spy, just because you ask too many questions?"

"Perhaps I am one," said the girl, smiling and raising her delicately penciled brows.

"It's no joking matter, Sally. People have been shot against a wall for less than that."

"I can see," said the girl dryly, "that Captain Cass has been lecturing you."

"How—" began Lister, then bit his lip.

"How do I know? Oh, I can read men like a book—any woman can. Captain Cass doesn't like me. And I don't like men who don't like me."

She pouted prettily.

"I'm glad he doesn't," declared Lister. "It would suit me if nobody liked you, but me."

HE RECALLED this conversation the next evening, when Cass strolled nosily into his laboratory, where he was working late over some analyses.

"Nice mess of algae," Cass observed, squinting at Lister's experimental tank. "They say the stuff is clogging the Atlantic harbors."

"You could damn near walk across the Golden Gate this morning," Lister replied, and went on to detail the latest news: train schedules disrupted in

the northwest, ships stuck in harbors everywhere, even in the open seas, particularly the north Pacific.

But Captain Cass was not listening. He was leaning over Lister's glass-topped desk, peering intently at something beneath the glass—a snapshot.

"What's this?" he asked sharply.

"Just a snap of Sally. Not a very good one; print's blurred."

"Um!" said Cass. His eyes narrowed. Then he said, irrelevantly, "Have you any theory about what's causing all this growth of algae?"

"Yes," Lister admitted, pursing up his lips judiciously. "But I'm not going off half-cocked. When I've verified certain points, I shall report to Washington—not to the intelligence service."

"Well, seeing as you won't tell the intelligence service anything, the intelligence service will tell you something—and for your own good. Listen carefully, and don't fly off the handle: I was attached to the Harbin legation three years ago, before the war. I got to know a lot about the Khan's eastern capital. Maybe you never heard of the woman called Princess Stephanie—or did you?"

"Yes. What about her?"

"Wait a minute. Stephanie was the daughter of Dmitri Kazarov, the Khan's chancellor. He was killed fifteen years ago in the Japanese revolution, and the Khan himself took over the raising of Stephanie. It wasn't given much publicity, but, in a town like Harbin, people talk, and they were still talking when I was there. It seemed the Khan gave her a queer education—a very queer one."

"What do you mean?"

"I mean he raised her to be the greatest spy in history. She was taught every important language, and to speak each like a native. She was taught to be at ease in every situation and every level of society. She learned military science, so as to be able to identify important information. And, when it began to be evident that she was going to be a very beautiful girl, she was

even taught the knowledge of human nature! But above all—above all, I say—she learned to be cold and heartless, and immune to love. She can act the part of a woman in love, but there is no feeling in her—no feeling except the desire to serve Asia!"

"But I don't see—"

"You will. When Stephanie was sixteen—that was three years ago, when I was in Harbin—the Khan forbade her to appear in public, lest foreign residents learn her features and impair her usefulness When she rode out-of-doors, no one was permitted within five hundred feet of her, and no one save her palace intimates really saw her face.

"But"—Cass grinned aggravatingly—"I happen to have extraordinary eyesight, as a copter observer should, and I used to watch her from the prescribed distance. Once I even turned a pair of night glasses on her. She was a beauty, all right."

"I begin to suspect, sir," said Lister grimly, "that you're about to say something you're going to be sorry for."

"Perhaps. Anyway, since the war began, there have been a lot of rumors about a brilliant feminine Asiatic spy—the Nightshade. It's my opinion that the Nightshade is the Princess Stephanie, and as for the rest, I know only this—that Sally Amber looks like Stephanie!"

"You're utterly insane!" blazed Lister. His voice rose. "It's ridiculous! Sally's no Asiatic. Does she look like an Oriental? Her skin is as white as marble—when she isn't sun-tanned, I mean. Her speech is thoroughly American. Her eyes—"

He stopped; suddenly he had visualized Sally Amber's eyes—dark, pure, lovely; but, beyond doubt, with the slightest possible oriental cast.

"Exactly'" declared Cass, in reply to Lister's unspoken thought.

"Lieutenant, how long have you known this girl? Are you sure that her tan is tan, and not her natural color? And isn't she about the right age? And doesn't she spend a lot of time cultivating the friendship of people like you, who possess important military knowledge? Whether she gets anything out

of you is a different story, but you ought to know whether she tries, whether she ever asks leading questions, or anything like that."

"She doesn't!" snapped Lister, then groaned. He himself had chided the girl more than once on her curiosity. "Look here, captain," he said, "if Sally is an enemy spy—it's inconceivable—but if she is, I say, it's America first with me, much as I love her. Lay off of her, will you, and let me find out."

"I'm not so hard-boiled and pitiless as you think."

"How do you—"

"How do I know what you think of me? Because it's my business, as an intelligence officer, to know what people think. But, as I was saying, I'll trust you. I'll give you your chance. I'm flying tonight on a certain mission, and shall not return for two days. Until then, the case is in your hands. But, if you have not solved it by then, I shall take it over."

LISTER'S mental turmoil brooked no delay. Despite the fact that, if Sally were dining out, she must have already left, he rushed across town to her apartment. She—or some one, at least—was home, for the library lights were glowing. He ignored the slow automatic elevator, and dashed up the four flights of steps to her floor.

He arrived in front of her door breathless and perspiring. There he paused, striving to calm himself.

Suddenly, he was aware of voices beyond the door. He listened, but it was impossible to distinguish words. He fancied he heard the tones of a man, but even that was not a certainty.

He rang the bell. There was a sudden silence in the room beyond; and then, after a considerable interval, the sound of footsteps. Sally herself opened the door, her face seeming strained and tense. But she smiled as she recognized Lister.

"Dick!" she exclaimed. "What's the matter? You're breathless!"

He strode past her. The room was empty of occupants, save for Sally and himself. "To whom were you talking?" he asked grimly.

"I was using the televisiphone. Why?"'

"I thought I heard a man's voice in the room here."

"Dick!" she said reprovingly. "I had no idea your jealousy would lead to such imaginings." She looked up at him with her dark eyes sober. "You know you have no cause to be jealous."

"It isn't that," he replied miserably. Suddenly he burst out, "Sally, what were you doing in Harbin three years ago?"

If there was a momentary flicker in her eyes, it was almost imperceptible. "Why, I was traveling. You know I love to travel."

"You say you saw the woman Stephanie there," he pursued. "Did any one ever tell you that you looked like her?"

Decidedly her eyes widened now. "Why—yes. Of course I've heard that. But, Dick, you don't think—" She laughed. "How absurd! You don't think that I'm the Nightshade, do you?"

"Who said anything about the Nightshade?" he snapped. "How did you know that Stephanie and the Nightshade are the same person?"

"Why, everybody hears those rumors, Dick."

"You mean that you hear everybody's rumors," he returned grimly. "Why are you so interested in everything that has to do with the war or the service—everything from fleet sailings to algae? Sally, you're not telling me the truth."

"How ridiculous!" she indignantly declared. Then, suddenly, her mood changing, she moved close to him, looking up at him out of innocent, dark eyes. "You trust me, don't you?"

"Heaven knows I want to!"

Her lovely, provocative lips smiled. "Then kiss me!" she whispered.

He obeyed, fiercely. As always, her lips burned like soft fire, but, suddenly, she threw back her head, and thrust her hands against him, as though to

push away from his embrace. One of her scarlet finger nails drew a sharp gash across his throat. With hurt surprise in his eyes, he released her.

"You—were hurting me," she explained, apologetically. But her eyes were watching him like a cat. "I'm sorry I scratched you."

"It's nothing," he muttered. He felt curiously dizzy—no wonder, he thought, in the grip of such violent and opposing emotions. But abruptly he found himself sitting in a chair with his head on his hands, and the room seemed to gyrate around him like the cabin of a copter.

Through a haze of dizziness he heard a man's voice, and then Sally's in answer. "No, no," she said. "This was much better. If I'd called you there would have been a fight and a disturbance, and see how peacefully he sinks into stupor"

"I bow to you, Kazarovna," said the man. "There is but one Stephanie."

"I am glad that it turned out as it did," said Sally's voice. "He is the one who knows about the algae. And now Asia shall know."

III.

WHEN next Lister was aware of a world about him, it was a world of a most unstable nature. Minutes passed before he realized that he was in a plane, soaring over an apparently endless expanse of brilliant white clouds. There was a further interval before he perceived that Sally Amber was sitting, calmly smoking, beside the man who piloted the machine, and that he himself was handcuffed very effectively to the aluminum arms of his seat. His head ached dully. Then, full realization dawned upon him. He was a prisoner in the hands of agents of the Khan.

His movement caught the girl's attention. She rose and made her way to the seat facing him.

"I hope you're not feeling too ill," she said gently. "I'm sorry, Dick. Drugging you was necessary."

"Then it's true!" he groaned. "You are the Nightshade—a sneaking Asiatic spy!"

"Like a sneaking American spy," she retorted. "Dick, I serve my country in the best way I can, just as you and that Cass person and the rest of the Americans serve yours."

She smiled. "He's a clever fellow, that Captain Cass. I'm afraid his suspicions will damage my value in America."

"Well, not until—" He bit his lip, and hurried on, "Of course he will. He'll get those snapshots I have of you, and turn them over to his department. You're cooked as a spy from now on, Sally."

"Oh, not that bad," she said. "You forget that every picture you have of me was taken with my camera. My camera is a very queer little mechanism; when I use it, it takes sharp, clear pictures, but when my friends use it, somehow the prints seem to come out blurred. Or hadn't you noticed that?"

He had, of course. He asked glumly, "Where are we headed for?"

"Asia," said Sally.

"Yeah, I thought so, since we're in a plane instead of a copter." Pound for pound and horse power for horse power, Lister knew that the planes were still more efficient than the copters, and the fact that Sally was using a plane meant a long flight.

"Why?" he asked, after a moment's silence.

"Don't you know? Because we have to have certain information from you. I'm sure it won't do any good to offer you safety for it, Dick; but I can promise, if it makes any difference to you."

"It doesn't," he responded grimly. "I won't sell my country for my personal safety. Anyway, I haven't the least idea what information you think I can give you. Your bacteriologists are as good as ours; our epidemics haven't been any more successful than yours."

She shook her soot-black hair. "Not bacteriology nor epidemics, Dick—algae!"

"Algae! Why?"

"Because you know the causes of this plague of slime in water, and lichens on land. It's an American weapon, and Asia needs the secret. It means everything—everything to us!"

"Indeed?" he said guardedly. "Why everything?"

"Don't act so innocent, Dick. You know quite well what the plague of lichens is doing in Siberia. It's clogging the rail lines, and the algae is blocking the rivers. You know how important it is to keep our Alaskan expeditionary force supplied with coal and oil to power the Beckerley fields, and you know that if our fields fail for lack of fuel, the war's over. We're licked.

"You Americans use Alaskan coal, but our coal has to come all the way from the Stanovoi Mountains, either by water across the Sea of Okhotsk, or by rail up through Dezhnev. And it's becoming impossible to keep the rails open; Siberia is being strangled by your accursed lichens."

"Well, what about the water route?"

"Water! Ships are stalled all over the seven seas. Look there!"

He glanced through the floor window at the Pacific, five thousand feet below, visible now through a vast opening in the clouds. The sea had a curious aspect; it was not blue, but brilliant grass-green. Peering closer, he made out two tiny vessels idle on the surface.

"As bad as that!" he muttered, wondering what was happening to Allen's mighty fleet. Would the admiral attempt to cross the choked ocean? To Sally he said, "That's fine. The more strangled Siberia gets, the better it suits me."

For the first time in their acquaintance a sign of irritation showed in her face. "It won't be for long!" she snapped angrily. "We'll get the secret out of you. Make no mistake about that, Dick!"

"And you," he said thoughtfully, "are sweet little Sally Amber, who said that she loved me."

Suddenly, her face was gentle. "And if I do love you?" she murmured. "If I do, would that make a difference to you, Dick?"

He laughed bitterly. "Do you think I'd believe you now? I know all about Princess Stephanie and her education. If you love anybody at all, it's the Khan!"

"Not the Khan, but Asia," she said. "The Khan is nothing to me, except for what he means to my country. For he himself, Dick, trained me from childhood to be immune to love. And yet —and yet, Dick—I have never met a man whom I—like—as I do you. You mean less to me than Asia, but more to me than any human being in the world."

"And that," he sorrowfully asserted, "is another one of your pretty lies."

For a long moment, she was silent. "No. It isn't a lie," she said at last, rising and returning to her place beside the pilot.

SHE ADDRESSED not another word to Lister until seven hours later, when they were soaring over Honshu, and snow-tipped Fujiyama slid beneath. Then she returned to the seat facing him, smiled very gently, and said softly, "I am terribly unhappy about this, Dick."

"Humph!" he said. "You ought to be triumphant."

"But I'm not. Listen to me, Dick. The Khan's intelligence division is not gentle. A number of the operatives are Mongols, and their methods of extracting information do not include kindness. It hurts me to think of you under torture, Dick."

"You ought to have thought of that last night."

"But I can save you from it. If you'll tell me what I want to know about the plague of algae and lichens, I'll guarantee your safety. Isn't that the best way—for both of us?"

"No, Sally. I'm not saying that I have the information you want, but you can be sure, that, whether I have it or not, I'll never tell Asia anything that might help."

She sighed and left him, but her glorious, dark eyes were troubled. They were still troubled when the great Khingan range loomed on the horizon, and the plane slanted down into Harbin. She even seemed to pale when at

last a slant-eyed guard took the key from her, and released Lister from his seat; and she followed the grim parade, as half a dozen men herded him into the centuries-old stone fortress that served as a military prison.

She did not enter the dark stone-walled cell; but, as the door swung shut, Lister glimpsed her pale face in the corridor. Her lips formed a silent phrase; he could have sworn that it was, "I'm sorry."

Well, it was too late now for her sorrow to help him, even if he believed in its sincerity. And he smiled bitterly, as he thought of the wild mistake that had led to his abduction. The algae and the lichens. Asia strangling in the grip of a plague that arose from so simple a cause that—if he told—a schoolboy could see the remedy.

Luckily for America, the cryptogams flourished most luxuriantly in Asia; and, until he told, all advantage lay with the Western continent. Until he told! He ceased to smile, and set his jaw grimly. He was not going to tell. Torture or none, he had to be strong enough to keep silent.

Hours passed. He heard conversations in the corridor outside, but they were in some Asiatic tongue, and meant nothing to him. Then a chance colloquy in lingua Franca told him that the Khan was not in Harbin, but was still with the troops on the Alaskan front. At last a guard brought him a jug of water, slimy-green with algae, and a slab of coarse bread; but this man, a Mongol, spoke neither English nor lingua Franca, or at least refused to speak them.

It was deep night when four grim Orientals and a stolid Siberian led him from his cell to a chamber that seemed sunk far underground. A single, dim electric light illuminated it, and a dozen pairs of cold eyes surveyed him—and one pair that was not cold. Sally Amber sat at the head of the narrow table, and she met his gaze with eyes that were wide, troubled, and apprehensive.

Then she addressed him. "Dick," she said softly, "I have told the interlocutory committee that you will give them what knowledge you have concerning this plague of mosses and algae. They have promised me your safety if you tell, and I have assured Comrade Plotkin that you would."

"Then, as usual, you lied," said Lister grimly.

Plotkin spoke out of the depths of his beard. "You see, Kazarovna," he rumbled, "only one method works with these stubborn American apes. I think it best we try that method."

"Oh, no!" gasped Sally Amber. "Let me question him first. He'll tell me. I can get it from him. Please—" She broke off suddenly as Plotkin's icy eyes surveyed her curiously.

"Will you tell?" he asked Lister, and then, at the latter's stubborn silence, "Very well. The pincers under the arm-pits first, I think. An ounce or so of flesh from the proper places can sometimes unblock the stream of information."

SALLY—or Stephanie—choked back a sob and covered her eyes. The four Mongol guards forced Lister's arm upward; for a moment, he struggled, but realized instantly that it was utterly useless. The stolid Siberian seized a glittering little instrument, and the pincers tore a ragged tatter of flesh from his armpit. He bit his lip fiercely to suppress the groan of pain that sought utterance, but there was no sound in the chamber save Sally's stifled sob.

"Why so unstrung, Kazarevna?" asked Plotkin amiably. "Surely the Princess Stephanie has witnessed more extreme measures than this."

She smiled wanly. "Of course. It's just that I haven't yet recovered from my sojourn in America—a—a horrible place!" Plotkin nodded and turned back to Lister. "Shall we try it again?" He smiled. "Or would you prefer a variation?"

"Neither," said the biologist, "I'll tell." Impassively he met the startled, relieved, unbelieving eyes of Sally. If she was acting, he thought, it was certainly good acting!

"Good—good!" rumbled Plotkin. "You're much wiser—or at least less stubborn—than some of your country-men whom we have found it necessary to question. Now then, let us hear the secret."

"You'd better take this down carefully," said Lister. "It's rather intricate." He waited as Plotkin spoke in Rusian to a man at his side, then began: "The plague of algae and lichens," he said slowly, "is due to the great increase in

numbers of thallogens. If the confervae were checked, the trouble would disappear."

"And what," barked Plotkin, "are thallogens?"

"Thallogens are the third grand division of the cryptogamia. The group consists of the ulvae and fuci, besides the confervae."

"Can't you put that in understandable language?" snapped Plotkin.

"I can express scientific information only in the language of science," said Lister, his eyes on Sally's fascinated one. "Your own scientists will have to translate it for you."

"Is that all?" asked the Siberian eagerly.

"That is all. Reduce the confervae, and there will be less thallogens. And when there are less thallogens, the algae and lichens will cease to trouble you. It's really very simple."

"Take him back to his cell," rumbled Plotkin. "And this had better be true, my friend, unless you crave further treatment."

"Every word of it is true," Lister asserted. It was still deep night when, three hours later, the door of his cell opened, and a slim figure slipped stealthily in. For a moment he thought it was a boy; then he recognized Sally, wearing the shorts and rolled hose of a copterman. She closed the door quietly behind her, then rushed abruptly into his arms.

"I can't stand it!", she sobbed. "Why did you do it? Plotkin is furious—insane with rage. He'll have you rotted bit by bit with acid! He'll—he'll—Why did you trick him, Dick?" Lister looked down into her white face. "Is this acting, too?" he asked coolly. "After all, the Princess Stephanie, the Nightshade, isn't supposed to be able to care what happens to a man."

"But I do! I love you, Dick. I care for nothing except you and Asia, but I can't bear to see you killed or tortured even for Asia." She paused, suppressing her sobs.

"Plotkin is wild," she said. "He wired a copy of your statement to the university at Tsitsihar, and back came the scornful reply that all that your

words meant was that the plague of algae is due to an increase in the amount of algae." He smiled. "Well? Isn't that true?"

"Yes, but—Oh, Dick, it's becoming horrible! They've kept the cities supplied with water by adding calcium chloride to the supply, but all through the country—all through the world, I guess—wells are choked and rivers smothered, and oceans have become heaving masses of slime. And on land the mosses spread like flames of gray fire!" He was still suspicious, though he held the girl tightly in his arms. "Is this an attempt to play on my sympathies?" he asked. "I warn you, Sally, I'll tell you nothing."

"I don't care whether you do or not! Don't you understand, Dick? I love you!"

"If you love me, you'll help me escape from here."

She pushed herself out of his arms, and stared at him with indignation at his disbelief. "And why else do you think I came?" she asked in a very low voice. "Follow me, quickly, before Plotkin cools down enough to put his mind on the details of your torture."

She stepped to the door, rapping sharply. It opened instantly, and they passed into the dim corridor beside a young Russian guard who looked at Sally with tragic eyes. She spoke softly; the man extended his bared arm, and the girl scratched it hastily with one of her finger nails. Lister watched the man as he sank slowly into a limp sprawl on the floor.

"Thus it will seem like American trickery," she whispered. "But I am afraid he will die for treason, none the less."

"Why did he do it?"

"Because," she said simply, "he loves me."

LISTER followed her up a narrow flight of stone steps, wondering how many of the barred doors in the corridor hid American prisoners. At last, she paused. "Wait here," she whispered, and moved from his view along a passage.

He heard a low-voiced conversation in Chinese, and then Sally was at his side again. "Come on," she called softly. "I've sent this one with a fake message to Plotkin."

Lister followed her up yet another flight of steps, and emerged suddenly into starlight. They had attained the roof of the structure, and he glanced apprehensively at the lights of Harbin all around. Sally was slipping toward a copter, a tiny, single-man observer.

"Quick!" she breathed, "get in."

"Both of us?" He frowned doubtfully at the tiny craft.

"We must. For I have to show you what to do. This alone would not carry, you far."

He crowded in beside her. The tiny cabin swung like a pendulum as the vertical screw whirred and whined, and bored its way heavily aloft. Sally flashed her green passage light, waiting anxiously for the reply from the ground.

"There!" she exclaimed in relief. "They've turned off this section of the Beckerley field. I have a pass, but if they had discovered your escape they might have blocked all passage—especially mine, I think; for I am sure that Plotkin has ceased to trust me."

The craft whined into darkness. The lights of the city diminished and dimmed; and, at last, Sally relaxed, leaning more comfortably against him in the close quarters of the cabin.

"We're beyond searchlights at last," she said. "Now they'll have to wait until dawn to pursue us, and by dawn we might be anywhere in this half of Asia, for all that they can tell. If this corkscrew only holds together—"

It did. When the red sunrise flashed up on the sea, they were directly over a narrow promontory that struck south into the waters. Lister gasped as he saw those waters, for surely this was the most amazing sea ever glimpsed by earthly eyes, at least since the plesiosaur looked over the oceans of the carboniferous age hundreds of millions of years ago.

It was a brilliantly smooth, green sea, seeming at first as motionless as turf. But, as the copter dropped toward the beach, Lister could distinguish motion, a slow heaving of the slime as if the vast expanse were breathing. There were no breakers, for the algae had at last tamed storm and wind, and the seas permitted the wind to slip as smoothly above them as if the waters had been covered with a film of oil. The one thing that sent a tremor of disgust through Lister was the sight of sea birds stalking dismally over a crust of slime that had dried enough to support them, gobbling up billions of flies.

SALLY wasted not a glance on the scene. "The south cape of Taiwan," she said, as the copter grounded on a slimy beach, "or, as you call it, Formosa. There's a boat here—"

"A boat? How can we use a boat—in that?"

"Listen a moment. In that shed, there's one of the experimental side-wheelers, a quick adaptation by our scientists, who had foreseen this outcome, if the algae were not checked. Side-wheels can push a light hull right over the algae. They don't foul like propellers. This one has a dynoline engine, and a range of about a thousand miles."

"A thousand miles! I can't get anywhere on that!"

"You can get as far as I want you to get," she retorted with narrowed eyes. "You can reach Hongkong—that's British—or you can make Haiphong in French Indochina. Hongkong is much the closer."

"But they're neutral! I'll be interned, if I go into a neutral port. I want to get back to America and my job."

"And I," said Sally softly, "want to see to it that you don't. I'm being enough of a traitor to Asia now, without letting a dangerous enemy like you return to service. All I want is to see you safe, Dick."

She turned away, and he followed her to the shed she had pointed out. There was the boat, true enough, a thirty-foot, open affair with six-foot paddle wheels like a miniature old Mississippi side-wheeler.

"Do you see this?" asked the girl, indicating a curious device of twisted glass tubing. "That's a sun-alembic. You put sea water in it, and the evaporation creates a partial vacuum in which the sea water can be distilled for drinking. The sun does it, just as it does with the rain.

"Under here is concentrated food for about a month. Can you take care of a dynoline engine? If the algae clog the cooling coils, you must stop and clean them at once."

"I know all that, but what about you, Sally? Will you be safe after this?"

"I can take care of myself." Her tone was confident enough, but Lister could see that she was under a terrific strain in this struggle between duty and desire. "Oh, Dick," she said shakily, "if this war is ever over—"

"It won't be long now. As soon as the Khan's supply of fuel to Alaska fails him, he's ended."

"Ah, but he's laying—" She caught herself, flushing miserably.

"Laying a pipe line, eh?" finished Lister. "I rather thought he would. He'll power the Beckerley fields with oil, eh?"

Sally laughed bitterly. "The downfall of the Nightshade!" she declaimed. "No wonder they fear love in a spy. Dick, that is the first slip that I've ever made, and my one consolation is that long before you can get to any place from where you could send that information to America, it will be too late. The work will be completed and protected by fields. And so—goodby."

With the feel of her lips still on his, he watched the copter flutter its way into the north; then turned to the craft he was to use, whose only name was a Chinese ideograph. It slid easily into the slip; and, without further hesitation, he started the engine, engaged the paddles, and was on his way.

His progress was a queer species of locomotion. The blades threw up vast lumps of green slime that fell behind with sullen, splashless plumps; and the light craft, thrust forward by the incredibly powerful dynoline engines, slid easily along the surface of the magot-infested slime. It was not unduly slow; he judged that the boat made twenty-five knots.

Formosa was a receding shadow when he passed the first stalled ship. This was a Dutch freighter, and the crew —or what was left of them, since many had doubtless been put ashore by copter—crowded the rail to watch his passage. He waved, but there was never a sign of response.

Suddenly, he realized the cause of the grim silence; his craft bore gold and purple stripes—the colors of the Khan —and the Dutch, with Borneo, Celebes, and New Guinea in the very shadow of the vast Asiatic Union, had no love for the Khan.

His coil clogged, and he paused to clean the slime from the screens. It was at this moment that the idea struck him; he sat suddenly erect, staring eastward where the China Sea met the mighty Pacific. Why did he have to go to Hongkong or Haiphong—or any neutral port, for that matter?

What other possibilities were there? He glanced at the map of the East Indies, affixed to the cowl of the motor. There was Luzon, of course; but the Philippines, during their half century of independence, had grown far closer to Asia, in sympathy, than to the United States.

There were the Marianas, where Admiral Allen had all but annihilated the Asiatic fleet, and where surely there must be an American garrison, if he could but reach them. But the Marianas lay two thousand miles out in the Pacific, close to Guam. He had, fuel for half that distance, but—

HE SWUNG the craft about and set it lurching back toward the Dutch freighter. The maintenance crew watched him sullenly as he approached. He pulled close under the hull and shouted, "Any of you understand English?"

A man pushed to the rail. "Yes! What do you want?"

"Listen! I'm American, not Asian. Look!"

He was not in uniform, since the biological branch did not require it, but he displayed his identification tag, with its red-white-and-blue shield plainly visible.

There was a stir. "What do you want?" asked the man above him, but in friendlier tones.

"Just some information. I want to know if there's an American or British ship stalled between here and Guam. I want to buy some fuel. You been in touch with any?"

There was a long conversation in Netherlands dialect. At last Lister's informant spoke again. "De Britisher Resolute—she stuck—by latitude 21'20" and longitude 135'60"."

Lister looked at his map, marking the position. It would do; it was almost exactly a thousand miles east of his present position, and might be a close gamble with his fuel, but it was worth the try. If he reached the Britisher and got fuel, he could then certainly make Guam or the Marianas, and give to the American army the news that the lichens had blocked the Siberian railroads, thus cutting off the fuel supply to the Khan's Alaskan Beckerley fields, but that the Khan was frantically laying a pipe line.

Between the giving out of the Khan's coal supply and the arrival of his first oil, there might be a brief gap of time, during which his Beckerley fields would be dead. If America only knew this, and could strike then, the war would be won. Lister must try to get the information to America in time!

So he set the boat lurching away into the east. Little by little, the Dutch ship faded toward the horizon, and Formosa was a dark cloud sinking ever lower. At last he was alone on a dead, green sea that barely moved, and his passage left no wake save a slightly darker green scraping, that slowly closed behind him. No fin cut the slimy surface, and but few birds soared, for their slime-bred prey was too abundant to draw them far from land.

He set his course carefully on a great circle, to conserve his fuel. The malodorous slime sickened him with its stench. The perpetual lurching of his craft added to his nausea. Day faded into a starry darkness, and darkness into day.

He made it. At the second midnight, with scarcely a pint of dynoline remaining in his tank, the lights of the Resolute flashed out of the darkness.

But convincing the captain was almost as difficult a job as the passage itself.

"It's deuced irregular!" That official grunted. We're neutrals." But at last, because England had India and Papua and the Malay States, and hated Asia and all its component parts by tradition and policy, the British captain acceded to Lister's request, and Lister set out again with a full tank.

He had tried to get the captain to send a code message by radio to America for him, but to that the captain had proved adamant.

IV.

EARLY NEXT MORNING, on glancing back, he spied a plane, winging swiftly out of the shadows that still clouded the west and the distant China Seas. Soon it arrived, and circled far above him, then slanted downward in a wide spiral. The double-headed golden eagle of the Khan's air force glittered on its wings.

The machine swung close. An arm waved vigorously, gesturing in the direction of the west. The pilot was ordering him back.

Lister stared with narrowed eyes, but permitted his boat to jog right ahead. He was not going to be turned back so easily as that. All the same, he had a feeling anything but comfortable, for he was completely at the mercy of the Asiatic aviator, should the latter choose to use bullet or bomb.

The plane circled again. Suddenly Lister realized with a start of amazement that the craft was attempting to land—to alight on that sticky mass of heaving slime! It was impossible!

But the plane seemed able to achieve the impossible. Its pontoons skipped lightly over the treacherous stuff, bounding toward him. It was all but down safely, and then—then the inevitable! Either the plane dipped or the sea heaved—Lister could not tell which—and the idling propeller struck a mass of green slime. Very gently, the plane lifted its tail and nosed over, the green corruption spewing from the spinning blades. And the pilot—for a single instant Lister had a clear view of the form that was catapulted through the air—was plunged into the impassive algos. All that remained was a quickly filling depression and the sinking plane.

But he had seen enough. Sally Amber! It was Sally who struggled somewhere in the depths of that nauseating sea. And he—he was as helpless to aid her as though he were a thousand miles away.

He spun the wheel; the boat bounced and jogged toward the spot. As near as he could bring it without disturbing the gradually closing dent in the slimy surface of the sea, he halted the craft. He seized the twenty-foot rope fastened to the bow, and tied one end of the rope firmly around his arm. Then, fixing his gaze on the spot, he plunged down into the slime.

It was like trying to swim in heavy oil. To move his arms at all required a great effort, and then he was not sure whether he was going down, or up, or sidewise, or was just churning. The stuff clogged his nose, his eyes, his ears—even his mouth, when in an unguarded moment he opened it.

His hand struck something solid. It was an instant before he realized that it was Sally's ankle. He clutched it in a grasp of desperation, and gave a yank on the rope tied to his arm. Pulling in on the rope was difficult, as he had only one free hand with which to work. Once he lost hold of the rope in the slime, and had to start all over again, groping along it from where it was tied to his arm.

He scarcely knew when he reached the surface, so thick was the coating of muck he carried with him. He thrust the girl across the gunwale, and then had to stop to clear his nose and mouth before he could even breathe. He clambered into the boat.

Sally was not unconscious, but her nausea made her almost as green as the algae she clawed out of her eyes.

"Thank you, Dick," she said, "for the rescue. I'm ashamed that I needed it."

"Why are you here, Sally?"

Her eyes hardened a bit. "Why are you here, Dick? I told you to make for Hongkong or Haiphong."

"But I didn't promise to, Sally."

"Perhaps not, but do you think I can let you get to an American ship or port, with the information you have? It's bad enough that I let it slip, and that I helped you to escape, but I will not play traitor to Asia any further than that! Do you understand?"

"How'd you find me?"

"It occurred to me, after I left you, that you might try just what you did. I got back to Harbin before Plotkin thought of connecting me with your escape—if he's thought of it yet—so I was able to get a plane. I flew over the China Sea between Taiwan and Hongkong, until I was sure you weren't on that route. Then I flew east.

"For two days, I've been scouring this area. You see, I anticipated that you'd head for Guam. But now, Dick, you're going where I say. We're going back to Luzon. The Philippines are neutral, but they're friendly to Asia, so I can have you interned there, and yet, with a little influence, go free myself. Start your engine."

He did. The boat took up its eastward course.

"Turn about!" she snapped. When he merely smiled, she reached suddenly into the bosom of her aviator's shirt and produced a tiny Japanese automatic, one of the diminutive nine-caliber, but deadly with its high-velocity, chrome-jacketed bullets. "Put about, Dick!"

With a movement so casual that she was caught completely off guard, he kicked the weapon from her hand, and. it spun off into the slime. "We go my way, Sally," he said quietly.

She sobbed, "I ought to have killed you! But I couldn't, and this is the result."

Abruptly she turned her glorious deep eyes upon him. "Dick, do you know what will happen to me, if you take me to Guam? You know what they do to spies! Do you want me to be shot against a wall?"

"Lord!" he muttered. "I didn't think of that. Listen, Sally. The Pelew Islands are Japanese, and they're not far off my course. I'm going to land you there about midnight, and you're going to be thoroughly bound, and very tightly

gagged, so you can't rouse any pursuit. After the war is over, maybe you will forgive me."

"I forgive you now, Dick," she said softly, but with a puzzling note in her voice. "The Nightshade is dead. I'm no good as a spy when you're involved. But I warn you that I shall still try to defeat you!"

He swung the boat onto its new course. "If you can, Sally."

SUDDENLY he noticed something which altered all his plans! Staring out over the horrible, slimy sea, he noticed a change. In addition to the green, there were now vast patches of brown —of dying algae!

For a moment he failed to grasp the significance of this. Then, so suddenly that Sally jumped, he shouted, "I see it all now! It has happened!"

"Wh-what?"

"The Khan's Beckerley fields are off in Alaska! His Siberian railroads are blocked at last by the fungi! He's out of fuel! It can't be our fields that are off, for our coal mines are too close behind our lines to be cut off in this way."

"How can you know that any Beckerley fields are off?" asked Sally.

"The—the—" He caught himself, then proceeded, "We're not going to Pelew Island, after all. We're going to Guam. This information can't wait; for, if the American lines know it and advance at once, the war's over. Our Beckerley fields are on, and yours are off!"

"How—how do you know?"

"I'll tell you, for it can't do any harm now. You wanted to know what I knew about this plague of algae, didn't you? Well, I'll tell you, Sally. It isn't an American weapon; it's an accident!"

"An—accident?"

"Yes, or a by-product. It's the result of the Beckerley fields. I got the hunch when I learned that the center of the trouble seemed to be Alaska. Up in Alaska there are two enormous fields of force within a few hundred feet of

each other, ours and yours. Between them is a hundred-mile-long zone of terrific electrical strain. What's the result? Ozone! Tons of ozone pouring up into the air, until the very envelope of air around the earth was affected.

"The normal ozone content increased, and this layer of ozone around the earth cut off the sun's death rays which had been maintaining the balance of nature. Relieved from the restraining influence of the death rays, the cryptogamia—the lichen; and fungi and algae—increased to abnormal quantities.

"But it's over now. Ozone is unstable and goes rapidly back to normal. The ozone in the air is decreasing. The death rays are getting through again.

"How do I know? Because the algae are dying, and that can mean only one thing—that there are no longer two Beckerley fields opposing each other in Alaska, pouring ozone into the air. There is only one Beckerley field—ours. The Khan's shield is gone, and all we need do is advance!"

Sally was very pale now. "I wish you hadn't told me this," she whispered. "Oh, Dick, don't you see that it means that I just have to stop you? If you love me, throw me into the slime of the sea, for I'd rather die than live these next few hours trying to kill you!"

His triumphant face sobered. "Hours?" he echoed. "It will take us three days to reach Guam. Sally, when I need sleep, I'm going to tie you up. And I hope you don't resist, because Lord knows I don't want to hurt you."

But she yielded quite submissively when, a few hours later, he twisted the painter rope about her wrists and ankles. He remembered her trick of the drugged finger nail, and carefully avoided giving her another similar opportunity. Then he set and locked the gyro steering compass, and curled up on one of the seats to sleep.

When he awoke, the boat was still slapping along across the slime. Sally was still securely tied and apparently in. the same position, but the bottom of the boat was wet with some colorless fluid.

"What's this?" he snapped.

"It's your fuel," said Sally triumphantly. "I drained the tank."

He gasped! But in a moment he broke out in a chuckle of relief. "That isn't dynoline," he said. "That's the fresh water from the sun-alembic I was saving against a cloudy day. The water tank's air-tight, and the algae can't get in."

Sally sagged despondently in her place. "Will you untie me?" she asked dully. "I'm very cramped,"

HE VENTURED an attempt to sleep only once more, and this time lying full length against the fuel tank, while he bound Sally not only hand and foot, but lashed her to the gunwale as well. And when he awakened, she had kicked the sun-alembic to bits.

"Why'd you do that?" he asked angrily. "Although we don't need water for the one day that's left to travel, it would be a convenience."

"I did it so that if we miss Guam we'll be dead before some scouting American plane happens to run across us."

"We won't miss Guam," he promised grimly.

As the hot, stinking day wore on, the grueling grind began to tell on Lister. All about them the algae was turning brown, and the stench was almost unbearably nauseating.

"I'm going bats," he told the girl. "A crazy poem keeps hammering at my head. I've got to pass it on, or I shall go bats. Did you ever hear the short-short-short story about Algy? All this rotting algae is what suggested it to me, I guess."

Sally turned intent catlike eyes on him, aroused from her lethargy by the possibility of his cracking.

"Go on. Tell it to me," she urged insidiously.

He laughed harshly, discordantly, gave his head a violent shake, and ran the back of his hand across his tired eyes.

"It goes like this," he said:

"Bear met Algy.
Bear et Algy.

Bear was bulgy.
Bulge was Algy."

Suddenly, he gave a wild laugh. "That's all wrong this time!" he declared. "By Heaven! The bear isn't eating Algy this time. Algae is eating the bear—the Siberian bear. We've got them licked, if we ever reach Guam."

"We never will reach Guam," the girl taunted him.

"Won't we?" he exclaimed. "Look! A low shore line showed in the darkening east. "Guam!" he announced, sober and sane once more.

Sally was disconsolate. "I've lost, then," she whimpered. "Please, Dick, be kind to me, and—let me kiss you now, in case anything happens."

He knew what she meant. He had worried enough over the question of what would happen to the lovely Nightshade; for, despite his assurance, he knew that Captain Cass was aware of Sally's identity. The two days of grace were long since up—Cass would have reported the circumstances of Lister's disappearance.

Cass' description of Sally, together with the blurred photographs in Lister's office, would certainly identify the girl. Nothing could save her from a wall at sunrise. So he drew her into his arms with a tenderness born of despair.

Just in time he realized her intent. He caught her wrist as she struck with her drugged finger nail at his throat.

"Damn you, Sally!" he blazed. "Now I'm going to give you a dose of your own medicine. There's only one way you're safe to have around, and that's unconscious!"

But she read his purpose. Before he could seize her forefinger, she had clenched it into a stubborn little fist, and she fought him with a strength that was amazing. But at last he saw the way: disregarding her blows against his face, he slowly, inexorably, crushed her clenched fist in his hand. She cried out in pain as her own finger nails were driven into the flesh of her palm, and then, suddenly, her eyes widened, fluttered, and closed, and she sank first to her knees, then in a limp heap at his feet.

IT WAS DEEP NIGHT when he carried her up the side of the U. S. cruiser Dallas, stalled in the algae off Agana. Thrusting her into the arms of the ship's surgeon, he rushed to report to the commanding officer his information: that he knew, from the browning of the algae, that the Khan's Alaskan Beckerley field was off. The message did not need to wait for coding, for America still held the secret of non-interceptible radio.

Scarcely an hour later came back the news that America had triumphed in Alaska.

Later in the night came the flash that the Khan was dead—his body had been positively identified. America broadcast this news to the world.

By morning, rioting and dissension had broken out all over Asia. The Asiatic Union was disintegrating. It was the beginning of the end.

There was jubilation aboard the Dallas, but Dick Lister could not share in it. True, yes, he had saved America. He was a great national hero. The president in person had radioed his thanks.

So Dick Lister pretended to be elated, to join in the celebration—for, of course, he had to. But, through it all, two faces haunted him: the piquant oriental features of the girl he loved, and the grim, inexorable, duty-mad features of Captain Cass. Regardless of the fact that the war was now over and won, regardless of the part which Lister had played in winning it, Cass would never rest until he had brought death to the archspy of the late enemy.

And so, as soon as he could, Lister brake away from the jollification, and dragged his leaden feet toward the ship's hospital. There he stood with the ship's doctor, looking down on the still unconscious Sally.

"A very beautiful girl, your fiancee," said the doctor.

"Yes. We were kidnaped together by the Khan's spies, and she was really more important than I in accomplishing our escape. This is just exhaustion—and, of course, excitement." But he knew that Captain Cass would certainly spike that story.

"Well," observed the doctor, "your coming is almost the first excitement I've, had out of this war. I hope you're right about the algae being over, for it's been ungodly dull being stuck here in all this slime. One casualty is all I've seen, and that one at a distance. A young officer tried to land his plane on the algae a week ago, nosed over, and was lost. They never recovered his body."

"It's a difficult thing to do—find a body in that green muck," said Lister reminiscently. "Who was he?"

"He was—let's see—a Captain Jim Cass. We knew who it was, 'cause we'd been expecting him."

Captain Jim Cass! A week ago. Then Cass had never returned to America He had died before the end of the two days of grace which he had granted Lister. And his knowledge of Sally's identity had died with him. Now no one would ever know!

With a sob of joyous relief, Dick Lister dropped to his knees beside the sleeping form of the girl he loved.

Redemption Cairn (1936)

HAVE you ever been flat broke, hungry as the very devil, and yet so down and out that you didn't even care? Looking back now, after a couple of months, it's hard to put it into words, but I think the low point was the evening old Captain Harris Henshaw dropped into my room—my room, that is, until the twenty-four-hour notice to move or pay up expired.

There I sat, Jack Sands, ex-rocket pilot. Yeah, the same Jack Sands you're thinking of, the one who cracked up the Gunderson Europa expedition trying to land at Young's Field, Long Island, in March, 2110. Just a year and a half ago! It seemed like ten and a half. Five hundred idle days. Eighteen months of having your friends look the other way when you happened to pass on the street, partly because they're ashamed to nod to a pilot that's been tagged yellow, and partly because they feel maybe it's kinder to just let you drop out of sight peacefully.

I didn't even look up when a knock sounded on my door, because I knew it could only be the landlady. "Haven't got it," I growled. "I've got a right to stay out my notice."

"You got a right to make a damn fool of yourself," said Henshaw's voice. "Why don't you tell your friends your address?"

"Harris!" I yelled. It was "Captain" only aboard ship. Then I caught myself. "What's the matter?" I asked, grinning bitterly. "Did you crack up, too? Coming to join me on the dust heap, eh?"

"Coming to offer you a job," he growled.

"Yeah? It must be a swell one, then. Carting sand to fill up the blast pits on a field, huh? And I'm damn near hungry enough to take it—but not quite."

"It's a piloting job," said Henshaw quietly.

"Who wants a pilot who's been smeared with yellow paint? What outfit will trust its ships to a coward? Don't you know that Jack Sands is tagged forever?"

"Shut up, Jack," he said briefly. "I'm offering you the job as pilot under me on Interplanetary's new Europa expedition."

I started to burn up then. You see, it was returning from Jupiter's third moon, Europa, that I'd smashed up the Gunderson outfit, and now I got a wild idea that Henshaw was taunting me about that. "By Heaven!" I screeched. "If you're trying to be funny—"

But he wasn't. I quieted down when I saw he was serious, and he went on slowly, "I want a pilot I can trust, Jack. I don't know anything about your cracking up the *Hera*; I was on the Venus run when it happened. All I know is that I can depend on you."

After a while I began to believe him. When I got over the shock a little, I figured Henshaw was friend enough to be entitled to the facts.

"Listen, Harris," I said. "You're taking me on, reputation and all, and it looks to me as if you deserve an explanation. I haven't been whining about the bump I got, and I'm not now. I cracked up Gunderson and his outfit all right, only—" I hesitated; it's kind of tough to feel that maybe you're squirming in the pinch—"only my co-pilot, that fellow Kratska, forgot to mention a few things, and mentioned a few others that weren't true. Oh, it was my shift, right enough, but he neglected to tell the investigating committee that I'd stood his shift and my own before it. I'd been on for two long shifts, and this was my short one."

"Two long ones!" echoed Henshaw. "You mean you were on sixteen hours before the landing shift?"

"That's what I mean. I'll tell you just what I told the committee, and maybe you'll believe me. They didn't. But when Kratska showed up to relieve me he was hopped. He had a regular hexylamine jag, and he couldn't have piloted a tricycle. So I did the only possible thing to do; I sent him back to sleep it off, and I reported it to Gunderson, but that still left me the job of getting us down.

"It wouldn't have been so bad if it had happened in space, because there isn't much for a pilot to do out there except follow the course laid out by the captain, and maybe dodge a meteor if the alarm buzzes. But I had sixteen solid hours of teetering down through a gravitational field, and by the time my four-hour spell came around I was bleary."

"I don't wonder," said the captain. "Two long shifts!"

Maybe I'd better explain a rocket's pilot system. On short runs like Venus or Mars, a vessel could carry three pilots, and then it's a simple matter of three eight-hour shifts. But on any longer run, because air and weight and fuel and food are all precious, no rocket ever carries more than two pilots.

So a day's run is divided into four shifts, and each pilot has one long spell of eight hours, then four hours off, then four hours on again for his short shift, and then eight hours to sleep. He eats two of his meals right at the control desk, and the third during his short free period. It's a queer life, and sometimes men have been co-pilots for years without really seeing each other except at the beginning and the end of their run.

I went on with my story, still wondering whether Henshaw would feel as if I were whining. "I was bleary," I repeated, "but Kratska showed up still foggy, and I didn't dare trust a hexylamine dope with the job of landing. Anyway, I'd reported to Gunderson, and that seemed to shift some of the responsibility to him. So I let Kratska sit in the control cabin, and I began to put down."

Telling the story made me mad all over. "Those lousy reporters!" I blazed. "All of them seemed to think landing a rocket is like settling down in bed; you just cushion down on your underblast. Yeah; they don't realize that you have to land blind, because three hundred feet down from the ground the blast begins to splash against it.

"You watch the leveling poles at the edge of the field and try to judge your altitude from them, but you don't see the ground; what you see under you are the flames of Hell. And another thing they don't realize: lowering a ship is like bringing down a dinner plate balanced on a fishing rod. If she starts to

roll sideways—blooey! The underjets only hold you up when they're pointing down, you know."

Henshaw let me vent my temper without interruption, and I returned to my story. "Well, I was getting down as well as could be expected. The*Hera* always did have a tendency to roll a little, but she wasn't the worst ship I've put to ground.

"But every time she slid over a little, Kratska let out a yell; he was nervous from his dope jag, and he knew he was due to lose his license, and on top of that he was just plain scared by the side roll. We got to seventy feet on the leveling poles when she gave a pretty sharp roll, and Kratska went plain daffy."

I hesitated. "I don't know exactly how to tell what happened. It went quick, and I didn't see all of it, of course. But suddenly Kratska, who had been fumbling with the air lock for ten minutes, shrieked something like 'She's going over!' and grabbed the throttle. He shut off the blast before I could lift an eyelash, shut it off and flung himself out. Yeah; he'd opened the air lock.

"Well, we were only seventy feet—less than that—above the field. We dropped like an overripe apple off a tree. I didn't have time even to move before we hit, and when we hit, all the fuel in all the jets must have let go. And for what happened after that you'd better read the newspapers."

"Not me," said Henshaw. "You spill it."

"I can't, not all of it, because I was laid out. But I can guess, all right. It seems that when the jets blew off, Kratska was just picked up in a couple of cubic yards of the soft sand he had landed in, and tossed clear. He had nothing but a broken wrist. And as for me, apparently I was shot out of the control room, and banged up considerably. And as for Gunderson, his professors, and everyone else on the Hera—well, they were just stains on the pool of molten ferralumin that was left."

"Then how," asked Henshaw, "did they hang it on you?"

I tried to control my voice. "Kratska," I said grimly. "The field was clear for landing; nobody can stand in close with the blast splashing in a six-hundred-

foot circle. Of course, they saw someone jump from the nose of the ship after the jets cut off, but how could they tell which of us? And the explosion shuffled the whole field around, and nobody knew which was what."

"Then it should have been his word against yours."

"Yeah; it should have been. But the field knew it was my shift because I'd been talking over the landing beam, and besides, Kratska got to the reporters first. I never even knew of the mess until I woke up at Grand Mercy Hospital thirteen days later. By that time Kratska had talked and I was the goat."

"But the investigating committee?"

I grunted. "Sure, the investigating committee. I'd reported to Gunderson, but he made a swell witness, being just an impurity in a mass of ferralumin alloy. And Kratska had disappeared anyway."

"Couldn't they find him?"

"Not on what I knew about him. We picked him up at Junopolis on Io, because Briggs was down with white fever. I didn't see him at all except when we were relieving each other, and you know what that's like, seeing somebody in a control cabin with the sun shields up. And on Europa we kept to space routine, so I couldn't even give you a good description of him. He had a beard, but so have ninety per cent of us after a long hop, and he said when we took him on that he'd just come over from the Earth." I paused. "I'll find him some day."

"Hope you do," said Henshaw briskly. "About this present run, now. There'll be you and me, and then there'll be Stefan Coretti, a physical chemist, and an Ivor Gogrol, a biologist. That's the scientific personnel of the expedition."

"Yeah, but who's my co-pilot? That's what interests me."

"Oh, sure," said Henshaw, and coughed. "Your co-pilot. Well, I've been meaning to tell you. It's Claire Avery."

"*Claire Avery!*"

"That's right," agreed the captain gloomily. "The Golden Flash herself. The only woman pilot to have her name on the Curry cup, winner of this year's Apogee race."

"She's no pilot!" I snapped. "She's a rich publicity hound with brass nerves. I was just curious enough to blow ten bucks rental on a 'scope to watch that race. She was ninth rounding the Moon. Ninth! Do you know how she won? She gunned her rocket under full acceleration practically all the way back, and then fell into a braking orbit.

"Any sophomore in Astronautics II knows that you can't calculate a braking orbit without knowing the density of the stratosphere and ionosphere, and even then it's a gamble. That's what she did—simply gambled, and happened to be lucky. Why do you pick a rich moron with a taste for thrills on a job like this?"

"I didn't pick her, Jack. Interplanetary picked her for publicity purposes. To tell the truth, I think this whole expedition is an attempt to get a little favorable advertising to offset that shady stock investigation this spring. Interplanetary wants to show itself as the noble patron of exploration. So Claire Avery will take off for the television and papers, and you'll be politely ignored."

"And that suits me! I wouldn't even take the job if things were a little different, and—" I broke off suddenly, frozen "Say," I said weakly, "did you know they'd revoked my license?"

"You don't say," said Henshaw. "And after all the trouble I had talking Interplanetary into permission to take you on, too." Then he grinned. "Here," he said, tossing me an envelope. "See how long it'll take you to lose this one."

But the very sight of the familiar blue paper was enough to make me forget a lot of things—Kratska, Claire Avery, even hunger.

The take-off was worse than I had expected. I had sense enough to wear my pilot's goggles to the field, but of course I was recognized as soon as I joined the group at the rocket. They'd given us the *Minos*, an old ship, but she looked as if she'd handle well.

The newsmen must have had orders to ignore me, but I could hear plenty of comments from the crowd. And to finish things up, there was Claire Avery, a lot prettier than she looked on the television screens, but with the same unmistakable cobalt-blue eyes, and hair closer to the actual shade of metallic gold than any I'd ever seen. The "Golden Flash," the newsmen called her. Blah!

She accepted her introduction to me with the coolest possible nod, as if to say to the scanners and cameras that it wasn't her choice she was teamed with yellow Jack Sands. But for that matter, Coretti's black Latin eyes were not especially cordial either, nor were Gogrol's broad features. I'd met Gogrol somewhere before, but couldn't place him at the moment.

Well, at last the speeches were over, and the photographers and broadcast men let the Golden Flash stop posing, and she and I got into the control cabin for the take-off. I still wore my goggles, and huddled down low besides, because there were a dozen telescopic cameras and scanners recording us from the field's edge. Claire Avery simply ate it up, though, smiling and waving before she cut in the underblast. But finally we were rising over the flame.

She was worse than I'd dreamed. The *Minos* was a sweetly balanced ship, but she rolled it like a baby's cradle. She had the radio on the field broadcast, and I could hear the description of the take-off: "—heavily laden. There—she rolls again. But she's making altitude. The blast has stopped splashing now, and is coming down in a beautiful fan of fire. A difficult take-off, even for the Golden Flash." A difficult take-off! Bunk!

I was watching the red bubble in the level, but I stole a glance to Claire Avery's face, and it wasn't so cool and stand-offish now. And just then the bubble in the level bobbed way over, and I heard the girl at my side give a frightened little gasp. This wasn't cradle rocking any more—we were in a real roll!

I slapped her hands hard and grabbed the U-bar. I cut the underjets completely off, letting the ship fall free, then shot the full blast through the right laterals. It was damn close, I'm ready to swear, but we leveled, and I snapped on the under-blast before we lost a hundred feet of altitude. And

there was that inane radio still talking: "They're over! No— they've leveled again, but what a roll! She's a real pilot, this Golden Flash—"

I looked at her; she was pale and shaken, but her eyes were angry. "Golden Flash, eh?" I jeered. "The gold must refer to your money, but what's the flash? It can't have much to do with your ability as a pilot." But at that time I had no idea how pitifully little she really knew about rocketry.

She flared. "Anyway," she hissed, her lips actually quivering with rage, "the gold doesn't refer to color, Mr. Malaria Sands!" She knew that would hurt; the "Malaria" was some bright columnist's idea of a pun on my name. You see, malaria's popularly called Yellow Jack. "Besides," she went on defiantly, "I could have pulled out of that roll myself, and you know it."

"Sure," I said, with the meanest possible sarcasm. We had considerable upward velocity now, and plenty of altitude, both of which tend toward safety because they give one more time to pull out of a roll. "You can take over again now. The hard part's over."

She gave me a look from those electric blue eyes, and I began to realize just what sort of trip I was in for. Coretti and Gogrol had indicated their unfriendliness plainly enough, and heaven knows I couldn't mistake the hatred in Claire Avery's eyes, so that left just Captain Henshaw. But the captain of the ship dare not show favoritism; so all in all I saw myself doomed to a lonely trip.

Lonely isn't the word for it. Henshaw was decent enough, but since Claire Avery had started with a long shift and so had the captain, they were having their free spells and meals on the same schedule, along with Gogrol, and that left me with Coretti. He was pretty cool, and I had pride enough left not to make any unwanted advances.

Gogrol was worse; I saw him seldom enough, but he never addressed a word to me except on routine. Yet there was something familiar about him—As for Claire Avery, I simply wasn't in her scheme of things at all; she even relieved me in silence.

Offhand, I'd have said it was the wildest sort of stupidity to send a girl with four men on a trip like this. Well, I had to hand it to Claire Avery; in*that* way

she was a splendid rocketrix. She took the inconveniences of space routine without a murmur, and she was so companionable—that is, with the others—that it was like having a young and unusually entertaining man aboard.

And, after all, Gogrol was twice her age and Henshaw almost three times; Coretti was younger, but I was the only one who was really of her generation. But as I say, she hated me; Coretti seemed to stand best with her.

So the weary weeks of the journey dragged along. The Sun shrunk up to a disk only a fifth the diameter of the terrestrial Sun, but Jupiter grew to an enormous moon-like orb with its bands and spots gloriously tinted. It was an exquisite sight, and sometimes, since eight hours' sleep is more than I can use, I used to slip into the control room while Claire Avery was on duty, just to watch the giant planet and its moons. The girl and I never said a word to each other.

We weren't to stop at Io, but were landing directly on Europa, our destination, the third moon outward from the vast molten globe of Jupiter. In some ways Europa is the queerest little sphere in the Solar System, and for many years it was believed to be quite uninhabitable. It is, too, as far as seventy per cent of its surface goes, but the remaining area is a wild and weird region.

This is the mountainous hollow in the face toward Jupiter, for Europa, like the Moon, keeps one face always toward its primary. Here in this vast depression, all of the tiny world's scanty atmosphere is collected, gathered like little lakes and puddles into the valleys between mountain ranges that often pierce through the low-lying air into the emptiness of space.

Often enough a single valley forms a microcosm sundered by nothingness from the rest of the planet, generating its own little rainstorms under pygmy cloud banks, inhabited by its indigenous life, untouched by, and unaware of, all else.

In the ephemeris, Europa is dismissed prosaically with a string of figures: diameter, 2099 M.—period, 3 days, 13 hours, 14 seconds —distance from

primary, 425,160 M. For an astronomical ephemeris isn't concerned with the thin film of life that occasionally blurs a planet's surface; it has nothing to say of the slow libration of Europa that sends intermittent tides of air washing against the mountain slopes under the tidal drag of Jupiter, nor of the waves that sometimes spill air from valley to valley, and sometimes spill alien life as well.

Least of all is the ephemeris concerned with the queer forms that crawl now and then right up out of the air pools, to lie on the vacuum-bathed peaks exactly as strange fishes flopped their way out of the Earthly seas to bask on the sands at the close of the Devonian age.

Of the five of us, I was the only one who had ever visited Europa— or so I thought at the time. Indeed, there were few men in the world who had actually set foot on the inhospitable little planet; Gunderson and his men were dead, save me and perhaps Kratska, and we had been the first organized expedition.

Only a few stray adventurers from Io had preceded us. So it was to me that Captain Henshaw directed his orders when he said, "Take us as close as possible to Gunderson's landing."

It began to be evident that we'd make ground toward the end of Claire's long shift, so I crawled out of the coffinlike niche I called my cabin an hour early, and went up to the control room to guide her down. We were seventy or eighty miles up, but there were no clouds or air distortion here, and the valleys crisscrossed under us like a relief map.

It was infernally hard to pick Gunderson's valley; the burned spot from the blast was long since grown over, and I had only memory to rely on, for, of course, all charts were lost with the *Hera*. But I knew the general region, and it really made less difference than it might have, for practically all the valleys in that vicinity were connected by passes; one could walk between them in breathable air.

After a while I picked one of a series of narrow parallel valleys, one with what I knew was a salt pool in the center—though most of them had that; they'd be desert without it—and pointed it out to Claire. "That one," I said,

adding maliciously, "and I'd better warn you that it's narrow and deep—a ticklish landing place."

She flashed me an unfriendly glance from sapphire eyes, but said nothing. But a voice behind me sounded unexpectedly: "To the left! The one to the left. It—it looks easier."

Gogrol! I was startled for a moment, then turned coldly on him. "Keep out of the control room during landings," I snapped.

He glared, muttered something, and retired. But he left me a trifle worried; not that his valley to the left was any easier to land in— that was pure bunk—but it looked a little familiar! Actually, I wasn't sure but that Gogrol had pointed out Gunderson's valley.

But I stuck to my first guess. The irritation I felt I took out on Claire. "Take it slow!" I said gruffly. "This isn't a landing field. Nobody's put up leveling poles in these valleys. You're going to have to land completely blind from about four hundred feet, because the blast begins to splash sooner in this thin air. You go down by level and guess, and Heaven help us if you roll her! There's no room for rolling between those cliffs."

She bit her lip nervously. The *Minos* was already rolling under the girl's inexpert hand, though that wasn't dangerous while we still had ten or twelve miles of altitude. But the ground was coming up steadily.

I was in a cruel mood. I watched the strain grow in her lovely features, and if I felt any pity, I lost it when I thought of the way she had treated me. So I taunted her.

"This shouldn't be a hard landing for the Golden Flash. Or maybe you'd rather be landing at full speed, so you could fall into a braking ellipse —only that wouldn't work here, because the air doesn't stick up high enough to act as a brake."

And a few minutes later, when her lips were quivering with tension, I said, "It takes more than publicity and gambler's luck to make a pilot, doesn't it?"

She broke. She screamed suddenly, "Oh, take it! Take it, then!" and slammed the U-bar into my hands. Then she huddled back in her corner sobbing, with her golden hair streaming over her face.

I took over; I had no choice. I pulled the *Minos* out of the roll Claire's gesture had put her in, and then started teetering down on the underjets. It was pitifully easy because of Europa's low gravitation and the resulting low falling acceleration; it gave the pilot so much time to compensate for side sway.

I began to realize how miserably little the Golden Flash really knew about rocketry, and, despite myself, I felt a surge of pity for her. But why pity her? Everyone knew that Claire Avery was simply a wealthy, thrill- intoxicated daredevil, with more than her share of money, of beauty, of adulation. The despised Jack Sands pitying her? That's a laugh!

The underblast hit and splashed, turning the brown-clad valley into black ashes and flame. I inched down very slowly now, for there was nothing to see below save the fiery sheet of the blast, and I watched the bubble on the level as if my life depended on it—which it did.

I knew the splash began at about four hundred feet in this density of air, but from then on it was guesswork, and a question of settling down so slowly that when we hit we wouldn't damage the underjets. And if I do say it, we grounded so gently that I don't think Claire Avery knew it until I cut off the blast.

She rubbed the tears away with her sleeve and glared blue-eyed defiance at me, but before she could speak, Henshaw opened the door. "Nice landing, Miss Avery," he said.

"Wasn't it?" I echoed, with a grin at the girl.

She stood up. She was trembling and I think that under Earthly gravitation she would have fallen back into the pilot's seat, for I saw her knees shaking below her trim, black shorts.

"I didn't land us," she said grimly. "Mr. Sands put us to ground."

Somehow my pity got the best of me then. "Sure," I said. "It's into my shift. Look." It was; the chronometer showed three minutes in. "Miss Avery had all the hard part—"

But she was gone. And try as I would, I could not bring myself to see her as the hard, brilliant thrill-seeker which the papers and broadcasts portrayed her. Instead, she left me with a strange and by no means logical impression of—wistfulness.

Life on Europa began uneventfully. Little by little we reduced the atmospheric pressure in the *Minos* to conform to that outside. First Coretti and then Claire Avery had a spell of altitude sickness, but by the end of twenty hours we were all acclimated enough to be comfortable outside.

Henshaw and I were first to venture into the open. I scanned the valley carefully for familiar landmarks, but it was hard to be sure; all these canyonlike ditches were much alike. I know that a copse of song-bushes had grown high on the cliff when the *Hera* had landed, but our blast had splashed higher, and if the bushes had been there, they were only a patch of ashes now.

At the far end of the valley there should have been a cleft in the hills, a pass leading to the right into the next valley. That wasn't there; all I could distinguish was a narrow ravine cutting the hills to the left.

"I'm afraid I've missed Gunderson's valley," I told Henshaw. "I think it's the next one to our left; it's connected to this one by a pass, if I'm right, and this is one I came in several times to hunt." It recurred to me suddenly that Gogrol had said the left one.

"You say there's a pass?" mused Henshaw. "Then we'll stay here rather than chance another take-off and another landing. We can work in Gunderson's valley through the pass. You're sure it's low enough so we won't have to use oxygen helmets?"

"If it's the right pass, I am. But work at what in Gunderson's valley? I thought this was an exploring expedition."

Henshaw gave me a queer, sharp look, and turned away. Right then I saw Gogrol standing in the port of the *Minos*, and I didn't know whether Henshaw's reticence was due to his presence or mine. I moved a step to follow him, but at that moment the outer door of the air lock opened and Claire Avery came out.

It was the first time I had seen her in a fair light since the take-off at Young's Field, and I had rather forgotten the loveliness of her coloring. Of course, her skin had paled from the weeks in semidarkness, but her cadmium-yellow hair and sapphire-blue eyes were really startling, especially when she moved into the sun shadow of the cliff and stood bathed only in the golden Jupiter light.

Like Henshaw and myself, she had slipped on the all-enveloping ski suit one wore on chilly little Europa. The small world received only a fourth as much heat as steamy Io, and would not have been habitable at all, except for the fact that it kept its face always toward its primary, and therefore received heat intermittently from the Sun, but eternally from Jupiter.

The girl cast an eager look over the valley; I knew this was her first experience on an uninhabited world, and there is always a sense of strangeness and the fascination of the unknown in one's first step on an alien planet.

She looked at Henshaw, who was methodically examining the scorched soil on which the *Minos* rested, and then her glance crossed mine. There was an electric moment of tension, but then the anger in her blue eyes—if it had been anger—died away, and she strode deliberately to my side.

She faced me squarely. "Jack Sands," she said with an undertone of defiance, "I owe you an apology. Don't think I'm apologizing for my opinion of you, but only for the way I've been acting toward you. In a small company like this there isn't room for enmity, and as far as I'm concerned, your past is yours from now on. What's more, I want to thank you for helping me during the take-off, and"—her defiance was cracking a bit—"d-during the—the landing."

I stared at her. That apology must have cost her an effort, for the Golden Flash was a proud young lady, and I saw her wink back her tears. I choked back the vicious reply I had been about to make, and said only, "O.K. You keep your opinion of me to yourself and I'll do the same with my opinion of you."

She flushed, then smiled. "I guess I'm a rotten pilot," she admitted ruefully. "I hate take-offs and landings. To tell the truth, I'm simply scared of the *Minos*. Up to the time we left Young's Field, I'd never handled anything larger than my little racing rocket, the *Golden Flash*."

I gasped. That wouldn't have been credible if I hadn't seen with my own eyes how utterly unpracticed she was. "But why?" I asked in perplexity. "If you hate piloting so, why do it? Just for publicity? With your money you don't have to, you know."

"Oh, my money!" she echoed irritably. She stared away over the narrow valley, and started suddenly. "Look!" she cried. "There's something moving on the peaks—like a big ball. And way up where there's no air at all!"

I glanced over. "It's just a bladder bird," I said indifferently. I'd seen plenty of them; they were the commonest mobile form of life on Europa. But of course Claire hadn't, and she was eagerly curious.

I explained. I threw stones into a tinkling grove of song-bushes until I flushed up another, and it went gliding over our heads with its membrane stretched taut.

I told her that the three-foot creature that had sailed like a flying squirrel was the same sort as the giant ball she had glimpsed among the airless peaks, only the one on the peaks had inflated its bladder. The creatures were able to cross from valley to valley by carrying their air with them in their big, balloonlike bladders. And, of course, bladder birds weren't really birds at all; they didn't fly, but glided like the lemurs and flying squirrels of Earth, and naturally, couldn't even do that when they were up on the airless heights.

Claire was so eager and interested and wide-eyed that I quite forgot my grudge. I started to show her my knowledge of things Europan; I led her

close to the copse of song-bushes so that she could listen to the sweet and plaintive melody of their breathing leaves, and I took her down to the salt pool in the center of the valley to find some of the primitive creatures which Gunderson's men had called "nutsies," because they looked very much like walnuts with the hulls on. But within was a small mouthful of delicious meat, neither animal nor vegetable, which was quite safe to eat raw, since bacterial life did not exist on Europa.

I guess I was pretty exuberant, for after all, this was the first chance at companionship I'd had for many weeks. We wandered down the valley and I talked, talked about anything. I told her of the various forms life assumed on the planets, how on Mars and Titan and Europa sex was unknown, though Venus and Earth and Io all possessed it; and how on Mars and Europa vegetable and animal life had never differentiated, so that even the vastly intelligent beaked Martians had a tinge of vegetable nature, while conversely the song-bushes on the hills of Europa had a vaguely animal content. And meanwhile we wandered aimlessly along until we stood below the narrow pass or ravine that led presumably into Gunderson's valley to our left.

Far up the slope a movement caught my eye. A bladder bird, I thought idly, though it was a low altitude for one to inflate; they usually expanded their bladders just below the point where breathing became impossible. Then I saw that it wasn't a bladder bird; it was a man. In fact, it was Gogrol.

He was emerging from the pass, and his collar was turned up about his throat against the cold of the altitude. He hadn't seen us, apparently, as he angled down what mountaineers call a *col*, a ledge or neck of rock that slanted from the mouth of the ravine along the hillside toward the *Minos*. But Claire, following the direction of my gaze, saw him in the moment before brush hid him from view.

"Gogroll" she exclaimed. "He must have been in the next valley. Stefan will want—" She caught herself sharply.

"Why," I asked grimly, "should your friend Coretti be interested in Gogrol's actions? After all, Gogrol's supposed to be a biologist, isn't he? Why shouldn't he take a look in the next valley?"

Her lips tightened. "Why shouldn't he?" she echoed. "I didn't say he shouldn't. I didn't say anything like that."

And thenceforward she maintained a stubborn silence. Indeed, something of the old enmity and coolness seemed to have settled between us as we walked back through the valley toward the *Minos*.

That night Henshaw rearranged our schedule to a more convenient plan than the requirements of space. We divided our time into days and nights, or rather into sleeping and waking periods, for, of course, there is no true night on Europa. The shifts of light are almost as puzzling as those on its neighbor Io, but not quite, because Io has its own rotation to complicate matters.

On Europa, the nearest approach to true night is during the eclipse that occurs every three days or so, when the landscape is illumined only by the golden twilight of Jupiter, or at the most, only by Jupiter and Io light. So we set our own night time by arbitrary Earth reckoning, so that we might all work and sleep during the same periods.

There was no need for any sort of watch to be kept; no one had ever reported life dangerous to man on little Europa. The only danger came from the meteors that swarm about the giant Jupiter's orbit, and sometimes came crashing down through the shallow air of his satellites; we couldn't dodge them here as we could in space. But that was a danger against which a guard was unavailing.

It was the next morning that I cornered Henshaw and forced him to listen to my questions.

"Listen to me, Harris," I said determinedly. "What is there about this expedition that everybody knows but me? If this is an exploring party, I'm the Ameer of Yarkand. Now I want to know what it's all about."

Henshaw looked miserably embarrassed. He kept his eyes away from mine, and muttered unhappily, "I can't tell you, Jack. I'm damned sorry, but I can't tell you."

"Why not?"

He hesitated. "Because I'm under orders not to, Jack."

"Whose orders?"

Henshaw shook his head. "Damn it!" he said vehemently. "I trust you. If it were my choice, you'd be the one I'd pick for honesty. But it isn't my choice." He paused. "Do you understand that? All right"—he stiffened into his captain's manner—"no more questions, then. I'll ask the questions and give the orders."

Well, put on that basis, I couldn't argue. I'm a pilot, first, last, and always, and I don't disobey my superior's orders even when he happens to be as close a friend as Henshaw. But I began to kick myself for not seeing something queer in the business as soon as Henshaw offered me the job.

If Interplanetary was looking for favorable publicity, they wouldn't get it by signing me on. Moreover, the government wasn't in the habit of reissuing a revoked pilot's license without good and sufficient reason, and I knew I hadn't supplied any such reason by loafing around brooding over my troubles. That alone should have tipped me off that something was screwy.

And there were plenty of hints during the voyage itself. True, Gogrol seemed to talk the language of biology, but I'll be dogged if Coretti talked like a chemist. And there was that haunting sense of familiarity about Gogrol, too. And to cap the climax was the incongruity of calling this jaunt an exploring expedition; for all the exploring we were doing we might as well have landed on Staten Island or Buffalo. Better, as far as I was concerned, because I'd seen Europa but had never been to Buffalo.

Well, there was nothing to be done about it now. I suppressed my disgust and tried as hard as I could to cooperate with the others in whatever project we were supposed to be pursuing. That was rather difficult, too, because suspicious-appearing incidents kept cropping up to make me feel like a stranger or an outcast.

There was, for instance, the time Henshaw decided that a change in diet would be welcome. The native life of Europa was perfectly edible, though not all as tasty as the tiny shell creatures of the salt pools. However, I knew of one variety that had served the men of the *Hera*, a plantlike growth

consisting of a single fleshy hand-sized member, that we had called liver-leaf because of its taste.

The captain detailed Coretti and myself to gather a supply of this delicacy, and I found a specimen, showed it to him, and then set off dutifully along the north—that is, the left—wall of the valley.

Coretti appeared to take the opposite side, but I had not gone far before I glimpsed him skirting my edge of the salt pool. That meant nothing; he was free to search anywhere for liver-leaf, but it was soon evident to me that he was not searching. He was following me; he was shadowing my movements.

I was thoroughly irritated, but determined not to show it. I plodded methodically along, gathering the fat leaves in my basket, until I reached the valley's far end and the slopes back and succeeded in running square into Coretti before he could maneuver himself out of a copse of song-bushes.

He grinned at me. "Any luck?" he asked.

"More than you, it seems," I retorted, with a contemptuous look at his all but empty basket.

"I had no luck at all. I thought maybe in the next valley, through the pass there, we might find some."

"I've found my share," I grunted.

I thought I noticed a flicker of surprise in his black eyes. "You're not going over?" he asked sharply. "You're going back?"

"You guessed it," I said sharply. "My basket's full and I'm going back."

I knew that he watched me most of the way back, because halfway to the *Minos* I turned around, and I could see him standing there on the slope below the pass.

Along toward what we called evening the Sun went into our first eclipse. The landscape was bathed in the aureate light of Jupiter alone, and I realized that I'd forgotten how beautiful that golden twilight could be.

I was feeling particularly lonesome, too; so I wandered out to stare at the glowing peaks against the black sky, and the immense, bulging sphere of Jupiter with Ganymede swinging like a luminous pearl close beside it. The scene was so lovely that I forgot my loneliness, until I was suddenly reminded of it.

A glint of more brilliant gold caught my eye, up near the grove of song-bushes. It was Claire's head; she was standing there watching the display, and beside her was Coretti. While I looked, he suddenly turned and drew her into his arms; she put her hands against his chest, but she wasn't struggling; she was perfectly passive and content. It was none of my business, of course, but—well, if I'd disliked Coretti before, I hated him now, because I was lonely again.

I think it was the next day that things came to a head, and trouble really began. Henshaw had been pleased with our meal of indigenous life, and decided to try it again. This time Claire was assigned to accompany me, and we set off in silence. A sort of echo of the coolness that had attended our last parting survived, and besides, what I had seen last night in the eclipse light seemed to make a difference to me. So I simply stalked along at her side, wondering what to choose for the day's menu.

We didn't want liver-leaves again. The little nutsies from the salt pool were all right, but it was a half-day's job to gather enough, and besides, they were almost too salty to be pleasant fare for a whole meal. Bladder birds were hopeless; they consisted of practically nothing except thin skin stretched over a framework of bones. I remembered that once we had tried a brown, fungoid lump that grew in the shade under the song-bushes; some of Gunderson's men had liked it.

Claire finally broke the silence. "If I'm going to help you look," she suggested, "I ought to know what we're looking for."

I described the lumpy growths. "I'm not so sure all of us will like them. Near as I can remember, they tasted something like truffles, with a faint flavor of meat added. We tried them both raw and cooked, and cooked was best."

"I like truffles," said the girl. "They're—"

A shot! There was no mistaking the sharp crack of a .38, though it sounded queerly thin in the rare atmosphere. But it sounded again, and a third time, and then a regular fusillade!

"Keep back of me!" I snapped as we turned and raced for the *Minos*. The warning was needless; Claire was unaccustomed to the difficulties of running on a small planet. Her weight on Europa must have been no more than twelve or fifteen pounds, one eighth Earth normal, and though she had learned to walk easily enough—one learned that on any space journey—she had had no opportunity to learn to run. Her first step sent her half a dozen feet in the air; I sped away from her with the long, sliding stride one had to use on such planets as Europa.

I burst out of the brush into the area cleared by the blast, where already growth had begun. For a moment I saw only the *Minos* resting peacefully in the clearing, then I reeled with shock. At the air lock lay a man— Henshaw— with his face a bloody pulp, his head split by two bullets.

There was a burst of sound, voices, another shot. Out of the open air lock reeled Coretti; he staggered backward for ten steps, then dropped on his side, while blood welled up out of the collar of his suit. And standing grimly in the opening, an automatic smoking in his right hand, a charged flame-pistol in his left, was Gogrol!

I had no weapon; why should one carry arms on airless Europa? For an instant I stood frozen, appalled, uncomprehending, and in that moment Gogrol glimpsed me. I saw his hand tighten on his automatic, then he shrugged and strode toward me.

"Well," he said with a snarl in his voice, "I had to do it. They went crazy. Anerosis. It struck both of them at once, and they went clean mad. Self-defense, it was."

I didn't believe him, of course. People don't get anerosis in air no rarer than Europa's; one could live his whole life out there without ever suffering from air starvation. But I couldn't argue those points with a panting murderer armed with the most deadly weapon ever devised, and with a girl coming up behind me. So I said nothing at all.

Claire came up; I heard her shocked intake of breath, and her almost inaudible wail, "Stefan!" Then she saw Gogrol holding his guns, and she flared out, "So you did it! I knew they suspected you! But you'll never get away with it, you—"

She broke off under the sudden menace of Gogrol's eyes, and I stepped in front of her as he raised the automatic. For an instant death looked squarely at both of us, then the man shrugged and the evil light in his eyes dimmed.

"A while yet," he muttered. "If Coretti dies—" He backed to the air lock and pulled a helmet from within the *Minos*, an air helmet that we had thought might serve should we ever need to cross the heights about a blind valley.

Then Gogrol advanced toward us, and I felt Claire quiver against my shoulder. But the man only glared at us and spat out a single word. "Back!" he rasped. "Back!"

We backed. Under the menace of that deadly flame-pistol he herded us along the narrow valley, eastward to the slope whence angled the ravine that led toward Gunderson's valley. And up the slope, into the dim shadows of the pass itself, so narrow in places that my outstretched hands could have spanned the gap between the walls. A grim, dark, echo-haunted, and forbidding place; I did not wonder that the girl shrank against me. The air was thin to the point of insufficiency, and all three of us were gasping for breath.

There was nothing I could do, for Gogrol's weapons bore too steadily on Claire Avery. So I slipped my arm about her to hearten her and inched warily along that shadowy canyon, until at last it widened, and a thousand feet below stretched a valley—Gunderson's valley, I knew at once. Far away was the slope where the *Hera* had rested, and down in the lower end was the heart-shaped pool of brine.

Gogrol had slipped on the helmet, leaving the visor open, and his flat features peered out at us like a gargoyle's. On he drove us, and down into the valley. But as he passed the mouth of the ravine, which by now was no more than a narrow gorge between colossal escarpments that loomed heavenward like the battlements of Atlantis, he stooped momentarily into

the shadows, and when he rose again I fancied that a small sound like the singing of a teakettle followed us down the slope. It meant nothing to me then.

He waved the automatic. "Faster!" he ordered threateningly. We were down in the talus now, and we scrambled doggedly among the rocks and fallen debris. On he drove us, until we stumbled among the boulders around the central pond. Then, suddenly, he halted.

"If you follow," he said with a cold intensity, "I shoot!" He strode away not toward the pass, but toward the ridge itself, back along the slopes that lay nearest the *Minos*, hidden from view in the other valley. Of course, Gogrol could cross those airless heights, secure in this helmet, carrying his air supply like the bladder birds.

He seemed to seek the shelter of an ascending ridge. As the jutting rock concealed him, I leaped to a boulder.

"Come on!" I said. "Perhaps we can beat him through the pass to the ship!"

"No!" screamed Claire, so frantically that I halted. "My Lord, no! Didn't you see the blaster he left?"

The singing teakettle noise! I had barely time to throw myself beside the girl crouching behind a rock when the little atomic bomb let go.

I suppose everybody has seen, either by eye or television, the effect of atomic explosions. All of us, by one means or the other, have watched old buildings demolished, road grades or canals blasted, and those over forty may even remember the havoc-spreading bombs of the Pacific War. But none of you could have seen anything like this, for this explosion had a low air pressure and a gravitation only one-eighth normal as the sole checks to its fury.

It seemed to me that the whole mountain lifted. Vast masses of crumbling rock hurtled toward the black sky. Bits of stone, whistling like bullets and incandescent like meteors, shot past us, and the very ground we clung to heaved like the deck of a rolling rocket.

When the wild turmoil had subsided, when the debris no longer sang about us, when the upheaved masses had either fallen again or had spun beyond Europa's gravitation to crash on indifferent Jupiter, the pass had vanished. Mountain and vacuum hemmed us into a prison.

Both of us were slightly stunned by the concussion, although the thin atmosphere transmitted a strangely high-pitched sound instead of the resounding *b-o-o-m* one would have heard on the Earth. When my head stopped ringing, I looked around for Gogrol, and saw him at last seven or eight hundred feet up the slope of the mountain. Anger surged in me; I seized a stone from the margin of the pool, and flung it viciously at him. One can throw amazing distances on small worlds like Europa; I watched the missile raise dust at his very feet.

He turned; very deliberately he raised the automatic, and stone splinters from the boulder beside me stung my face. I dragged Claire down behind the shelter, knowing beyond doubt that he had meant that bullet to kill. In silence we watched him climb until he was but a tiny black speck, nearing the crest.

He approached a bladder bird crawling its slow way along the airless heights. Up there the creatures were slow as snails, for their flight membranes were useless in the near vacuum. But they had normally no enemies on the peaks.

I saw Gogrol change his course purposely to intercept the thing. Intentionally, maliciously, he kicked a hole in the inflated bladder, collapsing it like a child's balloon. He stood watching while the miserable creature flopped in the agonies of suffocation, then moved methodically on. It was the coldest exhibition of wanton cruelty I had ever witnessed.

Claire shuddered; still in silence we watched the man's leisurely progress along the ridge. There was something in his attitude that suggested searching, seeking, hunting. Suddenly he quickened his pace and then halted abruptly, stooping over what looked to me like a waist-high heap of stones, or perhaps merely a hummock on the ridge.

But he was burrowing in it, digging, flinging stones and dirt aside. And at last he stood up; if he held anything, distance hid it, but he seemed to wave some small object at us in derisive triumph. Then he moved over the crest of the hills and disappeared.

Claire sighed despondently; she seemed very little like the proud and rather arrogant Golden Flash. "That settles it," she murmured disconsolately. "He's got it, and he's got us trapped; so we're quite helpless."

"Got what?" I asked. "What was he digging for up there?"

Her blue eyes widened in amazement. "Don't you know?"

"I certainly don't. I seem to know less about this damn trip than anybody else on it."

She gazed steadily at me. "I knew Stefan was wrong," she said softly. "I don't care what you were when you wrecked the *Hera*, Jack Sands; on this trip you've been decent and brave and a gentleman."

"Thanks," I said dryly, but I was a little touched for all that because, after all, the Golden Flash was a very beautiful girl. "Then suppose you let me in on a few of the secrets. For instance, what was Coretti wrong about? And what did Gogrol dig for?"

"Gogrol," she said, watching me, "was digging in Gunderson's cairn."

I looked blank. "Gunderson's what? This is news to me."

She was silent for a moment. "Jack Sands," she said at last, "I don't care what Stefan or the government or anybody thinks of you. I think you're honest, and I think you've had an injustice done you somehow, and I don't believe you were to blame in the *Hera* crash. And I'm going to tell you all I know about this matter. But first, do you know the object of Gunderson's expedition to Europa?"

"I never knew it. I'm a pilot; I took no interest in their scientific gibberish."

She nodded. "Well, you know how a rocket motor works, of course. How they use a minute amount of uranium or radium as catalyst to release the energy in the fuel. Uranium has low activity; it will set off only metals like the

alkalis, and ships using uranium motors burn salt. And radium, being more active, will set off the metals from iron to copper; so ships using a radium initiator usually burn one of the commoner iron or copper ores."

"I know all that," I grunted. "And the heavier the metal, the greater the power from its disintegration."

"Exactly." She paused a moment. "Well, Gunderson wanted to use still heavier elements. That required a source of rays more penetrating than those from radium, and he knew of only one available source—Element 91, protactinium. And it happens that the richest deposits of protactinium so far discovered are those in the rocks of Europa; so to Europa he came for his experiments."

"Well?" I asked. "Where do I fit in this mess?"

"I don't quite know, Jack. Let me finish what I know, which is all Stefan would tell me. Gunderson succeeded, they think; he's supposed to have worked out the formula by which protactinium could be made to set off lead, which would give much more power than any present type of initiator. But if he did succeed, his formula and notes were destroyed when the *Hera* crashed!"

I began to see. "But what—what about that cairn?"

"You really don't know?"

"I'll be double damned if I do! If Gunderson built a cairn, it must have been that last day. I had the take-off, so I slept through most of it. But —why, they did have some sort of ceremony!"

"Yes. Gunderson mentioned something about it when your ship touched at Junopolis on Io. What the government hopes is that he buried a copy of his formula in that cairn. They do, you know. Well, nobody could possibly know of the location except you and a man named Kratska, who had disappeared.

"So Interplanetary, which is in bad anyway because of some stock transactions, was ordered to back this expedition with you as pilot—or at least, that's what Stefan told me. I guess I was taken along just to give the corporation a little more publicity, and, of course, Stefan was sent to watch

you, in hopes you'd give away the location. The formula's immensely valuable, you see."

"Yeah, I see. And how about Gogrol?"

She frowned. "I don't know. Stefan hinted that he had some connections with Harrick of Interplanetary, or perhaps some hold over him. Harrick insisted on his being a member."

"The devil!" I exploded suddenly. "He knew about the cairn! He knew where to look!"

Her eyes grew wide. "Why, he did! He's—could he be the representative of some foreign government? If we could stop him! But he's left us absolutely helpless here. Why didn't he kill us?"

"I can guess that," I said grimly. "He can't fly the *Minos* alone. Henshaw's dead, and if Coretti dies—well, one of us is due for the job of pilot."

A tremor shook her. "I'd rather be dead, too," she murmured, "than to travel with him alone."

"And I'd rather see you so," I agreed glumly. "I wish to heaven you had stayed out of this. You could be home enjoying your money."

"My money!" she flashed. "I haven't any money. Do you think I take these chances for publicity or thrills or admiration?"

I gaped; of course, I'd thought exactly that.

She was literally blazing. "Listen to me, Jack Sands. There's just one reason for the fool things I do—money! There isn't any Avery fortune, and hasn't been since my father died. I've needed money desperately these last two years, to keep the Connecticut place for my mother, because she'd die if she had to leave it. It's been our family home for two hundred years, since 1910, and I won't be the one to lose it!"

It took a moment to adjust myself to what she was saying. "But a racing rocket isn't a poor man's toy," I said feebly. "And surely a girl like you could find—"

"A girl like me!" she cut in bitterly. "Oh, I know I have a good figure and a passable voice, and perhaps I could have found work in a television chorus, but I needed real money. I had my choice of two ways to get it: I could marry it, or I could gamble my neck against it. You see which way I chose. As the Golden Flash, I can get big prices for endorsing breakfast foods and beauty preparations. That's why I gambled in that race; my racing rocket was all I had left to gamble with. And it worked, only"—her voice broke a little—"I wish I could stop gambling. I—I hate it!"

It wasn't only pity I felt for her then. Her confession of poverty had changed things; she was no longer the wealthy, unattainable being I had always imagined the Golden Flash to be. She was simply a forlorn and unhappy girl; one who needed to be loved and comforted. And then I remembered the evening of the eclipse, and Coretti's arms about her. So I gazed for an instant at the sunlight on her hair, and then turned slowly away.

After a while we gathered some liver-leaves and cooked them, and I tried to tell Claire that we were certain to be rescued. Neither of us believed it; we knew very well that Gogrol would carry no living companion to Io; whoever helped him run the *Minos* would certainly be dead and cast into space before landing. And we knew that Gogrol's story, whatever it might be, would not be one likely to encourage a rescue party. He'd simply report us all dead somehow or other.

"I don't care," said Claire. "I'm glad I'm with you."

I thought of Coretti and said nothing. We were just sitting in glum silence near the fire when Gogrol came over the hills again.

Claire saw him first and cried out. Despite his helmet, neither of us could mistake his broad, squat figure. But there was nothing we could do except wait, though we did draw closer to the area of wild and tumbled boulders about the central pool.

"What do you suppose—" asked Claire nervously. "Coretti may have died, or may be too injured to help." Pain twisted her features. "Yes, or —Oh, I know, Jack! It's that Gogrol can't plot a course. He can pilot; he can follow a course already laid out, but he can't plot one—and neither can Stefan!"

Instantly I knew she must be right. Piloting a ship is just a question of following directions, but plotting a course involves the calculus of function, and that, let me tell you, takes a mathematician. I could do it, and Claire handled a simple route well enough—one had to in rocket racing—but astrogators were not common even among pilots.

You see, the difficulty is that you don't just point the ship at your destination, because that destination is moving; you head for where the planet will be when you arrive. And in this case, assuming Gogrol meant to make for Io, a journey from Europa to that world meant speeding in the direction of the colossal mass of Jupiter, and if a rocket once passed the critical velocity in that direction—good night!

A hundred feet away Gogrol halted. "Listen, you two," he yelled, "I'm offering Miss Avery the chance to join the crew of the *Minos*."

"You're the crew," I retorted. "She's not taking your offer."

Without warning he leveled his revolver and fired, and a shock numbed my left leg. I fell within the shelter of a boulder, thrusting Claire before me, while Gogrol's bellow followed the crash of his shot: "I'll shut your mouth for you!"

There began the weirdest game of hide and seek I've ever played, with Claire and me crawling among the tumbled boulders, scarcely daring to breathe. Gogrol had all the advantage, and he used it. I couldn't stand upright, and my legs began to hurt so excruciatingly that I was afraid each minute of an involuntary groan forcing its way through my lips. Claire suffered with me; her eyes were agonized blue pools of torment, but she dared not even whisper to me.

Gogrol took to leaping atop the boulders. He glimpsed me, and a second bullet struck that same burning leg. He was deliberately hunting me down, and I saw it was the end.

We had a momentary shelter. Claire whispered to me, "I'm going to him. He'll kill you otherwise, and take me anyway."

"No!" I croaked. "No!"

Gogrol heard, and was coming. Claire said hastily. "He's—bestial. At least I can plot a course that will—kill us!" Then she called, "Gogrol! I'll surrender."

I snatched at her ankle—too late. I went crawling after her as she strode into the open, but her steps were too rapid. I heard her say, "I give up, if you won't—shoot him again."

Gogrol mumbled, and then Claire's voice again, "Yes, I'll plot your course, but how can I cross the peaks?"

"Walk," he said, and laughed.

"I can't breathe up there."

"Walk as far as you can. You won't die while I take you the rest of the way."

There was no reply. When I finally crept into the open, they were a hundred feet up the slope.

Helpless, raging, pain-maddened, I seized a stone and flung it. It struck Gogrol in the back, but it struck with no more force than if I'd tossed it a dozen feet on Earth. He spun in fury, thrust the screaming Claire aside, and sent another bullet at me. Missed me, I thought, though I wasn't sure, for pain had numbed me. I couldn't be sure of anything.

Claire saw that I still retained some semblance of consciousness. "Goodbye!" she called, and added something that I could not hear because of the red waves of pain, but I knew Gogrol laughed at it. Thereafter, for what seemed like a long time, I knew only that I was crawling doggedly through an inferno of torture.

When the red mist lifted, I was only at the base of the rise. Far above I could see the figures of Claire and Gogrol, and I perceived that though he strode with easy steps, protected by his helmet, the girl was already staggering from breathlessness. While I watched, she stumbled, and then began to struggle frantically and spasmodically to jerk away from him. It wasn't that she meant to break her promise, but merely that the agonies of suffocation drove her to attempt any means of regaining breathable air.

But the struggle was brief. It was less than a minute before she fainted, passed out from air starvation, and Gogrol slung her carelessly under one arm —as I said, she weighed about twelve pounds on Europa—and pressed on. At the very crest he paused and looked back, and in that thin, clear air I could see every detail with telescopic distinctness, even to the shadow he cast across Claire's drooping golden head.

He raised the revolver to his temple, waved it at me with a derisive gesture, and then flung it far down the mountainside toward me. His meaning was unmistakable; he was advising me to commit suicide. When I reached the revolver, there was a single unused catridge in the clip; I looked up, tempted to try it on Gogrol himself, but he was gone across the ridge.

Now I knew all hope was gone. Perhaps I was dying from that last bullet anyway, but whether I were or not, Claire was lost, and all that remained for me was the madness of solitude, forever imprisoned by empty space in this valley. That or—suicide.

I don't know how many times I thought of that single cartridge, but I know the thought grew very tempting after a few more hours of pain. By that time, for all I knew, the *Minos* might have taken off on its dash to death, for the roar of its blast could not carry over the airless heights, and it would be so high and small by the time I could see it above the hills that I might have missed it.

If only I could cross those hills! I began to realize that more important than my own life was Claire's safety, even if it meant saving her for Coretti. But I couldn't save her; I couldn't even get to her unless I could walk along the hills like a bladder bird.

Like a bladder bird! I was sure that it was only the delirium of fever that suggested that wild thought. Would it work? I answered myself that whether it worked or failed it was better than dying here without ever trying.

I stalked that bladder bird like a cat. Time after time I spent long minutes creeping toward a copse of song-bushes only to have the creature sail blithely over my head and across the valley. But at last I saw the thing

crouched for flight above me; I dared not delay longer lest my wounds weaken me too much for the trial of my plan, and I fired. There went my single cartridge.

The bladder bird dropped! But that was only the beginning of my task. Carefully—so very carefully—I removed the creature's bladder, leaving the vent tube intact. Then, through the opening that connects to the bird's single lung, I slipped my head, letting the bloody rim contract about my throat.

I knew that wouldn't be air-tight, so I bound it with strips torn from my clothing, so closely that it all but choked me. Then I took the slimy vent tube in my mouth and began an endless routine. Breathe in through the vent tube, pinch it shut, breathe out into the bladder—over and over and over. But gradually the bladder expanded with filthy, vitiated, stinking, and once-breathed air.

I had it half filled when I saw that I was going to have to start if I were to have a chance of living long enough for a test. Breathing through the vent tube as long as there was air enough, peering dully through the semitransparent walls of the bladder, I started crawling up the hill.

I won't describe that incredible journey. On Earth it would have been utterly impossible; here, since I weighed but eighteen pounds, it was barely within the bounds of possibility. As I ascended, the bladder swelled against the reduced pressure; by the time I had to start breathing the fearful stuff, I could feel it escaping and bubbling through the blood around my neck.

Somehow I made the crest, almost directly above the *Minos*. It was still there, anyway. Gogrol hadn't come this way, and now I saw why. There was a sheer drop here of four hundred feet. Well, that only equaled fifty on Earth, but even fifty—But I had to try it, because I was dying here on the peaks. I jumped.

I landed with a wrench of pain on my wounded leg, but much more lightly than I had feared. Of course! Jumping down into denser air, the great bladder had acted like a parachute, and, after all, my weight here was but

eighteen pounds. I crawled onward, in agony for the moment when I could cast off the stinking, choking bladder.

That moment came. I had crossed the peaks, and before me lay the *Minos*. I crawled on, around to the side where the air lock was. It was open, and a voice bellowed out of it. Gogrol!

"You'll trick me, eh!" he screeched. "You'll lay a course that will crash us! We'll see! We'll see!" There came the unmistakable sound of a blow, and a faint whimper of pain.

Somewhere I found the strength to stand up. Brandishing the empty automatic, I swayed into the air lock, sliding along the walls to the control room.

There was something about the figure that bent in the dusk above a sobbing girl that aroused a flash of recognition. Seeing him thus in a shadowed control room with the sun shields up—I knew what I should have known weeks ago. Gogrol was—Kratska!

"Kratska!" I croaked, and he whirled. Both he and Claire were frozen into utter rigidity by surprise and disbelief. I really think they were both convinced that I was a ghost.

"How—how—" squeaked Gogrol, or rather Kratska.

"I walked across. I'd walk across hell to find you, Kratska." I brandished the gun. "Get out and get away quick, if you expect to escape the blast. We're leaving you here until police from Io can pick you up—on that *Hera* matter among others." I spoke to the dazed Claire. "Close the air lock after him. We're taking off."

"Jack!" she cried, comprehending at last. "But Stefan's wired to a tree out there. The blast will incinerate him!"

"Then loose him, and for Heaven's sake, quickly!"

But no sooner had she vanished than Kratska took his chance. He saw how weak I was, and he gambled on the one shot he thought remained in the magazine of my weapon. He rushed me.

I think he was mad. He was screaming curses. "Damn you!" he screeched. "You can't beat me! I made you the goat on the *Hera*, and I can do it here."

And I knew he could, too, if he could overcome me before Claire released Coretti. She couldn't handle him, and we'd all be at his mercy. So I fought with all the life I had left, and felt it draining out of me like acid out of burette. And after a while it was all drained, and darkness filled up the emptiness.

I heard curious sounds. Some one was saying, "No, I'll take off first and lay out the course after we reach escape velocity. Saves time. We've got to get him to Io." And a little later, "Oh, Lord, Stefan! If I roll her now —Why am I such a rotten pilot?" And then there was the roar of the blast for hours upon hours.

A long time later I realized that I was lying on the chart room table, and Coretti was looking down at me. He said, "How you feel, Jack!" It was the first time he had used my name.

"O.K.," I said, and then memory came back. "Gogrol! He's Kratska!"

"He was," said Coretti. "He's dead."

"Dead!" There went any chance of squaring that *Hera* mess.

"Yep. You killed him, smashed in his head with that automatic before we could pull you off. But he had it coming."

"Yeah, maybe, but the *Hera*—"

"Never mind the *Hera*, Jack. Both Claire and I beard Kratska admit his responsibility. We'll clear you of that, all right." He paused. "And it might make you feel a little more chipper it I tell you that we got the formula, too, and that there's a reward for it that will leave us sitting in the clover field, even split three ways. That is, Claire keeps insisting on three ways; I know I don't deserve a split."

"Three ways is right," I said. "It'll give you and Claire a good send- off."

"Me and Claire?'

"Listen, Coretti. I didn't mean to, but I saw you the evening of the eclipse. Claire didn't look as if she was fighting you."

He smiled. "So you saw that," he said slowly. "Then you listen. A fellow who's asking a girl to marry him is apt to hold the girl a little close. And if she's got any heart, she doesn't push him away. She just says no as gently as possible."

"She says no?"

"She did that time. I'd bet different with you."

"She—she—" Something about the familiar sound of the blast caught my attention. "We're landing!"

"Yeah, on Io. We've been landing for two hours."

"Who took off?"

"Claire did. She took off and kept going. She's been sitting there fifty hours. She thinks you need a doctor, and I don't know a damn thing about running a rocket. She's taken it clear from Europa."

I sat up. "Take me in there," I said grimly. "Don't argue. Take me in there!"

Claire barely raised her eyes when Coretti slid me down beside her. She was all but exhausted, sitting there all those weary hours, and now up against her old terror of landing.

"Jack, Jack!" she whispered as if to herself. "I'm glad you're better."

"Honey," I said—her hair did look like honey—"I'm taking half the U-bar. Just let me guide you."

We came down without a roll, and landed like a canary feather. But I hadn't a thing to do with it; I was so weak I couldn't even move the U-bar, but she didn't know that. Confidence was all she needed; she had the makings of a damn good pilot. Yeah; I've proved that. She is a damn good pilot. But all the same, she went to sleep in the middle of our first kiss.

PROTEUS ISLAND (1936)

THE BROWN MAORI in the bow of the outrigger stared hard at Austin Island slowly swimming nearer; then he twisted to fix his anxious brown eyes on Carver. "Taboo!" he exclaimed. "Taboo! Aussitan taboo!"

Carver regarded him without change of expression. He lifted his gaze to the island. With an air of sullen brooding the Maori returned to his stroke. The second Polynesian threw the zoologist a pleading look.

"Taboo," he said. "*Aussitan* taboo!"

The white man studied him briefly, but said nothing. The soft brown eyes fell and the two bent to their work. But as Carver stared eagerly shoreward there was a mute, significant exchange between the natives.

The proa slid over green combers toward the foam-skirted island, then began to sheer off as if reluctant to approach. Carver's jaw squared. "*Malloa!* Put in, you chocolate pig. Put in, do you hear?"

He looked again at the land. Austin Island was not traditionally sacred, but these natives had a fear of it for some reason. It was not the concern of a zoologist to discover why. The island was uninhabited and had been charted only recently. He noted the fern forests ahead, like those of New Zealand, the kauri pine and dammar—dark wood hills, a curve of white beach, and between them a moving dot—an *apteryx mantelli*, thought Carver—a kiwi.

The proa worked cautiously shoreward.

"Taboo," Malloa kept whispering. "Him plenty *bunyip!*"

"Hope there is," the white man grunted. "I'd hate to go back to Jameson and the others at Macquarie without at least one little *bunyip*, or anyway a ghost of a fairy." He grinned. "*Bunyip Carveris*. Not bad, eh? Look good in natural-history books with pictures."

On the approaching beach the kiwi scuttled for the forest—if it *was* a kiwi after all. It looked queer, somehow, and Carver squinted after it. Of course,

it had to be an *apteryx*; these islands of the New Zealand group were too deficient in fauna for it to be anything else. One variety of dog, one sort of rat, and two species of bat—that covered the mammalian life of New Zealand.

Of course, there were the imported cats, pigs and rabbits that ran wild on the North and Middle Islands, but not here. Not on the Aucklands, not on Macquarie, least of all here on Austin, out in the lonely sea between Macquarie and the desolate Balleny Islands, far down on the edge of Antarctica. No; the scuttling dot *must* have been a kiwi.

The craft grounded. Kolu, in the bow, leaped like a brown flash to the beach and drew the proa above the gentle inwash of the waves. Carver stood up and stepped out, then paused sharply at a moan from Malloa in the stern.

"See!" he gulped. "The trees, *wahi!* The *bunyip* trees!"

Carver followed his pointing figure. The trees—what about them? There they were beyond the beach as they had, fringed the sands of Macquarie and of the Aucklands. Then he frowned. He was no botanist; that was Halburton's field, back with Jameson and the *Fortune* at Macquarie Island. He was a zoologist, aware only generally of the variations of flora. Yet he frowned.

The trees *were* vaguely queer. In the distance they had resembled the giant ferns and towering kauri pine that one would expect. Yet here, close at hand, they had a different aspect—not a markedly different one, it is true, but none the less, a strangeness. The kauri pines were not exactly kauri, nor were the tree ferns quite the same Cryptogamia that flourished on the Aucklands and Macquarie. Of course, those islands were many miles away to the north, and certain local variations might be expected. All the same—

"Mutants," he muttered, frowning. "Tends to substantiate Darwin's isolation theories. I'll have to take a couple of specimens back to Halburton."

"*Wahi*," said Kolu nervously, "we go back now?"

"Now!" exploded Carver. "We just got here! Do you think we came all the way from Macquarie for one look? We stay here a day or two, so I have a chance to take a look at this place's animal life. What's the matter, anyway?"

"The trees, *wahi!*" wailed Malloa. "*Bunyip!*—the walking trees, the talking trees!"

"Bah! Walking and talking, eh?" He seized a stone from the pebbled beach and sent it spinning into the nearest mass of dusky green. "Let's hear 'em say a few cuss words, then."

The stone tore through leaves and creepers, and the gentle crash died into motionless silence. Or not entirely motionless; for a moment something dark and tiny fluttered there, and then soared briefly into black silhouette against the sky. It was small as a sparrow, but bat-like, with membranous wings. Yet Carver stared at it amazed, for it trailed a twelve-inch tail, thin as a pencil, but certainly an appendage no normal bat ought to possess.

For a moment or two the creature fluttered awkwardly in the sunlight, its strange tail lashing, and then it swooped again into the dusk of the forest whence his missile had frightened it. There was only an echo of its wild, shrill cry remaining, something that sounded like "*Wheer! Whe-e-e-r!*"

"What the devil!" said Carver. "There are two species of Chiroptera in New Zealand and neighboring islands, and that was neither of them! No bat has a tail like that!"

Kolu and Malloa were wailing in chorus. The creature had been too small to induce outright panic, but it had flashed against the sky with a sinister appearance of abnormality. It was a monstrosity, an aberration, and the minds of Polynesians were not such as to face unknown strangeness without fear. Nor for that matter, reflected Carver, were the minds of whites; he shrugged away a queer feeling of apprehension. It would be sheer stupidity to permit the fears of Kolu and Malloa to influence a perfectly sane zoologist.

"Shut up!" he snapped. "We'll have to trap that fellow, or one of his cousins. I'll want a specimen of his tribe. Rhimolophidae, I'll bet a trade dollar, but a brand-new species. We'll net one tonight."

The voices of the two brown islanders rose in terror. Carver cut in sharply on the protests and expostulations and fragmentary descriptions of the horrors of *bunyips,* walking and talking trees, and the bat-winged spirits of evil.

"Come on," 'he said gruffly. "Turn out the stuff in the proa. I'll look along the beach for a stream of fresh water. Mawson reported water on the north side of the island."

Malloa and Kolu were muttering as he turned away. Before him the beach stretched white in the late afternoon sun; at his left rolled the blue Pacific and at his right slumbered the strange, dark, dusky quarter; he noted curiously the all but infinite variety of the vegetable forms, marveling that there was scarcely a tree or shrub that he could identify with any variety common on Macquarie or the Aucklands, or far-away New Zealand. But, of course, he mused, he was no botanist.

Anyway, remote islands often produced their own particular varieties of flora and fauna. That was part of Darwin's original evolution theory, this idea of isolation. Look at Mauritius and its dodo, and the Galapagos turtles, or for that matter, the kiwi of New Zealand, or the gigantic, extinct moa. And yet—he frowned over the thought—one never found an island that was entirely covered by its own unique forms of plant life. Windblown seeds of ocean borne debris always caused an interchange of vegetation among islands; birds carried seeds clinging to their feathers, and even the occasional human visitors aided in the exchange.

Besides, a careful observer like Mawson in 1911 would certainly have reported the peculiarities of Austin Island. He hadn't; nor, for that matter, had the whalers, who touched here at intervals as they headed into the antarctic, brought back any reports. Of course, whalers had become very rare of late years; it might have been a decade or more since one had made anchorage at Austin. Yet what change could have occurred in ten or fifteen years?

Carver came suddenly upon a narrow tidal arm into which dropped a tinkling trickle of water from a granite ledge at the verge of the jungle. He stooped, moistened his finger, and tasted it. It was brackish but drinkable, and therefore quite satisfactory. He could hardly expect to find a larger stream

on Austin, since the watershed was too small on an island only seven miles by three. With his eyes he followed the course of the brook up into the tangle of fern forest, and a flash of movement arrested his eyes. For a moment he gazed in complete incredulity, knowing that he couldn't possibly be seeing —what he was seeing!

The creature had apparently been drinking at the brink of the stream, for Carver glimpsed it first in kneeling position. That was part of the surprise — the fact that it was kneeling—for no animal save man ever assumes that attitude, and this being, whatever it might be, was not human.

Wild, yellow eyes glared back at him, and the thing rose to an erect posture. It was a biped, a small travesty; of man, standing no more than twenty inches in height. Little clawed fingers clutched at hanging creepers. Carver had a shocked glimpse of a body covered in patches with ragged gray fur, of an agile tail, of needle-sharp teeth in a little red mouth. But mostly he saw only malevolent yellow eyes and a face that was not human, yet had a hideous suggestion of humanity gone wild, a stunning miniature synthesis of manlike and feline characteristics. Carver had spent much time in the wastelands of the planet. His reaction was almost in the nature of a reflex, without thought or volition; his blue-barreled gun leaped and flashed as if it moved of itself. This automatism was a valuable quality in the wilder portions of the earth; more than once he had saved his life by shooting first when startled, and reflecting afterward. But the quickness of the reaction did not lend itself to accuracy.

His bullet tore a leaf at the very cheek of the creature. The thing snarled, and then, with a final flash of yellow flame from its wild eyes, leaped headlong into the tangle of foliage and vanished.

Carver whistled. "What in Heaven's name," he muttered aloud, "was that?" But he had small time for reflection; long shadows and an orange tint to the afternoon light warned that darkness—sudden, twilightless darkness —was near. He turned back along the curving beach toward the outrigger.

A low coral spit hid the craft and the two Maoris, and the ridge jutted like a bar squarely across the face of the descending sun. Carver squinted against

the light and trudged thoughtfully onward—to freeze into sudden immobility at the sound of a terrified scream from the direction of the proa!

He broke into a run. It was no more than a hundred yards to the coral ridge, but so swiftly did the sun drop in these latitudes that dusk seemed to race him to the crest. Shadows skittered along the beach as he leaped to the top and stared frantically toward the spot where his craft had been beached.

Something was there. A box—part of the provisions from the proa. But the proa itself—was gone!

Then he saw it, already a half dozen cables' lengths out in the bay. Malloa was crouching in the stern, Kolu was partly hidden by the sail, as the craft moved swiftly and steadily out toward the darkness gathering in the north.

His first impulse was to shout, and shout he did. Then he realized that they were beyond earshot, and very deliberately, he fired his revolver three times. Twice he shot into the air, but since Malloa cast not even a glance backward, the third bullet he sent carefully in the direction of the fleeing pair. Whether or not it took effect he could not tell, but the proa only slid more swiftly into the black distance.

He stared in hot rage after the deserters until even the white sail had vanished; then he ceased to swear, sat glumly on the single box they had unloaded, and fell to wondering what had frightened them. But that was something he never discovered.

Full darkness settled. In the sky appeared the strange constellations of the heaven's under hemisphere; southeast glowed the glorious Southern Cross, and south the mystic Clouds of Magellan. But Carver had no eyes for these beauties; he was already long familiar with the aspect of the Southern skies.

He mused over his situation. It was irritating rather than desperate, for he was armed, and even had he not been, there was no dangerous animal life on these tiny islands south of the Aucklands, nor, excepting man, on New Zealand itself. But not even man lived in the Aucklands, or on Macquarie, or here on remote Austin. Malloa and Kolu had been terrifically frightened, beyond doubt; but it took very little to rouse the superstitious fears of a Polynesian. A strange species of bat was enough, or even a kiwi passing in

the shadows of the brush, or merely their own fancies, stimulated by whatever wild tales had ringed lonely Austin Island with taboos.

And as for rescue, that too was certain. Malloa and Kolu might recover their courage and return for him. If they didn't, they still might make for Macquarie Island and the *Fortune* expedition. Even if they did what he supposed they naturally would do—head for the Aucklands, and then to their home on the Chathams—still Jameson would begin to worry in three or four days, and there'd be a search made.

There was no danger, he told himself—nothing to worry about. Best thing to do was simply to go about his work. Luckily, the box on which he sat was the one that contained his cyanide jar for insect specimens, nets, traps, and snares. He could proceed just as planned, except that he'd have to devote some of his time to hunting and preparing food.

Carver lighted his pipe, set about building a fire of the plentiful driftwood, and prepared for the night. He delivered himself of a few choice epithets descriptive of the two Maoris as he realized that his comfortable sleeping bag was gone with the proa, but the fire would serve against the chill of the high Southern latitude. He puffed his pipe reflectively to its end, lay down near his driftwood blaze, and prepared to sleep.

When, seven hours and fifty minutes later, the edge of the sun dented the eastern horizon, he was ready to admit that the night was something other than a success. He was hardened to the tiny, persistent fleas that skipped out of the sand, and his skin had long been toughened to the bloodthirsty night insects of the islands. Yet he had made a decided failure at the attempt to sleep.

Why? It surely couldn't be nervousness over the fact of strange surroundings and loneliness. Alan Carver had spent too many nights in wild and solitary places for that. Yet the night sounds had kept him in a perpetual state of half-wakeful apprehension, and at least a dozen times he had started to full consciousness in a sweat of nervousness. Why?

He knew why. It was the night sounds themselves. Not their loudness nor their menace, but their—well, their *variety*. He knew what darkness ought

to bring forth in the way of noises; he knew every bird call and bat squeak indigenous to these islands. But the noises of night here on Austin Island had refused to conform to his pattern of knowledge. They were strange, unclassified, and far more varied than they should have been; and yet, even through the wildest cry, he fancied a disturbing note of familiarity.

Carver shrugged. In the clear daylight his memories of the night seemed like foolish and perverse notions, quite inexcusable in the mind of one as accustomed to lonely places as himself. He heaved his powerful form erect, stretched, and gazed toward the matted tangle of plant life under the tree ferns.

He was hungry, and somewhere in there was breakfast, either fruit or bird. Those represented the entire range of choice, since he was not at present hungry enough to consider any of the other possible variations—rat, bat, or dog. That covered the fauna of these islands.

Did it, indeed? He frowned as sudden remembrance struck him. What of the wild, yellow-eyed imp that had snarled at him from the brookside? He had forgotten that in the excitement of the desertion of Kolu and Malloa. That was certainly neither bat, rat, nor dog. What was it?

Still frowning, he felt his gun, glancing to assure himself of its readiness The two Maoris might have been frightened away by an imaginary menace, but the thing by the brook was something he could not ascribe to superstition. He had seen that. He frowned more deeply as he recalled the tailed bat of earlier in the preceding evening. That was no native fancy either.

He strode toward the fern forest. Suppose Austin Island *did* harbor a few mutants, freaks, and individual species. What of it? So much the better; it justified the *Fortune* expedition. It might contribute to the fame of one Alan Carver, zoologist, if he were the first to report this strange, insular animal world. And yet—it was queer that Mawson had said nothing of it, nor had the whalers.

At the edge of the forest he stopped short. Suddenly he perceived what was responsible for its aspect of queerness. He saw what Malloa had meant when he gestured toward the trees. He gazed incredulously, peering from

tree to tree. It was true. There were no related species. There were no two trees alike. Not two alike. Each was individual in leaf, bark, stem. There were no two the same. *No two trees were alike!*

But that was impossible. Botanist or not, he knew the impossibility of it. It was all the more impossible on a remote islet where inbreeding must of necessity take place. The living forms might differ from those of other islands, but not from each other—at least, not in such incredible profusion. The number of species must be limited by the very intensity of competition on an island. *Must* be!

Carver stepped back a half dozen paces, surveying the forest wall. It was true. There were ferns innumerable; there were pines; there were deciduous trees—but there were, in the hundred yard stretch he could scan accurately, *no two alike!* No two, even, with enough similarity to be assigned to the same species, perhaps not even to the same genus.

He stood frozen in uncomprehending bewilderment. What was the meaning of it? What was the origin of this unnatural plenitude of species and genera? How could any one of the numberless forms reproduce unless there were somewhere others of its kind to fertilize it? It was true, of course, that blossoms on the same tree could cross-fertilize each other, but where, then, were the offspring? It is a fundamental aspect of nature that from acorns spring oaks, and from kauri cones spring kauri pines.

In utter perplexity, he turned along the beach, edging away from the wash of the waves into which he had almost backed. The solid wall of forest was immobile save where the sea breeze ruffled its leaves, but all that Carver saw was the unbelievable variety of those leaves. Nowhere—nowhere — was there a single tree that resembled any he had seen before.

There were compound leaves, and digitate, palmate, cordate, acuminate, bipinnate, and ensiform ones. There were specimens of every variety he could name, and even a zoologist can name a number if he has worked with a botanist like Halburton. But there were *no* specimens that looked as if they might be related, however distantly, to any one of the others. It was as if, on Austin Island, the walls between the genera had dissolved, and only the grand divisions remained.

Carver had covered nearly a mile along the beach before the pangs of hunger recalled his original mission to his mind. He had to have food of some sort, animal or vegetable. With a feeling of distinct relief, he eyed the beach birds quarreling raucously up and down the sand; at least, they were perfectly normal representatives of the genus Larus. But they made, at best, but tough and oily fare, and his glance returned again to the mysterious woodlands.

He saw now a trail or path, or perhaps just a chance thinning of the vegetation along a subsoil ridge of rock, that led into the green shades, slanting toward the forested hill at the western end of the island. That offered the first convenient means of penetration he had encountered, and in a moment he was slipping through the dusky aisle, watching sharply for either fruit or bird.

He saw fruit in plenty. Many of the trees bore globes and ovoids of various sizes, but the difficulty, so far as Carver was concerned, was that he saw none he could recognize as edible. He dared not chance biting into some poisonous variety, and Heaven alone knew what wild and deadly alkaloids this queer island might produce.

Birds fluttered and called in the branches, but for the moment he saw none large enough to warrant a bullet. And besides, another queer fact had caught his attention; he noticed that the farther he proceeded from the sea, the more bizarre became the infinite forms of the trees of the forest. Along the beach he had been able at least to assign an individual growth to its family, if not its genus, but here even those distinctions began to vanish.

He knew why. "The coastal growths are crossed with strays from other islands," he muttered. "But in here they've run wild. The whole island's run wild."

The movement of a dark mass against the leaf-sprinkled sky caught his attention. A bird? If it were, it was a much larger one than the inconsiderable passerine songsters that fluttered about him. He raised his revolver carefully, and fired.

The weird forest echoed to the report. A body large as a duck crashed with a long, strange cry, thrashed briefly among the grasses of the forest floor, and was still. Carver hurried forward to stare in perplexity at his victim.

It was not a bird. It was a climbing creature of some sort, armed with viciously sharp claws and wicked, needle-pointed white teeth in a triangular little red mouth. It resembled quite closely a small dog—if one could imagine a tree-climbing dog—and for a moment Carver froze in surprise at the thought that he had inadvertently shot somebody's mongrel terrier, or at least some specimen of Canis.

But the creature was no dog. Even disregarding its plunge from the treetops, Carver could see that. The retractile claws, five on the forefeet, four on the hind, were evidence enough, but stronger still was the evidence of those needle teeth. This was one of the Felidae. He could see further proof in the yellow, slitted eyes that glared at him in moribund hate, to lose their fire now in death. This was no dog, but a cat!

His mind flashed to that other apparition on the bank of the stream. That had borne a wild aspect of feline nature, too. What was the meaning of it? Cats that looked like monkeys; cats that looked like dogs!

He had lost his hunger. After a moment he picked up the furry body and set off toward the beach. The zoologist had superseded the man; this dangling bit of disintegrating protoplasm was no longer food, but a rare specimen. He had to get to the beach to do what he could to preserve it. It would be named after him—*Felis Carveri*—doubtless.

A sound behind him brought him to an abrupt halt. He peered cautiously back through the branch-roofed tunnel. He was being trailed. Something, bestial or human, lurked back there in the forest shadows. He saw it— or them—dimly, as formless as darker shades in the shifting array that marked the wind-stirred leaves.

For the first time, the successive mysteries began to induce a sense of menace. He increased his pace. The shadows slid and skittered behind him, and, lest he ascribe the thing to fancy, a low cry of some sort, a subdued howl, rose in the dusk of the forest at his left, and was answered at his right.

He dared not run, knowing that the appearance of fear too often brought a charge from both beasts and primitive humans. He moved as quickly as he could without the effect of flight from danger, and at last saw the beach. There in the opening he would at least distinguish his pursuers, if they chose to attack.

But they didn't. He backed away from the wall of vegetation, but no forms followed him. Yet they were there. All the way back to the box and the remains of his fire, he knew that just within the cover of the leaves lurked wild forms.

The situation began to prey on his mind. He couldn't simply remain on the beach indefinitely, waiting for an attack. Sooner or later he'd have to sleep, and then—Better to provoke the attack at once, see what sort of creatures he faced, and try to drive them off or exterminate them. He had, after all, plenty of ammunition.

He raised his gun, aimed at the skittering shadow, and fired. There was a howl that was indubitably bestial; before it had quivered into silence, others answered. Then Carver started violently backward, as the bushes quivered to the passage of bodies, and he saw what sort of beings had lurked there.

A line of perhaps a dozen forms leaped from the fringe of underbrush to the sand. For the space of a breath they were motionless, and Carver knew that he was in the grip of a zoologist's nightmare, for no other explanation was at all adequate.

The pack was vaguely doglike; but by no means did its members resemble the indigenous hunting dogs of New Zealand, nor the dingoes of Australia. Nor, for that matter, did they resemble any other dogs in his experience, nor, if the truth be told, any dogs at all, except perhaps in their lupine method of attack, their subdued yelps, their slavering mouths, and the arrangement of their teeth—what Carver could see of that arrangement.

But the fact that bore home to him now was another stunning repetition of all his observations of Austin Island—they did not resemble each other! Indeed, it occurred to Carver with the devastating force of a blow that, so

far on this mad island, he had seen no two living creatures, animal or vegetable, that appeared to belong to related species!

The nondescript pack inched forward. He saw the wildest extremes among the creatures—beings with long hind legs and short forelimbs; a creature with hairless, thorn-scarred skin and a face like the half-human visage of a werewolf; a tiny, rat-sized thing that yelped with a shrill, yapping voice; and a mighty, barrel-chested creature whose body seemed almost designed for erect posture, and who loped on its hinder limbs with its fore-paws touching the ground at intervals like the knuckles of an orangutan. That particular being was a horrible, yellow-fanged monstrosity, and Carver chose it for his first bullet.

The thing dropped without a sound; the slug had split its skull. As the report echoed back and forth between the hills on the east and west extremities of Austin, the pack answered with a threatening chorus of bays, howls, growls, and shrieks. They shrank back momentarily from their companion's body, then came menacingly forward.

Again Carver fired. A red-eyed hopping creature yelped and crumpled. The line halted nervously, divided now by two dead forms. Their cries were no more than a muffled growling as they eyed him with red and yellowish orbs.

He started suddenly as a different sound rose, a cry whose nature he could not determine, though it seemed to come from a point where the forested bank rose sharply in a little cliff. It was as if some watcher urged on the nondescript pack, for they gathered courage again to advance. And it was at this moment that a viciously flung stone caught the man painfully on the shoulder.

He staggered, then scanned the line of brush. A missile meant humankind. The mad island harbored something more than aberrant beasts.

A second cry sounded, and another stone hummed past his ear. But this time he had caught the flash of movement at the top of the cliff, and he fired instantly.

There was a scream. A human figure reeled from the cover of foliage, swayed, and pitched headlong into the brush at the base, ten feet below.

The pack of creatures broke howling, as if their courage had vanished before this evidence of power. They fled like shadows into the forest.

But something about the figure that had fallen from the cliff struck Carver as strange. He frowned, waiting a moment to assure himself that the nondescript pack had fled, and that no other menace lurked in the brush, then he darted toward the place where his assailant had fallen.

The figure was human, beyond doubt—or was it? Here on this mad island where species seemed to take any form, Carver hesitated to make even that assumption. He bent over his fallen foe, who lay face down, then turned the body over. He stared.

It was a girl. Her face, still as the features of the Buddha of Nikko, was young and lovely as a Venetian bronze figurine, with delicate features that even in unconsciousness had a wildness apparent in them. Her eyes, closed though they were, betrayed a slight, dryadlike slant.

The girl was white, though her skin was sun-darkened almost to a golden hue. Carver was certain of her color, nevertheless, for at the edges of her single garment—an untanned hide of leopard-like fur, already stiffening and cracking—her skin showed whiter.

Had he killed her? Curiously perturbed, he sought for the wound, and found it, at last, in a scarcely bleeding graze above her right knee. His shot had merely spun her off balance; it was the ten-foot fall from the cliff that had done the damage, of which the visible evidence was a reddening bruise of her left temple. But she was living. He swung her hastily into his arms and bore her across the beach, away from the brush in which her motley pack was doubtless still lurking.

He shook his nearly empty canteen, then tilted her head to pour water between her lips. Instantly her eyes flickered open, and for a moment she stared quite uncomprehendingly into Carver's eyes, not twelve inches from her own. Then her eyes widened, not so much in terror as in startled bewilderment; she twisted violently from his arms, tried twice to rise, and twice fell back as her legs refused to support her. At last she lay quite passive, keeping her fascinated gaze on his face.

But Carver received a shock as well. As her lids lifted, he started at the sight of the eyes behind them. They were unexpected, despite the hint given by their ever-so-faint Oriental cast, for they flamed upon him in a tawny hue. They were amber, almost golden, and wild as the eyes of a votary of Pan. She watched the zoologist with the intentness of a captive bird, but not with a bird's timidity, for he saw her hand fumbling for the pointed stick or wooden knife in the thong about her waist.

He proffered the canteen, and she shrank away from his extended hand. He shook the container, and at the sound of gurgling liquid, she took it gingerly, tilted a trickle into her hand, and then, to Carver's surprise, smelled it, her dainty nostrils flaring as widely as her diminutive, uptilted nose permitted. After a moment she drank from her cupped palm, poured another trickle, and drank that. It did not occur to her, apparently, to drink from the canteen.

Her mind cleared. She saw the two motionless bodies of the slain creatures, and murmured a low sound of sorrow. When she moved as if to rise, her gashed knee pained her, and she turned her strange eyes on Carver with a renewed expression of fear. She indicated the red streak of the injury.

"*C'm on*?" she said with a questioning inflection. Carver realized that the sound resembled English words through accident only. "Where to?" He grinned.

She shook a puzzled head. "*Bu-r-r-o-o-on!*" she said "*Zee-e- e!*"

He understood that. It was her attempt to imitate the sound of his shot and the hum of the bullet. He tapped the revolver. "Magic!" he said warningly. "Bad medicine. Better be good girl, see?" It was obvious that she didn't understand. "*Thumbi?*" he tried. "You Maori?" No result save a long look from slanting, golden eyes. "Well," he grunted, "*Sprechen Sie Deutsch*, then? Or Kanaka? Or—what the devil! That's all I know —*Latinam intelligisne*?"

"*C'm on?*" she said faintly, her eyes on the gun. She rubbed the scratch on her leg and the bruise on her temple, apparently ascribing both to the weapon.

"All right," Carver acceded grimly. He reflected that it could do no harm to impress the girl with his powers. "I'll come on. Watch this!"

He leveled his weapon at the first target he saw—a dead branch that jutted from a drifted log at the end of the coral spit. It was thick as his arm, but it must have been thoroughly rotted, for instead of stripping a bit of bark as he expected, the heavy slug shattered the entire branch.

"O-o-oh!" gasped the girl, clapping her hands over her ears. Her eyes flickered sidewise at him; then she scrambled wildly to her feet. She was in sheer panic.

"No, you don't!" he snapped. He caught her arm. "You stay right here!"

For a moment he was amazed at the lithe strength of her. Her free arm flashed upward with the wooden dagger, and he caught that wrist as well. Her muscles were like tempered steel wires. She twisted frantically; then, with sudden yielding, stood quietly in his grasp, as if she thought, "What use to struggle with a god?"

He released her. "Sit down!" he growled.

She obeyed his gesture rather than his voice. She sat on the sand before him, gazing up with a trace of fear but more of wariness in her honey-hued eyes.

"Where are your people?" he asked sharply, pointing at her and then waving in an inclusive gesture at the forest.

She stared without comprehension, and he varied his symbolism. "Your home, then?" he pantomimed the act of sleeping.

The result was the same, simply a troubled look from her glorious eyes.

"Now what the devil!" he muttered. "You have a name, haven't you? A name? Look!" He tapped his chest. "Alan. Get it? Alan. Alan."

That she understood instantly. "Alan," she repeated dutifully, looking up at him.

But when he attempted to make her assign a name to herself, he failed utterly. The only effect of his efforts was a deepening of the perplexity in her features. He reverted, at last, to the effort to make her indicate in some fashion the place of her home and people, varying his gestures in every way he could devise. And at last she seemed to comprehend.

She rose doubtfully to her feet and uttered a strange, low, mournful cry. It was answered instantly from the brush, and Carver stiffened as he saw the emergence of that same motley pack of nondescript beings. They must have been watching, lurking just beyond view. Again they circled the two slain members as they advanced.

Carver whipped out his revolver. His movement was followed by a wail of anguish from the girl, who flung herself before him, arms outspread as if to shield the wild pack from the menace of the weapon. She faced him fearfully, yet defiantly, and there was puzzled questioning in her face as well. It was as if she accused the man of ordering her to summon her companions only to threaten them with death.

He stared. "O.K.," he said at last. "What's a couple of rare specimens on an island that's covered with 'em? Send 'em away."

She obeyed his gesture of command. The weird pack slunk silently from view, and the girl backed hesitantly away as if to follow them, but halted abruptly at Carver's word. Her attitude was a curious one, partly fear, but more largely composed, it seemed, of a sort of fascination, as if she did not quite understand the zoologist's nature.

This was a feeling he shared to a certain extent, for there was certainly something mysterious in encountering a white girl on this mad Austin Island. It was as if there were one specimen, and only one, of every species in the world here on this tiny islet, and she were the representative of humanity. But still he frowned perplexedly into her wild, amber eyes.

It occurred to him again that on the part of Austin he had traversed he had seen no two creatures alike. Was this girl, too, a mutant, a variant of some species other than human, who had through mere chance adopted a perfect human form? As, for instance, the doglike cat whose body still lay on the

sand where he had flung it. Was she, perhaps, the sole representative of the human form on the island, Eve before Adam, in the garden? There had been a woman before Adam, he mused.

"We'll call you Lilith," he said thoughtfully. The name fitted her wild, perfect features and her flame-hued eyes. Lilith, the mysterious being whom Adam found before him in Paradise, before Eve was created. "Lilith," he repeated. "Alan—Lilith. See?"

She echoed the sounds and the gesture. Without question she accepted the name he had given her, and that she understood the sound as a name was evident by her response to it. For when he uttered it a few minutes later, her amber eyes flashed instantly to his face and remained in a silent question.

Carver laughed and resumed his puzzled thoughts. Reflectively, he produced his pipe and packed it, then struck a match and lighted it. He was startled by a low cry from the girl Lilith, and looked up to see her extended hand. For a moment he failed to perceive what she sought, and then her fingers closed around the hissing stem of the match! She had tried to seize the flame as one takes a fluttering bit of cloth.

She screamed in pain and fright. At once the pack of nondescripts appeared at the edge of the forest, voicing their howls of anger, and Carver whirled again to meet them. But again Lilith, recovering from the surprise of the burn, halted the pack with her voice, and sent them slinking away into the shadows. She sucked her scorched Singers and turned widened eyes to his face. He realized with a start of disbelief that the girl did not comprehend fire!

There was a bottle of alcohol in the box of equipment; he produced it and, taking Lilith's hand, bound a moistened strip of handkerchief about her two blistered fingers, though he knew well enough that alcohol was a poor remedy for burns. He applied the disinfectant to the bullet graze on her knee; she moaned softly at the sting, then smiled as it lessened, while her strange amber eyes followed fixedly the puffs of smoke from his pipe, and her nostrils quivered to the pungent tobacco odor.

"Now what," queried Carver, smoking reflectively, "am I going to do with you?"

Lilith had apparently no suggestion. She simply continued her wide-eyed regard.

"At least," he resumed, "you ought to know what's good to eat on this crazy island. You *do* eat, don't you?" He pantomimed the act.

The girl understood instantly. She rose, stepped to the spot where the body of the doglike cat lay, and seemed for an instant to sniff its scent. Then she removed the wooden knife from her girdle, placed one bare foot upon the body, and hacked and tore a strip of flesh from it. She extended the bloody chunk to him, and was obviously surprised at his gesture of refusal.

After a moment she withdrew it, glanced again at his face, and set her own small white teeth in the meat. Carver noted with interest how daintily she managed even that difficult maneuver, so that her soft lips were not stained by the slightest drop of blood.

But his own hunger was unappeased. He frowned over the problem of conveying his meaning, but at last hit upon a means. "Lilith!" he said sharply. Her eyes flashed at once to him. He indicated the meat she held, then waved at the mysterious line of trees. "Fruit," he said. "Tree meat. See?" He went through the motions of eating.

Again the girl understood instantly. It was odd, he mused, how readily she comprehended some things, while others equally simple seemed utterly beyond her. Queer, as everything on Austin Island was queer. Was Lilith, after all, entirely human? He followed her to the tree line, stealing a sidelong look at her wild, flame-colored eyes, and her features, beautiful, but untamed, dryadlike, elfin—wild.

She scrambled up the crumbling embankment and seemed to vanish magically into the shadows. For a moment Carver felt a surge of alarm as he clambered desperately after her; she could elude him here as easily as if she were indeed a shadow herself. True, he had no moral right to restrain her, save the hardly tenable one given by her attack; but he did not want to lose her —not yet. Or perhaps not at all.

"Lilith!" he shouted as he topped the cliff.

She appeared almost at his elbow. Above them twined a curious vine like a creeping conifer of some kind, bearing white-greenish fruits the size and shape of a pullet's egg. Lilith seized one, halved it with agile fingers, and raised a portion to her nostrils. She sniffed carefully, daintily, then flung the fruit away.

"*Pah bo!*" she said, wrinkling her nose distastefully.

She found another sort of queerly unprepossessing fruit composed of five finger-like protuberances from a fibrous disk, so that the whole bore the appearance of a large, malformed hand. This she sniffed as carefully as she had the other, then smiled sidewise up at him.

"*Bo!*" she said, extending it.

Carver hesitated. After all, it was not much more than an hour ago that the girl had been trying to kill him. Was it not entirely possible that she was now pursuing the same end, offering him a poisonous fruit?

She shook the unpleasantly bulbous object. "*Bo!*" she repeated, and then, exactly as if she understood his hesitancy, she broke off one of the fingers and thrust it into her own mouth. She smiled at him.

"Good enough, Lilith." He grinned, taking the remainder.

It was much pleasanter to the tongue than to the eye. The pulp had a tart sweetness that was vaguely familiar to him, but he could not quite identify the taste. Nevertheless, encouraged by Lilith's example, he ate until his hunger was appeased.

The encounter with Lilith and her wild pack had wiped out thoughts of his mission. Striding back toward the beach he frowned, remembering that he was here as Alan Carver, zoologist, and in no other role. Yet—where could he begin? He was here to classify and to take specimens, but what was he to do on a mad island where *every* creature was of an unknown variety? There was no possibility of classification here, because there were no classes. There was only one of everything—or so it appeared.

Rather than set about a task futile on the very face of it, Carver turned his thoughts another way. Somewhere on Austin was the secret of this riotous disorder, and it seemed better to seek the ultimate key than to fritter away his time at the endless task of classifying. He would explore the island. Some strange volcanic gas, he mused vaguely, or some queer radioactive deposit—analogous to Morgan's experiments with X-rays on germ plasm. Or—or something else. There must be *some*answer.

"Come on, Lilith," he ordered, and set off toward the west, where the hill seemed to be higher than the opposing eminence at the island's eastern extremity.

The girl followed with her accustomed obedience, with her honey-hued eyes fastened on Carver in that curious mixture of fear, wonder, and— perhaps— a dawning light of worship.

The zoologist was not too preoccupied with the accumulation of mysteries to glance occasionally at the wild beauty of her face, and once he caught himself trying to picture her in civilized attire—her mahogany hair confined under one of the current tiny hats, her lithe body sheathed in finer textile than the dried and cracking skin she wore, her feet in dainty leather, and her ankles in chiffon. He scowled and thrust the visualization away, but whether because it seemed too anomalous or too attractive he did not trouble to analyze.

He turned up the slope. Austin was heavily wooded, like the Aucklands, but progress was easy, for it was through a forest, not a jungle. A mad forest, true enough, but still comparatively clear of underbrush.

A shadow flickered, then another. But the first was only a queen's pigeon, erecting its glorious feather crest, and the second only an owl parrot. The birds on Austin were normal; they were simply the ordinary feathered life of the southern seas. Why? Because they were mobile; they traveled, or were blown by storms, from island to island.

It was mid-afternoon before Carver reached the peak, where a solemn outcropping of black basalt rose treeless, like a forester's watchtower. He clambered up its eroded sides and stood with Lilith beside him, gazing out

across the central valley of Austin Island to the hill at the eastern point, rising until its peak nearly matched their own.

Between sprawled the wild forest, in whose depths blue-green shadows shifted in the breeze like squalls visible here and there on the surface of a calm lake. Some sort of soaring bird circled below, and far away, in the very center of the valley, was the sparkle of water. That, he knew must be the rivulet he had already visited. But nowhere—nowhere at all—was there any sign of human occupation to account for the presence of Lilith —no smoke, no clearing, nothing.

The girl touched his arm timidly, and gestured toward the opposite hill.

"*Pah bo!*" she said tremulously. It must have been quite obvious to her that he failed to understand, for she amplified the phrase. "*R-r-r- r!*" she growled, drawing her perfect lips into an imitation of a snarl. "*Pah bo, lay shot*." She pointed again toward the east.

Was she trying to tell him that some fierce beasts dwelt in that region? Carver could not interpret her symbolism in any other way, and the phrase she had used was the same she had applied to the poisonous fruit.

He narrowed his eyes as he gazed intently toward the eastern eminence, then started. There was something, not on the opposing hill, but down near the flash of water midway between.

At his side hung the prism binoculars he used for identifying birds. He swung the instrument to his eyes. What he saw, still not clearly enough for certainty, was a mound or structure, vine-grown and irregular. But it might be the roofless walls of a ruined cottage.

The sun was sliding westward. Too late in the day now for exploration, but to-morrow would do. He marked the place of the mound in his memory, then scrambled down.

As darkness approached, Lilith began to evince a curious reluctance to move eastward, hanging back, sometimes dragging timidly at his arm. Twice she said "No, no!" and Carver wondered whether the word was part of her vocabulary or whether she had acquired it from him. Heaven knew, he

reflected amusedly, that he had used the word often enough, as one might use it to a child.

He was hungry again, despite the occasional fruits Lilith had plucked for him. On the beach he shot a magnificent Cygnus Atratus, a black Australian swan, and carried it with its head dragging, while Lilith, awed by the shot, followed him now without objection.

He strode along the beach to his box; not that that stretch was any more desirable than the next, but if Kolu and Malloa were to return, or were to guide a rescue expedition from the *Fortune*, that was the spot they'd seek first.

He gathered driftwood, and, just as darkness fell, lighted a fire.

He grinned at Lilith's start of panic and her low "O-o-oh!" of sheer terror as the blaze of the match caught and spread. She remembered her scorched fingers, doubtless, and she circled warily around the flames, to crouch behind him where he sat plucking and cleaning the great bird.

She was obviously quite uncomprehending as he pierced the fowl with a spit and set about roasting it, but he smiled at the manner in which her sensitive nostrils twitched at the combined odor of burning wood and cooking meat.

When it was done, he cut her a portion of the flesh, rich and fat like roast goose, and he smiled again at her bewilderment. She ate it, but very gingerly, puzzled alike by the heat and the altered taste; beyond question she would have preferred it raw and bleeding. When she had finished, she scrubbed the grease very daintily from her fingers with wet sand at a tidal pool.

Carver was puzzling again over what to do with her. He didn't want to lose her, yet he could hardly stay awake all night to guard her. There were the ropes that had lashed his case of supplies; he could, he supposed, tie her wrists and ankles; but somehow the idea appealed to him not at all. She was too naive, too trusting, too awe-struck and worshipful. And besides, savage or not, she was a white girl over whom he had no conceivable rightful authority.

At last he shrugged and grinned across the dying fire at Lilith, who had lost some of her fear of the leaping flames. "It's up to you," he remarked amiably. "I'd like you to stick around, but I won't insist on it."

She answered his smile with her own quick, flashing one, and the gleam of eyes exactly the color of the flames they mirrored, but she said nothing. Carver sprawled in the sand; it was cool enough to dull the activities of the troublesome sand fleas, and after a while he slept.

His rest was decidedly intermittent. The wild chorus of night sounds disturbed him again with its strangeness, and he woke to see Lilith staring fixedly into the fire's dying embers. Some time later he awakened again; now the fire was quite extinct, but Lilith was standing. While he watched her silently, she turned toward the forest. His heart sank; she was leaving.

But she paused. She bent over something dark—the body of one of the creatures he had shot. The big one, it was; he saw her struggle to lift it, and, finding the weight too great, drag it laboriously to the coral spit and roll it into the sea.

Slowly she returned; she gathered the smaller body into her arms and repeated the act, standing motionless for long minutes over the black water. When she returned once more she faced the rising moon for a moment, and he saw her eyes glistening with tears. He knew he had witnessed a burial.

He watched her in silence. She dropped to the sand near the black smear of ashes; but she seemed in no need of sleep. She stared so fixedly and so apprehensively toward the east that Carver felt a sense of foreboding. He was about to raise himself to sitting position when Lilith, as if arriving at a decision after long pondering, suddenly sprang to her feet and darted across the sand to the trees.

Startled, he stared into the shadows, and out of them drifted that same odd call he had heard before. He strained his ears, and was certain he heard a faint yelping among the trees. She had summoned her pack. Carver drew his revolver quietly from its holster and half rose on his arm.

Lilith reappeared. Behind her, darker shadows against the shadowy growths, lurked wild forms, and Carver's hand tightened on the grip of his revolver.

But there was no attack. The girl uttered a low command of some sort, the slinking shadows vanished, and she returned alone to her place on the sand.

The zoologist could see her face, silver-pale in the moonlight, as she glanced at him, but he lay still in apparent slumber, and Lilith, after a moment, seemed ready to imitate him. The apprehension had vanished from her features; she was calmer, more confident. Carver realized why, suddenly; she had set her pack to guard against whatever danger threatened from the east.

Dawn roused him. Lilith was still sleeping, curled like a child on the sand, and for some time he stood gazing down at her. She was very beautiful, and now, with her tawny eyes closed, she seemed much less mysterious; she seemed no island nymph or dryad, but simply a lovely, savage, primitive girl. Yet he knew—-or he was beginning to suspect—the mad truth about Austin Island. If the truth were what he feared, then he might as well fall in love with a sphinx, or a mermaid, or a female centaur, as with Lilith.

He steeled himself. "Lilith!" he called gruffly.

She awoke with a start of terror. For a moment she faced him with sheer panic in her eyes; then she remembered, gasped, and smiled tremulously. Her smile made it very hard for him to remember what it was that he feared in her, for she looked beautifully and appealingly human save for her wild, flame-colored eyes, and even what he fancied he saw in those might be but his own imagining.

She followed him toward the trees. There was no sign of her bestial bodyguards, though Carver suspected their nearness. He breakfasted again on fruits chosen by Lilith, selected unerringly, from the almost infinite variety, by her delicate nostrils. Carver mused interestedly that smell seemed to be the one means of identifying genera on this insane island.

Smell is chemical in nature. Chemical differences meant glandular ones, and glandular differences, in the last analysis, probably accounted for racial

ones. Very likely the differences between a cat, say, and a dog was, in the ultimate sense, a glandular difference. He scowled at the thought and stared narrowly at Lilith; but, peer as he might, she seemed neither more nor less than an unusually lovely little savage—except for her eyes.

He was moving toward the eastern part of the island, intending to follow the brook to the site of the ruined cabin, if it *was* a ruined cabin. Again he noted the girl's nervousness as they approached the stream that nearly bisected this part of the valley. Certainly, unless her fears were sheer superstition, there was something dangerous there. He examined his gun again, then strode on.

At the bank of the brook Lilith began to present difficulties. She snatched his arm and tugged him back, wailing, "No, no, no!" in frightened repetition.

When he glanced at her in impatient questioning, she could only repeat her phrase of yesterday. "*Lay shot"* she said, anxiously and fearfully. "*Lay shot!*"

"Humph!" he growled. "A cannon's the only bird I ever heard of that could —" He turned to follow the watercourse into the forest.

Lilith hung back. She could not bring herself to follow him there. For an instant he paused, looking back at her slim loveliness, then turned and strode on. Better that she remained where she was. Better if he never saw her again, for she was too beautiful for close proximity. Yet Heaven knew, he mused, that she *looked* human enough. But Lilith rebelled. Once she was certain that he was determined to go on, she gave a frightened cry. "Alan!" she called. "Al-an!"

He turned, astonished that she remembered his name, and found her darting to his side. She was pallid, horribly frightened, but she would not let him go alone.

Yet there was nothing to indicate that this region of the island was more dangerous than the rest. There was the same mad profusion of varieties of vegetation, the same unclassifiable leaves, fruits, and flowers. Only— or he imagined this—there were fewer birds.

One thing slowed their progress. At times the eastern bank of the rivulet seemed more open than their side, but Lilith steadfastly refused to permit him to cross. When he tried it, she clung so desperately and so violently to his arms that he at last yielded, and plowed his way through the underbrush on his own bank. It was as if the watercourse were a dividing line, a frontier, or—he frowned—a border.

By noon they had reached a point which Carver knew must be close indeed to the spot he sought. He peered through the tunnel that arched over the course of the brook, and there ahead, so overgrown that it blended perfectly with the forest wall, he saw it.

It was a cabin, or the remains of one. The log walls still stood, but the roof, doubtless of thatch, had long ago disintegrated. But what struck Carver first was the certainty, evident in design, in window openings, in doorway, that this was no native hut. It had been a white man's cabin of perhaps three rooms.

It stood on the eastern bank; but by now the brook had narrowed to a mere rill, gurgling from pool to tiny rapids. He sprang across, disregarding Lilith's anguished cry. But at a glimpse of her face he did pause. Her magnificent honey-hued eyes were wide with fear, while her lips were set in a tense little line of grimmest determination. She looked as an ancient martyr must have looked marching out to face the lions, as she stepped deliberately across to his side. It was almost as if she said, "If you are bound to die, then I will die beside you."

Yet within the crumbling walls there was nothing to inspire fear. There was no animal life at all, except a tiny, ratlike being that skittered out between the logs at their approach. Carver stared around him at the grassy and fern grown interior, at the remnants of decaying furniture and the fallen debris. It had been years since this place had known human occupants, a decade at the very least.

His foot struck something. He glanced down to see a human skull and a human femur in the grass. And then other bones, though none of them were in a natural position. Their former owner must have died there where

the ruined cot sagged, and been dragged here by—well, by whatever it was that had feasted on human carrion.

He glanced sidewise at Lilith, but she was simply staring affrightedly toward the east. She had not noticed the bones, or if she had, they had meant nothing to her. Carver poked gingerly among them for some clue to the identity of the remains, but there was nothing save a corroded belt buckle. That, of course, was a little; it had been a man, and most probably a white man.

Most of the debris was inches deep in the accumulation of loam. He kicked among the fragments of what must once have been a cupboard, and again his foot struck something hard and round—no skull this time, but an ordinary jar.

He picked it up. It was sealed, and there was something in it. The cap was hopelessly stuck by the corrosion of years; Carver smashed the glass against a log. What he picked from the fragments was a notebook, yellow-edged and brittle with time. He swore softly as a dozen leaves disintegrated in his hands, but what remained seemed stronger. He hunched down on the log and scanned the all-but-obliterated ink.

There was a date and a name. The name was Ambrose Callan, and the date was October 25th, 1921. He frowned. In 1921 he had been—let's see, he mused; fifteen years ago—he had been in grade school. Yet the name Ambrose Callan had a familiar ring to it.

He read more of the faded, written lines, then stared thoughtfully into space. That *was* the man, then. He remembered the Callan expedition because as a youngster he had been interested in far places, exploration, and adventure, as what youngster isn't? Professor Ambrose Callan of Northern; he began to remember that Morgan had based some of his work with artificial species—synthetic evolution—on Callan's observations.

But Morgan had only succeeded in creating a few new species of fruit fly, of Drosophila, by exposing germ plasm to hard X-rays. Nothing like this —this madhouse of Austin Island. He stole a look at the tense and fearful Lilith, and shuddered, for she seemed so lovely—and so human. He turned his

eyes to the crumbling pages and read on, for here at last he was close to the secret.

He was startled by Lilith's sudden wail of terror. "*Lay shot!*" she cried. "Alan, *lay shot!*"

He followed her gesture, but saw nothing. Her eyes were doubtless sharper than his, yet—There! In the deep afternoon shadows of the forest something moved. For an instant he saw it clearly—a malevolent pygmy like the cat-eyed horror he had glimpsed drinking from the stream. Like it? No, the same; it must be the same, for here on Austin no creature resembled another, nor ever could, save by the wildest of chances.

The creature vanished before he could draw his weapon, but in the shadows lurked other figures, other eyes that seemed alight with nonhuman intelligence. He fired, and a curious squawling cry came back, and it seemed to him that the forms receded for a time. But they came again, and he saw without surprise the nightmare horde of creatures.

He stuffed the notebook in his pocket and seized Lilith's wrist, for she stood as if paralyzed by horror. He backed away out of the doorless entrance, over the narrow brook. The girl seemed dazed, half hypnotized by the glimpses of the things that followed them. Her eyes were wide with fear, and she stumbled after him unseeing. He sent another shot into the shadows.

That seemed to rouse Lilith. "*Lay shot!*" she whimpered, then gathered her self-control. She uttered her curious call, and somewhere it was answered, and yet further off, answered again.

Her pack was gathering for her defense, and Carver felt a surge of apprehension for his own position. Might he not be caught between two enemies?

He never forgot that retreat down the course of the little stream. Only delirium itself could duplicate the wild battles he witnessed, the unearthly screaming, the death grips of creatures not quite natural, things that fought with the mad frenzy of freaks and outcasts. He and Lilith must have been slain immediately save for the intervention of her pack; they slunk out of the

shadows with low, bestial noises, circling Carver cautiously, but betraying no scrap of caution against—the other things.

He saw or sensed something that had almost escaped him before. Despite their forms, whatever their appearance happened to be, Lilith's pack was doglike. Not in looks, certainly; it was far deeper than that. In nature, in character; that was it.

And their enemies, wild creatures of nightmare though they were, had something feline about them. Not in appearance, no more than the others, but in character and actions. Their method of fighting, for instance—all but silent, with deadly claw and needle teeth, none of the fencing of canine nature, but with the leap and talons of feline. But their aspect, their — their *catness* was more submerged by their outward appearance, for they ranged from the semi-human form of the little demon of the brook to ophidian-headed things as heavy and lithe as a panther. And they fought with a ferocity and intelligence that was itself abnormal.

Carver's gun helped. He fired when he had any visible target, which was none too often; but his occasional hits seemed to instill respect into his adversaries.

Lilith, weaponless save for stones and her wooden knife, simply huddled at his side as they backed slowly toward the beach. Their progress was maddeningly slow, and Carver began to note apprehensively that the shadows were stretching toward the east, as if to welcome the night that was sliding around from that half of the world. Night meant—destruction.

If they could attain the beach, and if Lilith's pack could hold the others at bay until Carver could build a fire, they might survive. But the creatures that were allied with Lilith were being overcome. They were hopelessly outnumbered. They were being slain more rapidly with each one that fell, as ice melts more swiftly as its size decreases.

Carver stumbled backward into orange-tinted sunlight. The beach! The sun was already touching the coral spit, and darkness was a matter of minutes —-brief minutes.

Out of the brush came the remnants of Lilith's pack, a half dozen nondescripts, snarling, bloody, panting, and exhausted. For the moment they were free of their attackers, since the catlike fiends chose to lurk among the shadows. Carver backed farther away, feeling a sense of doom as his own shadow lengthened in the brief instant of twilight that divided day from night in these latitudes. And then swift darkness came just as he dragged Lilith to the ridge of the coral spit.

He saw the charge impending. Weird shadows detached themselves from the deeper shadows of the trees. Below, one of the nondescripts whined softly. Across the sand, clear for an instant against the white ground coral of the beach, the figure of the small devil with the half-human posture showed, and a malevolent sputtering snarl sounded. It was exactly as if the creature had leaped forward like a leader to exhort his troops to charge.

Carver chose that figure as his target. His gun flashed; the snarl became a squall of agony, and the charge came.

Lilith's pack crouched; but Carver knew that this was the end. He fired. The flickering shadows came on. The magazine emptied; there was no time now to reload, so he reversed the weapon, clubbed it. He felt Lilith grow tense beside him.

And then the charge halted. In unison, as if at command, the shadows were motionless, silent save for the low snarling of the dying creature on the sand. When they moved again, it was away—toward the trees!

Carver gulped. A faint shimmering light on the wall of the forest caught his eye, and he spun. It was true! Down the beach, down there where he had left his box of supplies, a fire burned, and rigid against the light, facing toward them in the darkness, were human figures. The unknown peril of fire had frightened off the attack. He stared. There in the sea, dark against the faint glow of the West, was a familiar outline. The *Fortune!* The men there were his associates; they had heard his shots and lighted the fire as a guide.

"Lilith!" he choked. "Look there. Come on!"

But the girl held back. The remnant of her pack slunk behind the shelter of the ridge of coral, away from the dread fire. It was no longer the fire that

frightened Lilith, but the black figures around it, and Alan Carver found himself suddenly face to face with the hardest decision of his life.

He could leave her here. He knew she would not follow, knew it from the tragic light in her honey-hued eyes. And beyond all doubt that was the best thing to do; for he could not marry her. Nobody could ever marry her, and she was too lovely to take among men who might love her—as Carver did. But he shuddered a little as a picture flashed in his mind. Children! What sort of children would Lilith bear? No man could dare chance the possibility that Lilith, too, was touched by the curse of Austin Island.

He turned sadly away—a step, two steps, toward the fire. Then he turned.

"Come, Lilith," he said gently, and added mournfully, "other people have married, lived, and died without children. I suppose we can, too."

The *Fortune* slid over the green swells, northward toward New Zealand. Carver grinned as he sprawled in a deck chair. Halburton was still gazing reluctantly at the line of blue that was Austin Island.

"Buck up, Vance," Carver chuckled. "You couldn't classify that flora in a hundred years, and if you could, what'd be the good of it? There's just one of each, anyway."

"I'd give two toes and a finger to try," said Halburton. "You had the better part of three days there, and might have had more if you hadn't winged Malloa. They'd have gone home to the Chathams sure, if your shot hadn't got his arm. That's the only reason they made for Macquarie."

"And lucky for me they did. Your fire scared off the cats."

"The cats, eh? Would you mind going over the thing again, Alan? It's so crazy that I haven't got it all yet."

"Sure. Just pay attention to teacher and you'll catch on." He grinned. "Frankly, at first I hadn't a glimmering of an idea myself. The whole island seemed insane. No two living things alike! Just one of each genus, and all unknown genera at that. I didn't get a single clue until after I met Lilith. Then I noticed that she differentiated by smell. She told good fruits from poisonous ones by the smell, and she even identified that first cat-thing I

shot by smell. She'd eat that because it was an enemy, but she wouldn't touch the dog-things I shot from her pack."

"So what?" asked Halburton, frowning.

"Well, smell is a chemical sense. It's much more fundamental than outward form, because the chemical functioning of an organism depends on its glands. I began to suspect right then that the fundamental nature of all living things on Austin Island was just the same as anywhere else. It wasn't the *nature* that was changed, but just the *form*. See?"

"Not a bit."

"You will. You know what chromosomes are, of course. They're the carriers of heredity, or rather, according to Weissman, they carry the genes that carry the determinants that carry heredity. A human being has forty-eight chromosomes, of which he gets twenty-four from each parent."

"So," said Halburton, "has a tomato."

"Yes, but a tomato's forty-eight chromosomes carry a different heredity, else one could cross a human being with a tomato. But to return to the subject, all variations in individuals come about from the manner in which chance shuffles these forty-eight chromosomes with their load of determinants. That puts a pretty definite limit on the possible variations.

"For instance, eye color has been located on one of the genes on the third pair of chromosomes. Assuming that this gene contains twice as many brown- eye determinants as blue-eye ones, the chances are two to one that the child of whatever man or woman owns that particular chromosome will be brown-eyed —*if* his mate has no marked bias either way. See?"

"I know all that. Get along to Ambrose Callan and his notebook."

"Coming to it. Now remember that these determinants carry *all*heredity, and that includes shape, size, intelligence, character, coloring—everything. People—or plants and animals—can vary in the vast number of ways in which it is possible to combine forty-eight chromosomes with their cargo of genes and determinants. But that number is not infinite. There are limits,

limits to size, to coloring, to intelligence. Nobody ever saw a human race with sky-blue hair, for instance."

"Nobody'd ever want to!" grunted Halburton.

"And," proceeded Carver, "that is because there are no blue-hair determinants in human chromosomes. But—and here comes Callan's idea—suppose we could increase the number of chromosomes in a given ovum. What then? In humans or tomatoes, if, instead of forty-eight, there were four hundred eighty, the possible range of variation would be ten times as great as it is now.

"In size, for instance, instead of the present possible variation of about two and a half feet, they might vary twenty-five feet! And in shape—a man might resemble almost anything! That is, almost anything within the range of the mammalian orders. And in intelligence—" He paused thoughtfully.

"But how," cut in Halburton, "did Callan propose to accomplish the feat of inserting extra chromosomes? Chromosomes themselves are microscopic; genes are barely visible under the highest magnification, and nobody ever saw a determinant."

"I don't know how," said Carver gravely. "Part of his notes crumbled to dust, and the description of his method must have gone with those pages. Morgan uses hard radiations, but his object and his results are both different. He doesn't change the number of chromosomes."

He hesitated. "I think Callan used a combination of radiation and injection," he resumed. "I don't know. All I know is that he stayed on Austin four or five years, and that he came with only his wife. That part of his notes is clear enough. He began treating the vegetation near his shack, and some cats and dogs he had brought. Then he discovered that the thing was spreading like a disease."

"Spreading?" echoed Halburton.

"Of course. Every tree he treated strewed multi-chromosomed pollen to the wind, and as for the cats—Anyway, the aberrant pollen fertilized normal seeds, and the result was another freak, a seed with the normal number of

chromosomes from one parent and ten times as many from the other. The variations were endless. You know how swiftly kauri and tree ferns grow, and these had a possible speed of growth ten times as great.

"The freaks overran the island, smothering out the normal growths. And Callan's radiations, and perhaps his injections, too, affected Austin Island's indigenous life—the rats, the bats. They began to produce mutants. He came in 1918, and by the time he realized his own tragedy, Austin was an island of freaks where no child resembled its parents save by the merest chance."

"His own tragedy? What do you mean?"

"Well, Callan was a biologist, not an expert in radiation. I don't know exactly what happened. Exposure to X-rays for long periods produces burns, ulcers, malignancies. Maybe Callan didn't take proper precautions to shield his device, or maybe he was using a radiation of peculiarly irritating quality. Anyway, his wife sickened first—an ulcer that turned cancerous.

"He had a radio—a wireless, rather, in 1921—and he summoned his sloop from the Chathams. It sank off that coral spit, and Callan, growing desperate, succeeded somehow in breaking his wireless. He was no electrician, you see.

"Those were troubled days, after the close of the War. With Callan's sloop sunk, no one knew exactly what had become of him, and after a while he was forgotten. When his wife died, he buried her; but when he died there was no one to bury him. The descendants of what had been his cats took care of him, and that was that."

"Yeah? What about Lilith?"

"Yes," said Carver soberly. "What about her? When I began to suspect the secret of Austin Island, that worried me. Was Lilith really quite human? Was she, too, infected by the taint of variation, so that her children might vary as widely as the offspring of the—cats? She spoke not a word of any language I knew—or I thought so, anyway—and I simply couldn't fit her in. But Callan's diary and notes did it for me."

"How?"

"She's the daughter of the captain of Callan's sloop, whom he rescued when it was wrecked on the coral point. She was five years old then, which makes her almost twenty now. As for language—well, perhaps I should have recognized the few halting words she recalled. *C'm on*, for instance, was *comment*—that is, 'how?' And *pah bo* was simply *pas bon*, not good. That's what she said about the poisonous fruit. And *lay shot* was *les chats*, for somehow she remembered, or sensed, that the creatures from the eastern end were cats.

"About her, for fifteen years, centered the dog creatures, who despite their form were, after all, dogs by nature, and loyal to their mistress. And between the two groups was eternal warfare."

"But are you sure Lilith escaped the taint?"

"Her name's Lucienne," mused Carver, "but I think I prefer Lilith." He smiled at the slim figure clad in a pair of Jameson's trousers and his own shirt, standing there in the stern looking back at Austin. "Yes, I'm sure. When she was cast on the island, Callan had already destroyed the device that had slain his wife and was about to kill him. He wrecked his equipment completely, knowing that in the course of time the freaks he had created were doomed."

"Doomed?"

"Yes. The normal strains, hardened by evolution, are stronger. They're already appearing around the edges of the island, and some day Austin will betray no more peculiarities than any other remote islet. Nature always reclaims her own."

THE CIRCLE OF ZERO (1936)

1. TRY FOR ETERNITY

If there were a mountain a thousand miles high and every thousand years a bird flew over it, just brushing the peak with the tip of its wing, in the course of inconceivable eons the mountain would be worn away. Yet all those ages would not be one second to the length of eternity.

I don't know what philosophical mind penned the foregoing, but the words keep recurring to me since last I saw old Aurore de Néant, erstwhile professor of psychology at Tulane. When, back in '24, I took that course in Morbid Psychology from him, I think the only reason for taking it at all was that I needed an eleven o'clock on Tuesdays and Thursdays to round out a lazy program.

I was gay Jack Anders, twenty-two years old, and the reason seemed sufficient. At least, I'm sure that dark and lovely Yvonne de Néant had nothing to do with it. She was but a slim child of sixteen.

Old de Néant liked me, Lord knows why, for I was a poor enough student. Perhaps it was because I never, to his knowledge, punned on his name. Aurore de Néant translates to Dawn of Nothingness, you see; you can imagine what students did to such a name. 'Rising Zero'—'Empty Morning'—those were two of the milder soubriquets.

That was in '24. Five years later I was a bond salesman in New York and Professor Aurore de Néant was fired. I learned about it when he called me up. I had drifted quite out of touch with University days.

He was a thrifty sort. He had saved a comfortable sum, and had moved to New York and that's when I started seeing Yvonne again, now darkly beautiful as a Tanagra figurine. I was doing pretty well and was piling up a surplus against the day when Yvonne and I ...

At least that was the situation in August, 1929. In October of the same year I was as clean as a gnawed bone and old de Néant had but little more meat. I

was young and could afford to laugh—he was old and he turned bitter. Indeed, Yvonne and I did little enough laughing when we thought of our own future—but we didn't brood like the professor.

I remember the evening he broached the subject of the Circle of Zero. It was a rainy, blustering fall night and his beard waggled in the dim lamplight like a wisp of grey mist. Yvonne and I had been staying in evenings of late. Shows cost money and I felt that she appreciated my talking to her father, and—after all—he retired early.

She was sitting on the davenport at his side when he suddenly stabbed a gnarled finger at me and snapped, 'Happiness depends on money!'

I was startled. 'Well, it helps,' I agreed.

His pale blue eyes glittered. 'We must recover ours!' he rasped.

'How?'

'I know how. Yes, I know how,' he grinned thinly. 'They think I'm mad. *You* think I'm mad. Even Yvonne thinks so.'

The girl said softly, reproachfully, 'Father!'

'But I'm not,' he continued. 'You and Yvonne and all the fools holding chairs at universities—yes! But not I.'

'I will be all right, if conditions don't get better soon,' I murmured. I was used to the old man's outbursts.

'They will be better for us,' he said, calming. 'Money! We will do anything for money, won't we, Anders?'

'Anything honest.'

'Yes, anything honest. Time is honest, isn't it? An honest cheat, because it takes everything human and turns it into dust.' He peered at my puzzled face. I will explain,' he said, 'how we can cheat time.'

'Cheat—'

'Yes. Listen, Jack. Have you ever stood in a strange place and felt a sense of having been there before? Have you ever taken a trip and sensed that sometime, somehow, you had done exactly the same thing—when you know you hadn't?'

'Of course. Everyone has. A memory of the present, Bergson calls it.'

Bergson is a fool! Philosophy without science. Listen to me.' He leaned forward. 'Did you ever hear of the Law of Chance?'

I laughed. 'My business is stocks and bonds. I *ought* to know of it.'

'Ah,' he said, 'but not enough of it. Suppose I have a barrel with a million trillion white grains of sand in it and one black grain. You stand and draw single grains, one after the other, look at each one and throw it back into the barrel. What are the odds against drawing the black grain?'

'A million trillion to one, on each draw.'

'And if you draw half of the million trillion grains?'

'Then the odds are even.'

'So!' he said. 'In other words, if you draw long enough, even though you return each grain to the barrel and draw again, some day you will draw the black one—*if you try long enough!*'

'Yes,' I said.

He half smiled.

'Suppose now you tried for eternity?'

'Eh?

'Don't you see, Jack? In eternity the Law of Chance functions perfectly. In eternity, sooner or later, every possible combination of things and events must happen. *Must* happen, if it's a possible combination. I say, therefore, that in eternity, *whatever can happen, will happen*!' His blue eyes blazed in pale fire.

I was a trifle dazed. 'I guess you're right,' I muttered.

'Right! Of course I'm right. Mathematics is infallible. Now do you see the conclusion?'

'Why—that sooner or later everything will happen.'

'Bah! It is true that there is eternity in the future; we cannot imagine time ending. But Flammarion, before he died, pointed out that there is also an eternity in the past. Since in eternity everything possible must happen, it follows that everything *must already have happened*!'

I gasped. 'Wait a minute! I don't see—'

'Stupidity!' he hissed. 'It is but to say with Einstein that not only space is curved, but time. To say that, after untold eons of millennia, the same things repeat themselves because they must! The Law of Chance says they must, given time enough. The past and the future are the same thing, because everything that will happen must already have happened. Can't you follow so simple a chain of logic?'

'Why—yes. But where does it lead?'

To our money! To our money!'

'What?'

'Listen. Do not interrupt. In the past all possible combinations of atoms and circumstances must have occurred.' He paused then stabbed that bony finger of his at me. 'Jack Anders, *you* are a possible combination of atoms and circumstances! Possible because you exist at this moment!'

'You mean—that *I* have happened before?'

'How apt you are! Yes, you have happened before and will again.'

'Transmigration!' I gulped. 'That's unscientific.'

'Indeed?' He frowned as if in effort to gather his thoughts. 'The poet Robert Burns was buried under an apple tree. When, years after his death, he was to be removed to rest among the great men of Westminster Abbey, do you know what they found? Do you know?'

'I'm sorry, but I don't.'

'They found a root! A root with a bulge for a head, branch roots for arms and legs and little rootlets for fingers and toes. The apple tree had eaten Bobby Burns—but who had eaten the apples?'

'Who—what?'

'Exactly. Who and what? The substance that had been Burns was in the bodies of Scotch countrymen and children, in the bodies of caterpillars who had eaten the leaves and become butterflies and been eaten by birds, in the wood of the tree. Where is Bobby Burns? Transmigration, I tell you! Isn't that transmigration?'

'Yes—but not what you meant about me. His body may be living, but in a thousand different forms.'

'Ah! And when some day, eons and eternities in the future, the Laws of Chance form another nebula that will cool to another sun and another earth, is there not the same chance that those scattered atoms may reassemble another Bobby Burns?'

'But what a chance! Trillions and trillions to one!'

'But eternity, Jack! In eternity that one chance out of all those trillions must happen—*must* happen!'

I was floored. I stared at Yvonne's pale and lovely features, then at the glistening old eyes of Aurore de Néant.

'You win,' I said with a long sigh. 'But what of it? This is still nineteen twenty-nine, and our money's still sunk in a very sick securities market.'

'*Money*!' he groaned. 'Don't you see? That memory we started from —that sense of having done a thing before—that's a memory out of the infinitely remote future. If only—if only one could remember clearly! But I have a way.' His voice rose suddenly to a shrill scream. 'Yes, I have a way!'

Wild eyes glared at me. I said, 'A way to remember our former incarnations?' One had to humor the old professor. 'To remember—the future?'

'Yes! Reincarnation!' His voice crackled wildly. *Re-in-carnatione*, which is Latin for "by the thing in the carnation", but it wasn't a carnation —it was an

apple tree. The carnation is *dianthus carophyllus*, which proved that the Hottentots plant carnations on the graves of their ancestors, whence the expression "nipped in the bud". If carnations grow on apple trees—'

'Father!' cut in Yvonne sharply. 'You're tired!' Her voice softened. 'Come. You're going to bed.'

'Yes,' he cackled. To a bed of carnations.'

2. MEMORY OF THINGS PAST

Some evenings later Aurore de Néant reverted to the same topic. He was clear enough as to where he had left off.

'So in this millennially dead past,' he began suddenly, 'there was a year nineteen twenty-nine and two fools named Anders and de Néant, who invested their money in what are sarcastically called securities. There was a clown's panic, and their money vanished.' He leered fantastically at me.

'Wouldn't it be nice if they could remember what happened in, say, the months from December, nineteen twenty-nine, to June, nineteen thirty—next year?' His voice was suddenly whining. 'They could get their money back then!'

I humored him. 'If they could remember.'

They can!' he blazed. 'They can!'

'How?'

His voice dropped to a confidential softness. 'Hypnotism! You studied Morbid Psychology under me, didn't you, Jack? Yes—I remember.'

'But, hypnotism!' I objected. 'Every psychiatrist uses that in his treatments and no one has remembered a previous incarnation or anything like it.'

'No. They're fools, these doctors and psychiatrists. Listen—do you remember the three stages of the hypnotic state as you learned them?'

'Yes. Somnambulism, lethargy, catalepsy.'

'Right. In the first the subject speaks, answers questions. In the second he sleeps deeply. In the third, catalepsy, he is rigid, stiff, so that he can be laid across two chairs, sat on—all that nonsense.'

'I remember. What of it?'

He grinned bleakly. 'In the first stage the subject remembers everything that ever happened during his life. His subconscious mind is dominant and that never forgets. Correct?'

'So we were taught.'

He leaned tensely forward. 'In the second stage, lethargy, my theory is that he remembers everything that happened in his other lives! He remembers the future!'

'Huh? Why doesn't someone do it, then?'

'He remembers while he sleeps. He forgets when he wakes. That's why. But I believe that with proper training he can learn to remember.'

'And you're going to try?'

'Not I. I know too little of finance. I wouldn't know how to interpret my memories.'

'Who, then?'

'You!' He jabbed that long finger against me.

I was thoroughly startled. 'Me? Oh, no! Not a chance of it!'

'Jack,' he said querulously, 'didn't you study hypnotism in my course? Didn't you learn how harmless it is? You know what tommy-rot the idea is of one mind dominating another. You know the subject really hypnotizes himself, that no one can hypnotize an unwilling person. Then what are you afraid of?'

'I—well,' I didn't know what to answer.

I'm not afraid,' I said grimly. 'I just don't like it.'

'You're afraid!'

'I'm not!'

'You are!' He was growing excited.

It was at that moment that Yvonne's footsteps sounded in the hall. His eyes glittered. He looked at me with a sinister hint of cunning.

'I dislike cowards,' he whispered. His voice rose. 'So does Yvonne!'

The girl entered, perceiving his excitement. 'Oh!' she frowned. 'Why do you have to take these theories so to heart, father?'

'Theories?' he screeched. 'Yes! I have a theory that when you walk you stand still and the sidewalk moves back. No—then the sidewalk moves back. No—then the sidewalk would split if two people walked towards each other—or maybe it's elastic. Of course it's elastic! That's why the last mile is the longest. It's been stretched!'

Yvonne got him to bed.

Well, he talked me into it. I don't know how much was due to my own credulity and how much to Yvonne's solemn dark eyes. I half-believed the professor by the time he'd spent another evening in argument but I think the clincher was his veiled threat to forbid Yvonne my company. She'd have obeyed him if it killed her. She was from New Orleans too, you see, and of Creole blood.

I won't describe that troublesome course of training. One has to develop the hypnotic habit. It's like any other habit, and must be formed slowly. Contrary to the popular opinion morons and people of low intelligence can't ever do it. It takes real concentration—the whole knack of it is the ability to concentrate one's attention—and I don't mean the hypnotist, either.

I mean the subject. The hypnotist hasn't a thing to do with it except to furnish the necessary suggestion by murmuring, 'Sleep—sleep— sleep—sleep ...' And even that isn't necessary once you learn the trick of it.

I spent half-an-hour or more nearly every evening, learning that trick. It was tedious and a dozen times I became thoroughly disgusted and swore to

have no more to do with the farce. But always, after the half-hour's humoring of de Néant, there was Yvonne, and boredom vanished. As a sort of reward, I suppose, the old man took to leaving us alone. And we used our time, I'll wager, to better purpose than he used his.

But I began to learn, little by little. Came a time, after three weeks of tedium, when I was able to cast myself into a light somnambulistic state. I remember how the glitter of the cheap stone in Professor de Néant's ring grew until it filled the world and how his voice, mechanically dull, murmured like the waves in my ears. I remember everything that transpired during those minutes, even his query, 'Are you sleeping?' and my automatic reply, 'Yes.'

By the end of November we had mastered the second state of lethargy and then—I don't know why, but a sort of enthusiasm for the madness took hold of me. Business was at a standstill. I grew tired of facing customers to whom I had sold bonds at a par that were now worth fifty or less and trying to explain why. After a while I began to drop in on the professor during the afternoon and we went through the insane routine again and again.

Yvonne comprehended only a part of the bizarre scheme. She was never in the room during our half-hour trials and knew only vaguely that we were involved in some sort of experiment which was to restore our lost money. I don't suppose she had much faith in it but she always indulged her father.

It was early in December that I began to remember things. Dim and formless things at first—sensations that utterly eluded the rigidities of words. I tried to express them to de Néant but it was hopeless.

'A circular feeling,' I'd say. 'No—not exactly—a sense of spiral—not that, either. Roundness—I can't recall it now. It slips away.'

He was jubilant. 'It comes!' he whispered, grey beard a-waggle and pale eyes glittering. 'You begin to remember!'

'But what good is a memory like that?'

'Wait! It will come clearer. Of course not all your memories will be of the sort we can use. They will be scattered. Through all the multifold eternities of the

past-future circle you can't have been always Jack Anders, securities salesman.

'There will be fragmentary memories, recollections of times when your personality was partially existent, when the Laws of Chance had assembled a being who was not quite Jack Anders, in some period of the infinite worlds that must have risen and died in the span of eternities.

'But somewhere, too, the same atoms, the same conditions, must have made *you*. You're the black grain among the trillions of white grains and, with all eternity to draw in from, you must have been drawn before— many, many times.'

'Do you suppose,' I asked suddenly, 'that anyone exists twice on the same earth? Reincarnation in the sense of the Hindus?'

He laughed scornfully. 'The age of the earth is somewhere between a thousand million and three thousand million years. What proportion of eternity is that?'

'Why—no proportion at all. Zero.'

'Exactly. And zero represents the chance of the same atoms combining to form the same person twice in one cycle of a planet. But I have shown that trillions, or trillions of trillions of years ago, there *must*have been another earth, another Jack Anders, and'—his voice took on that whining note—'another crash that ruined Jack Anders and old de Néant. That is the time you must remember out of lethargy.'

'Catalepsy!' I said. 'What would one remember in that?'

'God knows.'

'What a mad scheme!' I said suddenly. 'What a crazy pair of fools we are!' The adjectives were a mistake.

'Mad? Crazy?' His voice became a screech. 'Old de Néant is mad, eh? Old Dawn of Nothingness is crazy! You think time doesn't go in a circle, don't you? Do you know what a circle represents? I'll tell you!

'A circle is the mathematical symbol for zero! Time is zero—time is a circle. I have a theory that the hands of a clock are really the noses, because they're on the clock's face, and since time is a circle they go round and round and round ...'

Yvonne slipped quietly into the room and patted her father's furrowed forehead. She must have been listening.

3. NIGHTMARE OR TRUTH?

'Look here,' I said at a later time to de Néant. 'If the past and future are the same thing, then the future's as unchangeable as the past. How, then, can we expect to change it by recovering our money?'

'Change it?' he snorted. 'How do you know we're changing it? How do you know that this same thing wasn't done by that Jack Anders and de Néant back on the other side of eternity? I say it was!'

I subsided, and the weird business went on. My memories—if they were memories—were becoming clearer now. Often and often I saw things out of my own immediate past of twenty-seven years, though of course de Néant assured me that these were visions from the past of that other self on the far side of time.

I saw other things too, incidents that I couldn't place in my experience, though I couldn't be quite sure they didn't belong there. I might have forgotten, you see, since they were of no particular importance. I recounted everything dutifully to the old man immediately upon awakening and sometimes that was difficult—like trying to find words for a half-remembered dream.

There were other memories as well—bizarre, outlandish dreams that had little parallel in human history. These were always vague and sometimes very horrible and only their inchoate and formless character kept them from being utterly nerve-racking and terrifying.

At one time, I recall, I was gazing through a little crystalline window into a red fog through which moved indescribable faces—not human, not even associable with anything I had ever seen. On another occasion I was wandering, clad in furs, across a cold grey desert and at my side was a woman who was not quite Yvonne.

I remember calling her Pyroniva, and knowing that the name meant 'Snowy-fire'. And here and there in the air about us floated fungoid things, bobbing around like potatoes in a water-bucket. And once we stood very quiet while a menacing form that was only remotely like the small fungi droned purposefully far overhead, toward some unknown objective.

At still another time I was peering, fascinated, into a spinning pool of mercury, watching an image therein of two wild winged figures playing in a roseate glade—not at all human in form but transcendently beautiful, bright and iridescent.

I felt a strange kinship between these two creatures and myself and Yvonne but I had no inkling of what they were, nor upon what world, nor at what time in eternity, nor even of what nature was the room that held the spinning pool that pictured them.

Old Aurore de Néant listened carefully to the wild word-pictures I drew.

'Fascinating!' he muttered. 'Glimpses of an infinitely distant future caught from a ten-fold infinitely remote past. These things you describe are not earthly; it means that somewhere, sometime, men are actually to burst the prison of space and visit other worlds. Some day ...'

'If these glimpses aren't simply nightmares,' I said.

They're not nightmares,' he snapped, 'but they might as well be for all the value they are to us.' I could see him struggle to calm himself. 'Our money is still gone. We must try, keep trying for years, for centuries, until we get the black grain of sand, because black sand is a sign of gold-bearing ore ...' He paused. 'What am I talking about?' he said querulously.

Well, we kept trying. Interspersed with the wild, all but indescribable visions came others almost rational. The thing became a fascinating game. I was

neglecting my business—though that was small loss—to chase dreams with old Professor Aurore de Néant.

I spent evenings, afternoons and finally mornings, too, living in the slumber of the lethargic state or telling the old man what fantastic things I had dreamed—or, as he said, remembered. Reality became dim to me. I was living in an outlandish world of fancy and only the dark, tragic eyes of Yvonne tugged at me, pulled me back into the daylight world of sanity.

I have mentioned more nearly rational visions. I recall one a city— but what a city! Sky-piercing, white and beautiful and the people of it were grave with the wisdom of gods, pale and lovely people, but solemn, wistful, sad. There was the aura of brilliance and wickedness that hovers about all great cities, that was born, I suppose, in Babylon and will remain until great cities are no more.

But that was something else, something intangible. I don't know exactly what to call it but perhaps the word decadence is as close as any word we have. As I stood at the base of a colossal structure there was the whir of quiet machinery but it seemed to me, nevertheless, that the city was dying.

It might have been the moss that grew green on the north walls of the buildings. It might have been the grass that pierced here and there through the cracks of the marble pavements. Or it might have been only the grave and sad demeanor of the pale inhabitants. There was something that hinted of a doomed city and a dying race.

A strange thing happened when I tried to describe this particular memory to old de Néant. I stumbled over the details, of course—these visions from the unplumbed depths of eternity were curiously hard to fix between the rigid walls of words. They tended to grow vague, to elude the waking memory. Thus, in this description I had forgotten the name of the city.

'It was called,' I said hesitatingly, Termis or Termoplia, or ...'

'Termopolis!' cried de Néant impatiently. 'City of the End!'

I stared amazed. That's it! But how did you know?' In the sleep of lethargy, I was sure, one never speaks.

A queer, cunning look flashed in his pale eyes. 'I knew,' he muttered. 'I knew.' He would say no more.

But I think I saw that city once again. It was when I wandered over a brown and treeless plain, not like that cold grey desert but apparently an arid and barren region of the earth. Dim on the western horizon was the circle of a great cool reddish sun. It had always been there, I remembered, and knew with some other part of my mind that the vast brake of the tides had at last slowed the earth's rotation to a stop, that day and night no longer chased each other around the planet.

The air was biting cold and my companions and I—there were half a dozen of us—moved in a huddled group as if to lend each other warmth from our half-naked bodies. We were all of us thin-legged, skinny creatures with oddly deep chests and enormous, luminous eyes, and the one nearest me was again a woman who had something of Yvonne in her but very little. And I was not quite Jack Anders, either. But some remote fragment of me survived in that barbaric brain.

Beyond a hill was the surge of an oily sea. We crept circling about the mound and suddenly I perceived that sometime in the infinite past that hill had been a city. A few Gargantuan blocks of stone lay crumbling on it and one lonely fragment of a ruined wall rose gauntly to four or five times a man's height. It was at this spectral remnant that the leader of our miserable crew gestured then spoke in sombre tones—not English words but I understood.

'The Gods,' he said—'the Gods who piled stones upon stones are dead and harm us not who pass the place of their dwelling.'

I knew what that was meant to be. It was an incantation, a ritual— to protect us from the spirits that lurked among the ruins—the ruins, I believe, of a city built by our own ancestors thousands of generations before.

As we passed the wall I looked back at a flicker of movement and saw something hideously like a black rubber doormat flop itself around the angle of the wall. I drew closer to the woman beside me and we crept on down to the sea for water—yes, water, for with the cessation of the planet's rotation

rainfall had vanished also, and all life huddled near the edge of the undying sea and learned to drink its bitter brine.

I didn't glance again at the hill which had been Termopolis, the City of the End. But I knew that some chance-born fragment of Jack Anders had been —or will be (what difference, if time is a circle?)—witness of an age close to the day of humanity's doom.

It was early in December that I had the first memory of something that might have been suggestive of success. It was a simple and very sweet memory, just Yvonne and I in a garden that I knew was the inner grounds on one of the New Orleans' old homes—one of those built in the Continental fashion about a court.

We sat on a stone bench beneath the oleanders and I slipped my arm very tenderly about her and murmured, 'Are you happy, Yvonne?'

She looked at me with those tragic eyes of hers and smiled, and then answered, 'As happy as I have ever been.'

And I kissed her.

That was all, but it was important. It was vastly important because it was definitely not a memory out of my own personal past. You see, I had never sat beside Yvonne in a garden sweet with oleanders in the Old Town of New Orleans and I had never kissed her until we met in New York.

Aurore de Néant was elated when I described this vision.

'You see!' he gloated. There is evidence. You have remembered the future! Not your own future, of course, but that of another ghostly Jack Anders, who died trillions and quadrillions of years ago.'

'But it doesn't help us, does it?' I asked.

'Oh, it will come now! You wait. The thing we want will come.'

And it did, within a week. This memory was curiously bright and clear, and familiar in every detail. I remember the day. It was the eighth of December, 1929, and I had wandered aimlessly about in search of business during the morning. In the grip of that fascination I mentioned I drifted to de Néant's

apartment after lunch. Yvonne left us to ourselves, as was her custom, and we began.

This was, as I said, a sharply outlined memory—or dream. I was leaning over my desk in the company's office, that too-seldom visited office. One of the other salesmen—Summers was his name—was leaning over my shoulder.

We were engaged in the quite customary pastime of scanning the final market reports in the evening paper. The print stood out, clear as reality itself. I glanced without surprise at the dateline. It was Thursday, April 27th, 1930—almost five months in the future!

Not that I realized that during the vision, of course. The day was merely the present to me. I was simply looking over the list of the day's trading. Figures—familiar names. Telephone 210¾—US Steel —161; Paramount, 68½.

I jabbed a finger at Steel. 'I bought that at 72,' I said over my shoulder to Summers. 'I sold out everything today. Every stock I own. I'm getting out before there's a secondary crash.'

'Lucky stiff!' he murmured. 'Buy at the December lows and sell out now! Wish I'd had money to do it.' He paused, 'What you gonna do? Stay with the company?'

'No, I've enough to live on. I'm going to stick it in Governments and paid-up insurance and live on the income. I've had enough of gambling.'

'You lucky stiff!' he said again. 'I'm sick of the Street too. Staying in New York?'

'For a while. Just till I get my stuff invested properly; Yvonne and I are going to New Orleans for the winter.' I paused. 'She's had a tough time of it. I'm glad we're where we are.'

'Who wouldn't be?' asked Summers, and then again, 'You lucky stiff!'

De Néant was frantically excited when I described this to him.

That's it!' he screamed. 'We buy! We buy tomorrow! We sell on the twenty-seventh of May and then—New Orleans!'

Of course I was nearly equally enthusiastic. 'By heaven!' I said. 'It's worth the risk! We'll do it!' And then a sudden hopeless thought. 'Do it? Do it with what? I have less than a hundred dollars to my name. And you ...'

The old man groaned. 'I have nothing,' he said in abrupt gloom. 'Only the annuity we live on. One can't borrow on that.' Again a gleam of hope. The banks. We'll borrow from them!'

I had to laugh, although it was a bitter laugh. 'What bank would lend us money on a story like this? They wouldn't lend Rockefeller himself money to play this sick market, not without security. We're sunk, that's all.'

I looked at his pale, worried eyes. 'Sunk,' he echoed dully. Then again that wild gleam. '*Not* sunk!' he yelled. 'How can we be? We *did* do it! You remembered our doing it! We must have found the way!'

I gazed speechless. Suddenly a queer, mad thought flashed over me. This other Jack Anders, this ghost of quadrillions of centuries past—or future—he too must be watching, or had watched, or yet would watch, me—the Jack Anders of this cycle of eternity.

He must be watching as anxiously as I to discover the means. Each of us watching the other—neither of us knowing the answer. The blind leading the blind! I laughed at the irony.

But old de Néant was not laughing. The strangest expression I have ever seen in a man's eyes was in his as he repeated very softly, 'We must have found the way because it was done. At least you and Yvonne found the way.'

'Then all of us must,' I answered sourly.

'Yes. Oh, yes. Listen to me, Jack. I am an old man, old Aurore de Néant. I am old Dawn of Nothingness and my mind is cracking. Don't shake your head!' he snapped. 'I am not mad. I am simply misunderstood. None of you understand.

'Why, I have a theory that trees, grass and people do not grow taller at all. They grow by pushing the earth away from them, which is why you keep

hearing that the earth is getting smaller every day. But you don't understand —Yvonne doesn't understand.'

The girl must have been listening. Without my seeing her, she had slipped into the room and put her arms gently about her father's shoulders, while she gazed across at me with anxious eyes.

4. THE BITTER FRUIT

There was one more vision, irrelevant in a way, yet vitally important in another way. It was the next evening. An early December snowfall was dropping its silent white beyond the windows and the ill-heated apartment of the de Néants was draughty and chill.

I saw Yvonne shiver as she greeted me and again as she left the room. I noticed that old de Néant followed her to the door with his thin arms about her and that he returned with very worried eyes.

'She is New Orleans born,' he murmured. This dreadful Arctic climate will destroy her. We must find a way at once.'

That vision was a sombre one. I stood on a cold, wet, snowy ground— just myself and Yvonne and one who stood beside an open grave. Behind us stretched rows of crosses and white tomb stones, but in our corner the place was ragged, untended, unconsecrated. The priest was saying, 'And these are things that only God understands.'

I slipped a comforting arm about Yvonne. She raised her dark, tragic eyes and whispered, 'It was yesterday, Jack—just yesterday—that he said to me, "Next winter you shall spend in New Orleans, Yvonne." Just yesterday!'

I tried a wretched smile, but I could only stare mournfully at her forlorn face, watching a tear that rolled slowly down her right cheek, hung glistening there a moment, then was joined by another to splash unregarded on the black bosom of her dress.

That was all but how could I describe that vision to old de Néant? I tried to evade. He kept insisting.

'There wasn't any hint of the way,' I told him. Useless—at last I had to tell anyway.

He was very silent for a full minute. 'Jack,' he said finally, 'do you know when I said that to her about New Orleans? This morning when we watched the snow. This morning!'

I didn't know what to do. Suddenly this whole concept of remembering the future seemed mad, insane. In all my memories there had been not a single spark of real proof, not a single hint of prophecy.

So I did nothing at all but simply gazed silently as old Aurore de Néant walked out of the room. And when, two hours later, while Yvonne and I talked, he finished writing a certain letter and then shot himself through the heart—why, that proved nothing either.

It was the following day that Yvonne and I, his only mourners, followed old Dawn of Nothingness to his suicide's grave. I stood beside her and tried as best I could to console her, and roused myself from a dark reverie to hear her words.

'It was yesterday, Jack—just yesterday—that he said to me, "Next winter you shall spend in New Orleans, Yvonne". Just yesterday!'

I watched the tear that rolled slowly down her right cheek hung glistening there a moment, then was joined by another to splash on the black bosom of her dress.

But it was later, during the evening, that the most ironic revelation of all occurred. I was gloomily blaming myself for the weakness of indulging old de Néant in the mad experiment that had led, in a way, to his death.

It was as if Yvonne read my thoughts, for she said suddenly:

'He was breaking, Jack. His mind was going. I heard all those strange things he kept murmuring to you.'

'What?'

'I listened, of course, behind the door there. I never left him alone. I heard him whisper the queerest things—faces in a red fog, words about a cold grey desert, the name Pyroniva, the word Termopolis. He leaned over you as you sat with closed eyes and he whispered, whispered all the time.'

Irony of ironies! It was old de Néant's mad mind that had suggested the visions! He had described them to me as I sat in the sleep of lethargy!

Later we found the letter he had written and again I was deeply moved. The old man had carried a little insurance. Just a week before he had borrowed on one of the policies to pay the premiums on it and the others. But the letter —well, he had made *me* beneficiary of half the amount! And the instructions were—

'You, Jack Anders, will take both your money and Yvonne's and carry out the plan as you know I wish.'

Lunacy! De Néant had found the way to provide the money but—I couldn't gamble Yvonne's last dollar on the scheme of a disordered mind.

'What will we do?' I asked her. 'Of course the money's all yours. I won't touch it.'

'Mine?' she echoed. 'Why, no. We'll do as he wished. Do you think I'd not respect his last request?'

Well, we did. I took those miserable few thousands and spread them around in that sick December market. You remember what happened, how during the spring the prices skyrocketed as if they were heading back toward 1929, when actually the depression was just gathering breath.

I rode that market like a circus performer. I took profits and pyramided them back and, on April 27th, with our money multiplied fifty times, I sold out and watched the market slide back.

Coincidence? Very likely. After all, Aurore de Néant's mind was clear enough most of the time. Other economists predicted that spring rise. Perhaps he foresaw it too. Perhaps he staged this whole affair just to trick us into the gamble, one which we'd never have dared risk otherwise. And then when he

saw we were going to fail from lack of money he took the only means he had of providing it.

Perhaps. That's the rational explanation, and yet—that vision of ruined Termopolis keeps haunting me. I see again the grey cold desert of the floating fungi. I wonder often about the immutable Law of Chance and about a ghostly Jack Anders somewhere beyond eternity.

For perhaps he does—did—will exist. Otherwise, how to explain that final vision? What of Yvonne's words beside her father's grave? Could he have foreseen those words and whispered them to me? Possibly. But what, then, of those two tears that hung glistening, merged and dropped from her cheeks?

What of them?

GRAPH (1936)

"YOU'RE on the mend again," said Dr. Felix Kurtius, tossing his black case carelessly on the desk. "Let's see how permanent it is this time!"

Isaac Levinson—mail-order Levinson—rolled down his sleeve and stared sardonically at the doctor.

"Thanks," he growled. "I've heard that before."

"You're feeling better, aren't you?"

The merchandise king nodded reluctantly, staring about his elaborate office. "Sure," he said. "But for how long? And anyway, why don't you do something? Is this the new medical practice—to let a patient get well by himself? For that I don't need a doctor!"

"I gave you my suggestions," retorted Kurtius. "Three and a half years ago—when you first called me—I told you what to do. Don't blame me because you refuse to follow my advice."

"Vacations!" sneered Levinson. "Rest—change—travel —retire! Could I leave my business with conditions like they were?"

"You certainly could! What's a little more money to you—or a little less?"

"Money—bah! It's my business that needs me."

"Same thing."

"No," said Levinson abruptly. "Not the same thing! My stockholders, my employees, I have obligations to them. The business must be run right, or the one loses money and the other jobs. Could I let some schlemiehl make a botch of things while I was telling how the biggest tarpon got away from me. Oser!"

"Just excuses," observed Kurtius. "What you mean is that you didn't want to leave."

"Couldn't is what I said."

"Wouldn't is what you mean.'"

The doctor gestured at the fittings of his patient's office. "You don't mean to tell me you're so busy that you haven't time to walk two blocks to my office, do you?—Instead of having me call here to examine you?"

Levinson silently indicated the welter of papers on his desk. "And that's what you've wedded to!" scoffed Kurtius. "Charts, summaries, statistics." Any clerk could tabulate them for you."

''Charts and statistics," growled Levinson, "are the life-blood of my business."

"And your business is the life-blood of you!"

"Yet you want I should get away from it."

"That's my advice. No man can live year after year on his own blood. You can't; that's the whole trouble with you. That's why medicine or operations are perfectly useless in your case."

"Bah!" Levinson was frowning again. "I have a notion that you doctors recommend the rest cure when you don't know what's wrong. I don't want to rest; I want something that will put me in shape to keep on working. I don't believe it's my business that's doing this to me; for twenty-five years I've lived, eaten, slept, and dreamt this business, and never, until that first time I called you, have I felt an hour's sickness. And now these damned spells —better, worse, better worse—How could it be my business?"

"Well," observed Kurtius, "there's no way of proving it to you. I've told you my diagnosis; that's all I can do. You'll find out sooner or later that I am right."

"I don't believe it." said Levinson stubbornly.

"Well, as I said, there's no way of proving it to you."

"You doctors," continued Levinson, "spend your efforts treating symptoms instead of causes. Because I am tired, I must go somewhere and rest;

because I can't sleep, I must get out somewhere and exercise; because I have no appetite, I must go away from my business! Why don't you find why I am tired, and can't sleep or eat? I should run my business like that and in a year I'd be broke—machullah!"

"Didn't you ever hear of functional disorders?" queried Kurtius mildly.

"Am I the doctor or you?"

"Functional disorders are those where there's nothing the matter with the patient—that is organically. Nothing wrong except in the mind or nervous system."

"Hah! Imaginary sickness I've got."

"It's not imaginary. Functional troubles are just as real as organic ones, and sometimes a damn sight harder to treat —Especially," he added, "if the patient won't cooperate."

"And you think my business is doing that?"

"Just as I told you."

"Bah! For more than twenty years I have had no trouble. And why do I get better and then worse again? You should make a study of your cases."

"Do you think I don't?" snapped Kurtius. "I can give you this case history by heart. Why, look here! Here's something you ought to be able to understand!"

He reached toward his black bag, noting that the catch had opened, spilling a stethoscope and a parer or two on the littered desk. He seized a paper and spread it out before his patient. "What's that?" grunted Levinson.

"Graph of your metabolism," replied the doctor. "Make a study of my cases, eh! Here's your chart month by month for three and a half years."

Levinson scanned the irregular black lines. Suddenly he narrowed his eyes, leaned closer. A moment more and he burst into a snickering laugh.

"What's the matter?" queried Kurtius impatiently.

"The chart!" chuckled Levinson. "Hee-hee! It's a graph of our sales I was looking at before you came! Case-record, huh?" Kurtius glanced at the paper, frowned perplexedly, and suddenly gave vent to a shout of laughter. "Ho!" He roared, slapping the desk. "Funny! Oh, Lord!"

"What's that funny?" asked his patient.

"The graph! The sales-chart!" bellowed the doctor. "Your business doesn't affect you, eh? Look!"

He pulled another bit of paper from his bag, spread it beside the first.

"Here's your metabolism! Look it over!"

Peak for peak, valley for valley, the two graphs were identical!

BRINK OF INFINITY (1936)

ONE would hardly choose the life of an assistant professor of mathematics at an Eastern University as an adventurous one. Professors in general are reputed to drone out in a quiet, scholarly existence, and an instructor of mathematics might seem the driest and least lively of men, since his subject is perhaps the most desiccated. And yet—even the lifeless science of figures has had its dreamers—Clerk Maxwell, Lobachevsky, Einstein and the rest. The latter, the great Albert Einstein himself who is forging the only chain that ever tied a philosophers' dream to experimental science, is pounding his links of tenuous mathematical symbols, shadowy as thought, but unbreakable.

And don't forget that "Alice in Wonderland" was written by a dreamer who happened also to be a mathematician. Not that I class myself with them; I'm practical enough to leave fantasies alone. Teaching is my business.

At least, teaching is my main business. I do a little statistical work for industrial corporations when the occasion presents itself—in fact, you'll find my name in the classified section: Abner Aarons, Statistician and Consulting Mathematician. I eke out my professional salary, and I do at times strike something interesting. Of course, in the main such work consists of graphing trends of consumption for manufacturers, or population increase for public utilities.

And occasionally some up-and-coming advertising agency will consult me on how many sardine cans would be needed to fill the Panama Canal, or some such material to use as catchy advertising copy. Not exactly exciting work, but it helps financially.

Thus I was not particularly surprised that July morning to receive a call. The university had been closed for some weeks; the summer session was about to open, without however, the benefit of my presence. *I* was taking a vacation, leaving in two or three days for a Vermont village I knew, where the brook trout cared not a bit whether a prizefighter, president, or

professor was on the hither end of the line. And I was going alone; three-quarters of the year before a classroom full of the tadpoles called college students had thoroughly wearied me of any further desire for human companionship; my social instincts were temporarily in abeyance.

Nevertheless, I'm not unthrifty enough to disregard an opportunity to turn an honest penny, and the call was far from unwelcome. Even the modest holiday I planned can bite deeply enough into the financial foundation of an assistant professor's pittance. And the work sounded like one of these fairly lucrative and rather simple propositions.

"This is Court Strawn," the telephone announced. "I'm an experimental chemist, and I've completed a rather long series of experiments. I want them tabulated and the results analyzed; do you do that sort of work?"

I did, and acknowledged as much.

"It will be necessary for you to call here for your data," the voice continued. Strangely unctuous, that voice. "It is impossible for me to leave." There followed an address on West Seventieth Street.

Well, I had called for data before. Generally the stuff was delivered or mailed to me, but his request wasn't extraordinary, I agreed, and added that I'd be over shortly. No use delaying my vacation if I could help it.

I took the subway. Taxis are a needless luxury to a professor, and a car of my own was an unrealized ambition. It wasn't long before I entered one of the nondescript brown houses that still survive west of the Avenue. Strawn let me in, and I perceived the reason for his request. The man was horribly crippled; his whole left side was warped like a gnarled oak, and he was hard put to hobble about the house. For the rest—stringy dark hair, and little tense eyes.

He greeted me pleasantly enough, and I entered a small library, while my host hobbled over to a littered desk, seating himself facing me. The deep-set eyes looked me over, and he chuckled.

"Are you a good mathematician, Dr. Aarons?" he asked. There was more than a hint of a sneer in his voice.

"My work has been satisfactory," I answered, somewhat nettled. "I've been doing statistical work for several years."

He waved a shriveled left hand.

"Of course—of course! I don't doubt your practical ability. Are you, however, well versed in the more abstract branches—the theory of numbers, for instance, or the hyper-spatial mathematics?"

I was feeling rather irritated. There was something about the man—

"I don't see that any of this is necessary in statistical analysis of experimental results," I said. "If you'll give me your data, I'll be going."

He chuckled again, seemingly hugely amused. "As a matter of fact, Dr. Aarons," he said smirking, "the experiment isn't completed yet. Indeed, to tell the truth, it is just beginning."

"What!" I was really angry. "If this is your idea of a joke—" I started to rise, thoroughly aroused.

"Just a moment," said Strawn coolly. He leveled a very effective-looking blue-barreled automatic at me. I sat down again open-mouthed; I confess to a feeling of panic at the sight of the cripple's beady little eyes peering along the ugly weapon.

"Common politeness dictates that you at least hear me out, Dr. Aarons." I didn't like the oily smoothness of his voice, but what was I to do? "As I was saying, the experiment is just beginning. As a matter of fact, *you* are the experiment!"

"Eh?" I said, wondering again if the whole thing might not be a joke of some sort.

"You're a mathematician, aren't you?" Strawn continued. "Well, that makes you fair game for me. A mathematician, my good friend, is no more to me than something to be hunted down. And I'm doing it!"

The man was crazy! The realization dawned on me as I strove to hold myself calm. Best to reason with him, I thought.

"But why?" I asked. "We're a harmless lot."

His eyes blazed up with a fierce light.

"Harmless, eh, harmless! Well, it was one of your colleagues that did —this!" He indicated his withered leg with his withered arm. "He did this with his lying calculations!" He leaned forward confidentially. "Listen to me, Dr. Aarons. I am a chemist, or was once. I used to work with explosives, and was pretty good, too. And then one of you damned calculators figured out a formula for me! A misplaced decimal point—bah! You're all fair game to me!" He paused, and the sneer came back to his lips. "That's simple justice, now, isn't it?"

Well, you can imagine how thoroughly horrified I was, sitting there facing a homicidal maniac with a loaded gun in his hand. Humor him! I'd heard that was the best treatment. Use persuasion, reason!

"Now, Mr. Strawn," I said, "you're certainly entitled to justice. Yes, you certainly are! But surely, Mr. Strawn, you are not serving the ends of justice by venting your anger on me! Surely that isn't justice."

He laughed wildly and continued. "A very specious argument, Dr. Aarons. You are simply unfortunate in that your name is the first in the classified section of the directory. Had your colleague given me a chance—any slightest chance to save my body from this that you see, I might be forgiving. But I trusted that fool's calculations!" He twisted his face again into that bitter leer. "As it is, I am giving you far more of a chance than I had. If, as you claim, you are a good mathematician, you shall have your opportunity to escape. I have no quarrel with the real students of figures, but only"—his leer became a very sinister scowl—"only with the dullards, the fakes and the blunderers. Yes, you'll have your chance!" The grin returned to his lips, but his eyes behind the blue automatic never wavered.

I saw no other alternative but to continue the ghastly farce. Certainly open opposition to any of his suggestions might only inflame the maniac to violence, so I merely questioned. "And what is the proposition, Mr. Strawn?"

The scowl became a sneer again.

"A very fair one, sir. A very fair proposition, indeed." He chuckled.

"I should like to hear it," I said, hoping for an interruption of some sort.

"You shall. It is just this: You are a mathematician, and you say, a good one. Very well. We shall put your claim to the test. I am thinking of a mathematical quantity, a numerical expression, if you prefer. You have ten questions to discover it. If you do so you are free as far as I am concerned. But if you fail"—his scowl reappeared—"well, if you fail I shall recognize you as one of the tribe of blunderers against whom I war, and the outcome will not be pleasant!"

Well! It was several moments before I found my voice, and began to babble protests. "But, Mr. Strawn! That's an utter impossibility! The range of numbers is infinite; how can I identify one with ten questions? Give me a fair test, man! This one offers not a chance in a million! In a billion!"

He silenced me with a wave of the blue barrel of his weapon.

"Remember, Dr. Aarons, I did not say it was a number. I said a numerical expression, which is a vastly wider field. I am giving you this hint without deducting a question; you must appreciate my magnanimity!" He laughed. "The rules of our little game are as follows: You may ask me any questions except the direct question, 'What is the expression?' I am bound to answer you in full and to the best of my knowledge any question except the direct inquiry. You may ask me as many questions at a time as you wish up to your limit of ten, but in any event I will answer not less than two per day. That should give you sufficient time for reflection"—again that horrible chuckle—"and my time too is limited."

"But, Mr. Strawn," I argued, "that may keep me here five days. Don't you know that by tomorrow my wife will have the police searching for me?"

A glint of anger flashed in the mad eyes. "You are not being fair, Dr. Aarons! I know you are not married! I checked up on you before you came here. I know you will not be missed. Do not attempt to lie to me; rather help me serve the ends of justice! You should be more than willing to prove your worth to survive as one of the true mathematicians." He rose suddenly.

"And now, sir, you will please precede me through the door and up those stairs!"

Nothing to do but obey! The stubby gun in his hand was enough authority, at least to an unadventurous soul like myself. I rose and stalked out of the room at his direction, up the stairs and through a door he indicated. Beyond was a windowless little cell ventilated by a skylight, and the first glance revealed that this was barred. A piece of furniture of the type known as a day-bed, a straight chair, a deep overstuffed chair, and a desk made up the furnishings.

"Here," said the self-appointed host, "is your student's cell. On the desk is a carafe of water, and, as you see, an unabridged dictionary. That is the only reference allowed in our little game." He glanced at his watch. "It is ten minutes to four. By four tomorrow you must have asked me two questions, and have them well thought out! The ten minutes over are a gift from me, lest you doubt my generosity!" He moved toward the door. "I will see that your meals are on time," he added. "My best wishes, Dr. Aarons."

The door clicked shut and I at once commenced a survey of the room. The skylight was hopeless, and the door even more so; I was securely and ingloriously imprisoned. I spent perhaps half an hour in painstaking and fruitless inspection, but the room had been well designed or adapted to its purpose; the massive door was barred on the outside, the skylight was guarded by a heavy iron grating, and the walls offered no slightest hope. Abner Aarons was most certainly a prisoner!

My mind turned to Strawn's insane game. Perhaps I could solve his mad mystery; at least, I could keep him from violence for five days, and something might occur in the interim. I found cigars on the desk, and, forcing myself to a degree of calm, I lit one and sat down to think.

Certainly there was no use in getting at his lunatic concept from a quantitative angle, I could waste all ten questions too easily by asking, "Is it greater or less than a million? Is it greater or less than a thousand? Is it greater or less than a hundred?" Impossible to pin the thing by that sort of elimination when it might be a negative number, a fraction or a decimal, or even an imaginary number like the square root of minus one—or, for that

matter, any possible combination of these. And that reflection gave me my impulse for the first question; by the time my cigar had been consumed to a tattered stub I had formulated my initial inquiry. Nor had I very long to wait; it was just past six when the door opened. "Stand away from the door, Dr. Aarons," came the voice of my host. I complied perforce; the madman entered, pushing before him a tea caddy bearing a really respectable meal, complete from bouillon to a bottle of wine. He propelled the cart with his withered left hand; the right brandished the evil automatic.

"I trust you have used your time well," he sneered.

"At least I have my first question," I responded.

"Good, Dr. Aarons! Very good! Let us hear it."

"Well," I continued, "among numbers, expressions of quantity, mathematicians recognize two broad distinctions—two fields in which every possible numerical expression may be classified. These two classifications are known as real numbers on the one hand, including every number both positive and negative, all fractions, decimals, and multiples of these numbers, and on the other hand the class of imaginary numbers, which include all products of operations on the quantity called 'e,' otherwise expressed as the square root of minus one."

"Of course, Dr. Aarons. That is elementary!"

"Now then—is this quantity of yours real or imaginary?"

He beamed with a sinister satisfaction.

"A very fair question, sir! Very fair! And the answer—may it assist you—is that it is either!"

A light seemed to burst in my brain! Any student of numbers knows that only one figure is both real and imaginary, the one that marks the point of intersection between the real and imaginary numbergraphs. "I've got it!" The phrase kept running through my mind like a crazy drumbeat! With an effort I kept an appearance of calm.

"Mr. Strawn," I said, "is the quantity you have in mind zero?"

He laughed—a nasty, superior laugh that rasped in my ears.

"It is not, Dr. Aarons! I know as well as you that zero is both a real and imaginary number! Let me call your attention to my answer: I did not say that my concept was *both* real and imaginary; I said it was either!" He was backing toward the door. "Let me further remind you that you have eight guesses remaining, since I am forced to consider this premature shot in the dark as one chance! Good evening!"

He was gone; I heard the bar outside the door settle into its socket with a thump. I stood in the throes of despair, and cast scarcely a glance at the rather sumptuous repast he had served me, but slumped back into my chair.

It seemed hours before my thoughts were coherent again; actually I never knew the interval, since I did not glance at my watch. However, sooner or later I recovered enough to pour a tumbler of wine and eat a bit of the roast beef; the bouillon was hopelessly cold. And then I settled down to the consideration of my third question. From Strawn's several hints in the wording of his terms and the answers to my first and second queries, I tabulated what information I could glean. He had specifically designated a numerical expression; that eliminated the x's and y's of algebraic usage. The quantity was either real or imaginary and was not zero; well, the square of any imaginary is a real number. If the quantity contained more than one figure, or if an exponent was used, then I felt sure his expression was merely the square of an imaginary; one *could* consider such a quantity either real or imaginary. A means of determining this by a single question occurred to me. I scribbled a few symbols on a sheet of paper, and then, feeling a sudden and thorough exhaustion, I threw myself on the daybed and slept. I dreamed Strawn was pushing me into a nightmarish sea of grinning mathematical monsters.

The creaking of the door aroused me. Sunbeams illumined the skylight; I had slept out the night. Strawn entered balancing a tray on his left arm, holding the ever-present weapon in his free hand. He placed a half dozen covered dishes on the tea-cart, removing the remains of the evening meal to his tray.

"A poor appetite, Dr. Aarons," he commented. "You should not permit your anxiety to serve the ends of justice to upset you!" He chuckled with

enjoyment of his sarcasm. "No questions yet? No matter; you have until four tomorrow for your next two."

"I have a question," I said, more thoroughly awakened. I rose and spread the sheet of paper on the desk.

"A numerical quantity, Mr. Strawn, can be expressed as an operation on numbers. Thus, instead of writing the numeral '4' one may prefer to express it as a product, such as '2×2,' or as a sum, as '3+1,' or as a quotient, as '8÷2' or 8/2 or as a remainder, as '5−1.' Or even in other ways—as a square, such as 2^2, or as a root, such as $\sqrt{16}$ or $\sqrt[3]{64}$. All different methods of expressing the single quantity '4.' Now here I have written out the various mathematical symbols of operations; my question is this: Which if any of these symbols is used in the expression you have in mind?"

"Very neatly put, Dr. Aarons! You have succeeded in combining several questions in one." He took the paper from me, spreading it on the desk before him. "This symbol, sir, is the one used." He indicated the first one in my list—the subtraction sign, a simple dash!

And my hopes, to use the triviality of a pun, were dashed as well! For that sign eliminated my carefully thought-out theory of a product or square of imaginaries to form a real number. You can't change imaginary to real by addition or subtraction; it takes multiplication, squaring or division to perform that mathematical magic! Once more I was thoroughly at sea, and for a long time I was unable to marshal my thoughts.

And so the hours dragged into days with the tantalizing slow swiftness that tortures the condemned in a prison death house. I seemed checkmated at every turn; curious paradoxical answers defeated my questions.

My fourth query, "Are there any imaginaries in your quantity?" elicited a cool, definite "No," My fifth, "How many digits are used in this expression?" brought forth an equally definite "Two."

Now there you are! What two digits connected by a minus sign can you name whose remainder is either real or imaginary? "An impossibility," I thought. "This maniac's merely torturing me!" And yet—somehow Strawn's

madness seemed too ingenious, too clever, for such an answer. He was sincere in his perverted search for justice. I'd have sworn to that.

On my sixth question, I had an inspiration! By the terms of our game, Strawn was to answer any question save the direct one, "What is this expression?" I saw a way out! On his next appearance I met him with feverish excitement, barely waiting for his entrance to begin my query.

"Mr. Strawn! Here is a question you are bound by your own rules to answer. Suppose we place an equal sign after your quantity, what number or numbers will complete the equation: *What is the quantity equal to?*"

Why was the fiend laughing? Could he squirm out of that poser?

"Very clever, Dr. Aarons. A very clever question. And the answer is — anything!"

I suppose I shouted. "Anything! Anything! Then you're a fraud, and your game's a damnable trickery. There's no such expression!"

"But there is, Doctor! A *good* mathematician could find it!" And he departed, still laughing.

I spent a sleepless night. Hour after hour I sat at that hateful desk, checking my scraps of information, thinking, trying to remember fragments of all-but-forgotten theories. And I found solutions! Not one, but several. Lord, how I sweated over them! With four questions—two days—left to me, the solution of the problem began to loom very close. The things dinned in my brain; my judgment counseled me to proceed slowly, to check my progress with another question, but my nature was rebelling against the incessant strain. "Stake it all on your last four questions! Ask them all at once, and end this agony one way or the other!"

I thought I saw the answer. Oh, the fiendish, insane cleverness-of the man! He had pointed to the minus sign of my list, deliberately misled me, for all the time the symbol had meant the bar of a fraction. Do you see? The two symbols are identical—just a simple dash—but one use means subtraction and the other division!"1–1" means zero, but "1/1" means one! And by division his problem could be solved. For there is a quantity that means

literally anything, real number or imaginary, and that quantity is "0/0"! Yes, zero divided by zero. You'd think offhand that the answer'd be zero, or perhaps one, but it isn't, not necessarily. Look at it like this: take the equation "2×3 = 6." See? That's another way of saying that two goes into six three times. Now take "0×6 = 0." Perfectly correct, isn't it? Well, in that equation *zero goes into zero six times*! Or "0/0 = 6"! And so on for any number, real or imaginary—zero divided by zero equals anything!

And that's what I figured the fiend had done. Pointed to the minus sign when he meant the bar of a fraction, or division!

He came in grinning at dawn.

"Are your questions ready, Dr. Aarons? I believe you have four remaining."

I looked at him. "Mr. Strawn, is your concept zero divided by zero?"

He grinned, "No, sir, it is not!"

I wasn't disheartened. There was just one other symbol I had been thinking of that would meet the requirement—one other possibility. My eighth question followed. "Then is it infinity divided by infinity?"

The grin widened. "It is not, Dr. Aarons."

I was a little panicky then! The end loomed awfully near! There was one way to find out if the thing was fraudulent or not; I used my ninth question:

"Mr. Strawn, when you designated the dash as the mathematical symbol used in your expression, did you mean it as the bar of a fraction or as the sign of subtraction?"

"As the subtraction sign, Dr. Aarons, You have one more question. Will you wait until tomorrow to ask it?"

The fiend was grinning in huge enjoyment. Thoroughly confident, he was, in the intricacies of his insane game. I hesitated in a torture of frenzied indecision. The appalling prospect of another agonized night of doubts decided me.

"I'll ask it now, Mr. Strawn!"

It *had* to be right! There weren't any other possibilities; I'd exhausted all of them in hour after hour of miserable conjecture!

"Is the expression—the one you're thinking of—infinity minus infinity?"

It was! I knew it by the madman's glare of amazed disappointment.

"The devil must have told you!" he shrieked. I think there were flecks of froth on his lips. He lowered the gun in his hand as I edged toward the door; he made no move to stop me, but stood in a sort of desolate silence, until I gained the top of the stairway. Then—

"Wait a minute!" he screamed. "You'll tell them! Wait just a minute, Dr. Aarons!"

I was down the stairs in two leaps, and tugging at the door. Strawn came after me, his gun leveled. I heard it crash as the door opened and I slipped out into a welcome daylight.

Yes, I reported him. The police got him as he was slipping away and dragged him before an alienist. Crazy, but his story was true; he *had* been mangled in an experimental laboratory explosion.

Oh, the problem? Don't you see? Infinity is the greatest expression of number possible—a number greater than any conceivable. Figure it out like this:

The mathematician's symbol for infinity is a tipsy eight—so: ∞

Well, take the question, $\infty+6=\infty$. That's true, because you can't add anything to infinity that will make it any greater than it is. See? It's the greatest possible number already. Well then, just by transposition, $\infty-\infty=6$. And so on; the same system applies to any conceivable number, real or imaginary.

There you are! Infinity minus itself may equal any quantity, absolutely *any* number, real or imaginary, from zero to infinity. No, there was nothing wrong with Court Strawn's mathematics.

SHIFTING SEAS (1937)

IT DEVELOPED later that Ted Welling was one of the very few eye-witnesses of the catastrophe, or rather, that among the million and a half eyewitnesses, he was among the half dozen that survived. At the time, he was completely unaware of the extent of the disaster, although it looked bad enough to him in all truth!

He was in a Colquist gyro, just north of the spot where Lake Nicaragua drains its brown overflow into the San Juan, and was bound for Managua, seventy-five miles north and west across the great inland sea. Below him, quite audible above the muffled whir of his motor, sounded the intermittent clicking of his tripanoramic camera, adjusted delicately to his speed so that its pictures could be assembled into a beautiful relief map of the terrain over which he passed. That, in fact, was the sole purpose of his flight; he had left San Juan del Norte early that morning to traverse the route of the proposed Nicaragua Canal, flying for the Topographical branch of the U. S. Geological Survey. The United States, of course, had owned the rights to the route since early in the century—a safeguard against any other nation's aspirations to construct a competitor for the Panama Canal.

Now, however, the Nicaragua Canal was actually under consideration. The over-burdened ditch that crossed the Isthmus was groaning under vastly increased traffic, and it became a question of either cutting the vast trench another eighty-five feet to sea level or opening an alternate passage. The Nicaragua route was feasible enough; there was the San Juan emptying from the great lake into the Atlantic, and there was Lake Managua a dozen miles or so from the Pacific. It was simply a matter of choice, and Ted Welling, of the Topographical Service of the Geological Survey, was doing his part to aid the choice.

At precisely 10:40 it happened. Ted was gazing idly through a faintly misty morning toward Ometepec, its cone of a peak plumed by dusky smoke. A hundred miles away, across both Lake Nicaragua and Lake Managua, the fiery mountain was easily visible from his altitude. All week, he knew, it had

been rumbling and smoking, but now, as he watched it, it burst like a mighty Roman candle.

There was a flash of white fire not less brilliant than the sun. There was a column of smoke with a red core that spouted upward like a fountain and then mushroomed out. There was a moment of utter silence in which the camera clicked methodically, and then there was a roar as if the very roof of Hell had blown away to let out the bellows of the damned!

Ted had one amazed thought—the sound had followed too quickly on the eruption! It should have taken minutes to reach him at that distance —and then his thoughts were forcibly diverted as the Colquist tossed and skittered like a leaf in a hurricane. He caught an astonished glimpse of the terrain below, of Lake Nicaragua heaving and boiling as if it were the seas that lash through the Straits of Magellan instead of a body of landlocked fresh water. On the shore to the east a colossal wave was breaking, and there in a banana grove frightened figures were scampering away. And then, exactly as if by magic, a white mist condensed about him, shutting out all view of the world below.

He fought grimly for altitude. He had had three thousand feet, but now, tossed in this wild ocean of fog, of up-drafts and down-drafts, of pockets and bumps, he had no idea at all of his position. His altimeter needle quivered and jumped in the changing pressure, his compass spun, and he had not the vaguest conception of the direction of the ground. So he struggled as best he could, listening anxiously to the changing whine of his blades as strain grew and lessened. And below, deep as thunder, came intermittent rumblings that were, unless he imagined it, accompanied by the flash of jagged fires.

Suddenly he was out of it. He burst abruptly into clear air, and for a horrible instant it seemed to him that he was actually flying inverted. Apparently below him was the white sea of mist, and above was what looked at first glance like dark ground, but a moment's scrutiny revealed it as a world-blanketing canopy of smoke or dust, through which the sun shone with a fantastic blue light. He had heard of blue suns, he recalled; they were one of the rarer phenomena of volcanic eruptions.

His altimeter showed ten thousand. The vast plain of mist heaved in gigantic ridges like rolling waves, and he fought upward away from it. At twenty thousand the air was steadier, but still infinitely above was the sullen ceiling of smoke. Ted leveled out, turning at random north-east, and relaxed.

"Whew!" he breathed. "What—what happened?"

He couldn't land, of course, in that impenetrable fog. He flew doggedly north and cast, because there was an airport at Bluefields, if this heaving sea of white didn't blanket it.

But it did. He had still half a tank of fuel, and, he bored grimly north. Far away was a pillar of fire, and beyond it to the right, another and a third. The first, of course, was Ometepec, but what were the others? Fuego and Tajumulco? It seemed impossible.

Three hours later the fog was still below him, and the grim roof of smoke was dropping as if to crush him between. He was going to have to land soon; even now he must have spanned Nicaragua and be somewhere over Honduras. With a sort of desperate calm he slanted down toward the fog and plunged in. He expected to crash; curiously, the only thing he really regretted was dying without a chance to say goodbye to Kay Lovell, who was far off in Washington with her father, old Sir Joshua Lovell, Ambassador from Great Britain.

When the needle read two hundred, he leveled off—and then, like a train bursting out of a tunnel, he came clear again! But under him was wild and raging ocean, whose waves seemed almost to graze the ship. He spun along at a low level, wondering savagely how he could possibly have wandered out to sea. It must, he supposed, be the gulf of Honduras.

He turned west. Within five minutes he had raised a stormlashed coast, and then—miracle of all miracles!—a town! And a landing field, He pancaked over it, let his vanes idle, and dropped as vertically as he could in that volley of gusty winds.

It was Belize in British Honduras. He recognized the port even before the attendants had reached him.

"A Yankee!" yelled the first. "Ain't that Yankee luck for you!"

Ted grinned. "I needed it. What happened?"

"The roof over this part of Hell blew off. That's all."

"Yeah. I saw that much. I was over it."

"Then you know more'n any of us. Radio's dead and there ain't no bloomin' telegraph at all."

It began to rain suddenly, a fierce, pattering rain with drops as big as marbles. The men broke for the shelter of a hangar, where Ted's information, meager as it was, was avidly seized upon, for sensational news is rare below the Tropic of Cancer. But none of them yet realized just how sensational it was.

* * * * *

It was three days before Ted, and the rest of the world as well, began to understand in part what had happened. This was after hours of effort at Belize had finally raised Havana on the beam, and Ted had reported through to old Asa Gaunt, his chief at Washington. He had been agreeably surprised by the promptness of the reply ordering him instantly to the Capital; that meant a taste of the pleasant life that Washington reserved for young departmentals, and most of all, it meant a glimpse of Kay Lovell after two months of letter-writing. So he had flown the Colquist gayly across Yucatan Channel, left it at Havana, and was now comfortably settled in a huge Caribbean plane bound for Washington, boring steadily north through a queerly misty mid-October morning.

At the moment, however, his thoughts were not of Kay. He was reading a grim newspaper account of the catastrophe, and wondering what thousand-to-one shot had brought him unscathed through the very midst of it. For the disaster overshadowed into insignificance such little disturbances as the Yellow River flood in China, the eruption of Krakatoa, the holocaust of Mount Pelée, or even the great Japanese earthquake of 1923, or any other terrible visitation ever inflicted on a civilized race.

For the Ring of Fire, that vast volcanic circle that surrounds the Pacific Ocean, perhaps the last unhealed scars of the birth-throes of the Moon, had burst into flame. Aniakchak in Alaska had blown its top away, Fujiyama had vomited lava, on the Atlantic side La Soufrière and the terrible Pelée had awakened again.

But these were minor. It was at the two volcanic foci, in Java and Central America, that the fire-mountains had really shown their powers. What had happened in Java was still a mystery, but on the Isthmus—that was already too plain. From Mosquito Bay to the Rio Coco, there was—ocean! Half of Panama, seven-eighths of Nicaragua—and as for Costa Rica, that country was as if it had never been. The Canal was a wreck, but Ted grinned a wry grin at the thought that it was now as unnecessary as a pyramid. North and South America had been cut adrift, and the Isthmus, the land that had once known Atlantis, had gone to join it.

* * * * *

In Washington Ted reported at once to Asa Gaunt. That dry Texan questioned him closely concerning his experience, grunted disgustedly at the paucity of information, and then ordered him tersely to attend a meeting at his office in the evening. There remained a full afternoon to devote to Kay, and Ted lost little time in so devoting it.

He didn't see her alone. Washington, like the rest of the world, was full of excitement because of the earthquake, but in Washington more than elsewhere the talk was less of the million and a half deaths and more largely of the other consequences. After all, the bulk of the deaths had been among the natives, and it was a sort of remote tragedy, like the perishing of so many Chinese. It affected only those who had friends or relatives in the stricken region, and these were few in number.

But at Kay's home Ted encountered an excited group arguing physical results. Obviously, the removal of the bottleneck of the Canal strengthened the naval power of the United States enormously. No need now to guard the vulnerable Canal so intensively. The whole fleet could stream abreast through the four hundred mile gap left by the subsidence. Of course the

country would lose the revenues of the toll-charges, but that was balanced by the cessation of the expense of fortifying and guarding.

Ted fumed until he managed a few moments of greeting with Kay alone. Once that was concluded to his satisfaction, he joined the discussion as eagerly as the rest. But no one even considered the one factor in the whole catastrophe that could change the entire history of the world.

* * * * *

At the evening meeting Ted stared around him in surprise. He recognized all those present, but the reasons for their presence were obscure. Of course there was Asa Gaunt, head of the Geological Survey, and of course there was Golsborough, Secretary of the Interior, because the Survey was one of his departments. But what was Maxwell, joint Secretary of War and the Navy, doing there? And why was silent John Parish, Secretary of State, frowning down at his shoes in the corner?

Asa Gaunt cleared his throat and began. "Do any of you like eels?" he asked soberly.

There was a murmur. "Why, I do," said Golsborough, who had once been Consul at Venice. "What about it?"

"This—that you'd better buy some and eat 'em tomorrow. There won't be any more eels."

"No more eels?"

"No more eels. You see, eels breed in the Sargasso Sea, and there won't be any Sargasso Sea."

"What is this?" growled Maxwell. "I'm a busy man. No more Sargasso Sea, huh!"

"You're likely to be busier soon," said Asa Gaunt dryly. He frowned. "Let me ask one other question. Does anyone here know what spot on the American continent is opposite London, England?"

Golsborough shifted impatiently, "I don't see the trend of this, Asa," he grunted, "but my guess is that New York City and London are nearly in the

same latitude. Or maybe New York's a little to the north, since I know its climate is somewhat colder."

"Hah!" said Asa Gaunt. "Any disagreement?"

There was none. "Well," said the head of the Survey, "you're all wrong, then. London is about one thousand miles north of New York. It's in the latitude of southern Labrador!"

"Labrador! That's practically the Arctic!"

Asa Gaunt pulled down a large map on the wall behind him, a Mercator projection of the world.

"Look at it," he said. "New York's in the latitude of Rome, Italy. Washington's opposite Naples. Norfolk's level with Tunis in Africa, and Jacksonville with the Sahara Desert. And gentlemen, these facts lead to the conclusion that next summer is going to see the wildest war in the history of the world!"

Even Ted, who knew his superior well enough to swear to his sanity, could not resist a glance at the faces of the others, and met their eyes with full understanding of the suspicion in them.

Maxwell cleared his throat. "Of course, of course," he said gruffly. "So there'll be a war and no more eels. That's very easy to follow, but I believe I'll ask you gentlemen to excuse me. You see, I don't care for eels."

"Just a moment more," said Asa Gaunt. He began to speak, and little by little a grim understanding dawned on the four he faced.

* * * * *

Ted remained after the appalled and sobered group had departed. His mind was too chaotic as yet for other occupations, and it was already too late in the evening to find Kay, even had he dared with these Oppressive revelations weighing on him.

"Are you sure?" he asked nervously. "Are you quite certain?

"Well, let's go over it again," grunted Asa Gaunt, turning to the map. He swept his hand over the white lines drawn in the Pacific Ocean. "Look here. This is the Equatorial Counter Current, sweeping cast to wash the shores of Guatemala, Salvador, Honduras, Nicaragua, Costa Rica, and Panama."

"I know. I've flown over every square mile of that coast."

"Uh." The older man turned to the blue-mapped expanse of the Atlantic. "And here," he resumed, "is the North Equatorial Drift, coming west out of the Atlantic to sweep around Cuba into the Gulf, and to emerge as—the Gulf Stream. It flows at an average speed of three knots per hour, is sixty miles broad, a hundred fathoms deep, and possesses, to start with, an average temperature of 50 degrees. And here it meets the Labrador Current and turns east to carry warmth to all of Western Europe. That's why England is habitable; that's why southern France is semi-tropical; that's why men can live even in Norway and Sweden. Look at Scandinavia, Ted; it's in the latitude of central Greenland, level with Baffin Bay. Even Eskimos have difficulty scraping a living on Baffin Island."

"I know," said Ted in a voice like a groan. "But are you certain about —the rest of this?"

"See for yourself," growled Asa Gaunt. "The barrier's down now. The Equatorial Counter Current, moving two knots per hour, will sweep right over what used to be Central America and strike the North Equatorial Drift just south of Cuba. Do you see what will happen—is happening—to the Gulf Stream? Instead of moving northeast along the Atlantic coast, it will flow almost due east, across what used to be the Sargasso Sea. Instead of bathing the shores of Northern Europe, it will strike the Spanish peninsula, just as the current, called the West Wind Drift does now, and instead of veering north it will turn south, along the coast of Africa. At three knots an hour it will take less than three months for the Gulf Stream to deliver its last gallon of warm water to Europe. That brings us to January —and after January, what?"

Ted said nothing.

"Now," resumed Asa Gaunt grimly, "the part of Europe occupied by countries dependent on the Gulf Stream consists of Norway, Sweden, Denmark, Germany, the British Isles, the Netherlands, Belgium, France, and to a lesser extent, several others. Before six months have passed, Ted, you're going to see a realignment of Europe. The Gulf Stream countries are going to be driven together; Germany and France are suddenly going to become bosom friends, and France and Russia, friendly as they are today, are going to be bitter enemies. Do you see why?"

"N—no."

"Because the countries I've named now support over two hundred million inhabitants. Two hundred million, Ted! And without the Gulf Stream, when England and Germany have the climate of Labrador, and France of Newfoundland, and Scandinavia of Baffin Land—how many people can those regions support then? Three or four million, perhaps, and that with difficulty. Where will the others go?"

"Where?"

"I can tell you where they'll try to go. England will try to unload its surplus population on its colonies. India's hopelessly overcrowded, but South Africa, Canada, Australia, and New Zealand can absorb some. About twenty-five of its fifty millions, I should estimate, because Canada's a northern country and Australia desert in a vast part of it. France has Northern Africa, already nearly as populous as it can be. The others—well, you guess, Ted."

"I will. Siberia, South America, and—the United States!"

"A good guess. That's why Russia and France will no longer be the best of friends. South America is a skeleton continent, a shell. The interior is unfit for white men, and so—it leaves Siberia and North America. What a war's in the making!"

"It's almost unbelievable!" muttered Ted. "Just when the world seemed to be settling down, too."

"Oh, it's happened before," observed Asa Gaunt. "This isn't the only climatic change that brought on war. It was decreasing rainfall in central Asia that

sent the Huns scouring Europe, and probably the Goths and Vandals as well. But it's never happened to two hundred million civilized people before!" He paused. "The newspapers are all shrieking about the million and a half deaths in Central America. By this time next year they'll have forgotten that a million and a half deaths ever rated a headline!"

"But good Lord!" Ted burst out. "Isn't there anything to be done about it?"

"Sure, sure," said Asa Gaunt. "Go find a nice tame earthquake that will raise back the forty thousand square miles the last one sunk. That's all you have to do, and if you can't do that, Maxwell's suggestion is the next best: build submarines and submarines. They can't invade a country if they can't get to it."

* * * * *

Asa Gaunt was beyond doubt the first man in the world to realize the full implications of the Central American disaster, but he was not very much ahead of the brilliant Sir Phineas Grey of the Royal Society. Fortunately (or unfortunately, depending on which shore of the Atlantic you call home), Sir Phineas was known to the world of journalism as somewhat of a sensationalist, and his warning was treated by the English and Continental newspapers as on a par with those recurrent predictions of the end of the world. Parliament noticed the warning just once, when Lord Rathmere rose in the Upper House to complain of the unseasonably warm weather and to suggest dryly that the Gulf Stream be turned off a month early this year. But now and again some oceanographer made the inside pages by agreeing with Sir Phineas.

So Christmas approached very quietly, and Ted, happy enough to be stationed in Washington, spent his days in routine topographical work in the office and his evenings, as many as she permitted, with Kay Lovell. And she did permit an increasing number, so that the round of gaiety during the holidays found them on the verge of engagement. They were engaged so far as the two of them were concerned, and only awaited a propitious moment to inform Sir Joshua, whose approval Kay felt, with true English conservatism, was a necessity.

Ted worried often enough about the dark picture Asa Gaunt had drawn, but an oath of secrecy kept him from ever mentioning it to Kay. Once, when she had casually brought up the subject of Sir Phineas Grey and his warning, Ted had stammered some inanity and hastily switched the subject. But with the turn of the year and January, things began to change.

It was on the fourteenth that the first taste of cold struck Europe. London shivered for twenty-four hours in the unheard-of temperature of twenty below zero, and Paris argued and gesticulated about its *grands froids*. Then the high pressure area moved eastward and normal temperatures returned.

But not for long. On the twenty-first another zone of frigid temperature came drifting in on the Westerlies, and the English and Continental papers, carefully filed at the Congressional Library, began to betray a note of panic. Ted read the editorial comments avidly: of course Sir Phineas Grey was crazy; of course he was—but just suppose he were right. Just suppose he were. Wasn't it unthinkable that the safety and majesty of Germany (or France or England or Belgium, depending on the particular capital whence the paper came) was subject to the disturbances of a little strip of land seven thousand miles away? Germany (or France, et al) must control its own destiny.

With the third wave of Arctic cold, the tone became openly fearful. Perhaps Sir Phineas was right. What then? What was to be done? There were rumblings and mutterings in Paris and Berlin, and even staid Oslo witnessed a riot, and conservative London as well. Ted began to realize that Asa Gaunt's predictions were founded on keen judgment; the German government made an openly friendly gesture toward France in a delicate border matter, and France reciprocated with an equally indulgent note. Russia protested and was politely ignored; Europe was definitely realigning itself, and in desperate haste.

But America, save for a harassed group in Washington, had only casual interest in the matter. When reports of suffering among the poor began to come during the first week in February, a drive was launched to provide relief funds, but it met with only nominal success. People just weren't interested; a cold winter lacked the dramatic power of a flood, a fire, or an

earthquake. But the papers reported in increasing anxiety that the immigration quotas, unapproached for a half a dozen years, were full again; there was the beginning of an exodus from the Gulf Stream countries.

By the second week in February stark panic had gripped Europe, and echoes of it began to penetrate even self-sufficient America. The realignment of the Powers was definite and open now, and Spain, Italy, the Balkans, and Russia found themselves herded together, facing an ominous thunderhead on the north and west. Russia instantly forgot her longstanding quarrel with Japan, and Japan, oddly, was willing enough to forget her own grievances. There was a strange shifting of sympathies; the nations which possessed large and thinly populated areas—Russia, the United States, Mexico, and all of South America—were glaring back at a frantic Europe that awaited only the release of summer to launch a greater invasion than any history had recorded. Attila and his horde of Huns—the Mongol waves that beat down on China —even the vast movements of the white race into North and South America—all these were but minor migrations to that which threatened now. Two hundred million people, backed by colossal fighting power, glaring panic-stricken at the empty places of the world. No one knew where the thunderbolt would strike first, but that it would strike was beyond doubt.

* * * * *

While Europe shivered in the grip of an incredible winter, Ted shivered at the thought of certain personal problems of his own. The frantic world found an echo in his own situation, for here was he, America in miniature, and there was Kay Lovell, a small edition of Britannia. Their sympathies clashed like those of their respective nations.

The time for secrecy was over. Ted faced Kay before the fireplace in her home and stared from her face to the cheery fire, whose brightness merely accentuated his gloom.

"Yeah," he admitted. "I knew about it. I've known it since a couple of days after the Isthmus earthquake."

"Then why didn't you tell me? You should have."

"Couldn't. I swore not to tell."

"It isn't fair!" blazed Kay. "Why should it fall on England? I tell you it sickens me even to think of Merccroft standing there in snow, like some old Norse tower. It was born in Warwickshire, Ted, and so was my father, and his father, and his, and all of us back to the time of William the Conqueror. Do you think it's a pleasant thing to think of my mother's rose garden as barren as—as a tundra?"

"I'm sorry," said Ted gently, "but what can I—or anyone—do about it? I'm just glad you're here on this side of the Atlantic, where you're safe."

"Safe!" she flashed. "Yes, I'm safe, but what about my people? I'm safe because I'm in America, the lucky country, the chosen land! Why did this have to happen to England? The Gulf Stream washes your shores too. Why aren't Americans shivering and freezing and frightened and hopeless, instead of being warm and comfortable and indifferent? Is that fair?"

"The Gulf Stream," he explained miserably, "doesn't affect our climate so definitely because in the first place we're much farther south than Europe and in the second place our prevailing winds are from the west, just as England's. But our winds blow from the land to the Gulf Stream, and England's from the Gulf Stream to the land."

"But it's not fair! It's not fair!"

"Can I help it, Kay?"

"Oh, I suppose not," she agreed in suddenly weary tones, and then, with a resurgence of anger, "But you people can do something about it! Look here! Listen to this!"

She spied a week-old copy of the London Times, fingered rapidly through it, and turned on Ted. "Listen—just listen! 'And in the name of humanity it is not asking too much to insist that our sister nation open her gates to us. Let us settle the vast areas where now only Indian tribes hunt and buffalo range. We would not be the, only ones to gain by such a settlement, for we would bring to the new country a sane, industrious, law-abiding citizenry, no harborers of highwaymen and gangsters—a point well worth considering.

We would bring a great new purchasing public for American manufacturers, carrying with us all our portable wealth. And finally, we would provide a host of eager defenders in the war for territory, a war that now seems inevitable. Our language is one with theirs; surely this is the logical solution, especially when one remembers that the state of Texas alone contains land enough to supply two acres to every man, woman, and child on earth!" She paused and stared defiantly at Ted. "Well?"

He snorted. "Indians and buffalo!" he snapped. "Have you seen either one in the United States?"

"No, but—"

"And as for Texas, sure there's enough land there for two acres to everybody in the world, but why didn't your editor mention that two acres won't even support a cow over much of it? The Llano Estacado's nothing but an alkali desert, and there's a scarcity of water in lots of the rest of it. On that argument, you ought to move to Greenland; I'll bet there's land enough there for six acres per person!"

"That may be true, but—"

"And as for a great new purchasing public, your portable wealth is gold and paper money, isn't it? The gold's all right, but what good is a pound if there's no British credit to back it? Your great new public would simply swell the ranks of the unemployed until American industry could absorb them, which might take years! And meanwhile wages would go down to nothing because of an enormous surplus of labor, and food and rent would go skyhigh because of millions of extra stomachs to feed and bodies to shelter."

"All right!" said Kay bleakly. "Argue all you wish. I'll even concede that your arguments are right, but there's one thing I know is wrong, and that's leaving fifty million English people to starve and freeze and suffer in a country that's been moved, as far as climate goes, to the North Pole. Why, you even get excited over a newspaper story about one poor family in an unheated hovel! Then what about a whole nation whose furnace has gone out?"

"What," countered Ted grimly, "about the seven or eight other nations whose furnaces have also gone out?"

"But England deserves priority!" she blazed. "You took your language from us, your literature, your laws, your whole civilization. Why, even now you ought to be nothing but an English colony! That's all you are, if you want the truth!"

"We think differently. Anyway, you know as well as I that the United States can't open the door to one nation and exclude the others. It must be all or none, and that means—none!"

"And that means war," she said bitterly. "Oh, Ted! I can't help the way I feel. I have people over there—aunts, cousins, friends. Do you think I can stand indifferently aside while they're ruined? Although they're ruined already, as far as that goes. Land's already dropped to nothing there. You can't sell it at any price now."

"I know. I'm sorry, Kay, but it's no one's fault. No one's to blame."

"And so no one needs to do anything about it, I suppose. Is that your nice American theory?"

"You know that isn't fair! What can we do?"

"You could let us in! As it is we'll have to fight our way in, and you can't blame us!"

"Kay, no nation and no group of nations can invade this country. Even if our navy were utterly destroyed, bow far from the sea do you think a hostile army could march? It would be Napoleon in Russia all over again; your army marches in and is swallowed up. And where is Europe going to find the food to support an invading army? Do you think it could live on the land as it moved? I tell you no sane nation would try that!"

"No sane nation, perhaps!" she retorted fiercely. "Do you think you're dealing with sane nations?"

He shrugged gloomily.

"They're desperate!" she went on. "I don't blame them. Whatever they do, you've brought it on yourselves. Now you'll be fighting all of Europe, when you could have the British navy on your side. It's stupid. It's worse than stupid; it's selfish!"

"Kay," he said miserably, "I can't argue with you. I know how you feel, and I know it's q bell of a situation. But even if I agreed with everything you've said—which I don't—what could I do about it? I'm not the President and I'm not Congress. Let's drop the argument for this evening, honey; it's just making you unhappy."

"Unhappy! As if I could ever be anything else when everything I value, everything I love, is doomed to be buried under Arctic snow."

"Everything, Kay?" he asked gently. "Haven't you forgotten that there's something for you on this side of the Atlantic as well?"

"I haven't forgotten anything," she said coldly. "I said everything, and I mean it. America! I hate America. Yes, and I hate Americans too!"

"Kay!"

"And what's more," she blazed, "I wouldn't marry an American if he— if he could rebuild the Isthmus! If England's to freeze, I'll freeze with her, and if England's to fight, her enemies are mine!"

She rose suddenly to her feet, deliberately averted her eyes from his troubled face, and stalked out of the room.

Sometimes, during those hectic weeks in February, Ted wormed his way into the Visitor's Gallery in one or the other Congressional house. The out-going Congress, due to stand for re-election in the fall, was the focal point of the dawning hysteria in the nation, and was battling sensationally through its closing session. Routine matters were ignored, and day after day found both houses considering the unprecedented emergency with a sort of appalled inability to act in any effective unison. Freak bills of all description were read, considered, tabled, reconsidered, put to a second reading, and tabled again. The hard-money boom of a year earlier had swept in a Conservative majority in the off-year elections, but they had no real policy to offer, and

the proposals of the minority group of Laborites and Leftists were voted down without substitutes being suggested.

Some of the weirdest bills in all the weird annals of Congress appeared at this time. Ted listened in fascination to the Leftist proposal that each American family adopt two Europeans, splitting its income into thirds; to a suggestion that Continentals be advised to undergo voluntary sterilization, thus restraining the emergency to the time of one generation; to a fantastic paper money scheme of the Senator from the new state of Alaska, that was to provide a magic formula to permit Europe to purchase its livelihood without impoverishing the rest of the world. There were suggestions of outright relief, but the problem of charity to two hundred million people was so obviously staggering that this proposal at least received little attention. But there were certain bills that passed both houses without debate, gaining the votes of Leftists, Laborites, and Conservatives alike; these were the grim appropriations for submarines, super-bombers and interceptors, and aircraft-carriers.

Those were strange, hectic days in Washington. Outwardly there was still the same gay society that gathers like froth around all great capitals, and Ted, of course, being young and decidedly not unattractive, received his full share of invitations. But not even the least sensitive could have overlooked the dark undercurrents of hysteria that flowed just beneath the surface. There was dancing, there was gay dinner conversation, there was laughter, but beneath all of it was fear. Ted was not the only one to notice that the diplomatic representatives of the Gulf Stream countries were conspicuous by their absence from all affairs save those of such importance that their presence was a matter of policy. And even then, incidents occurred; he was present when the Minister from France stalked angrily from the room because some hostess had betrayed the poor taste of permitting her dance orchestra to play a certain popular number called "The Gulf Stream Blues." Newspapers carefully refrained from mentioning the occurrence, but Washington buzzed with it for days.

Ted looked in vain for Kay. Her father appeared when appearance was necessary, but Ted had not seen the girl since her abrupt dismissal of him, and in reply to his inquiries, Sir Joshua granted only the gruff and double-

edged explanation that she was "indisposed." So Ted worried and fumed about her in vain, until he scarcely knew whether his own situation or that of the world was more important. In the last analysis, of course, the two were one and the same.

The world was like a crystal of nitrogen iodide, waiting only the drying- out of summer to explode. Under its frozen surface Europe was seething like Mounts Erebus and Terror that blaze in the ice of Antarctica. Little Hungary had massed its army on the west, beyond doubt to oppose a similar massing on the part of the Anschluss. Of this particular report, Ted heard Maxwell say with an air of relief that it indicated that Germany had turned her face inland; it meant one less potential enemy for America. But the maritime nations were another story, and especially mighty Britain, whose world-girdling fleet was gathering day by day in the Atlantic. That was a crowded ocean indeed, for on its westward shore was massed the American battle fleet, built at last to treaty strength, and building far beyond it, while north and south piled every vessel that could raise a pound of steam, bearing those fortunates who could leave their European homes to whatever lands hope called them. Africa and Australia, wherever Europe had colonies, were receiving an unheard of stream of immigrants. But this stream was actually only the merest trickle, composed of those who possessed sufficient liquid wealth to encompass the journey. Untold millions remained chained to their homes, bound by the possession of unsalable lands, or by investments in business, or by sentiment, or by the simple lack of sufficient funds to buy passage for families. And throughout all of the afflicted countries were those who clung stubbornly to hope, who believed even in the grip of that unbelievable winter that the danger would pass, and that things would come right in the end.

Blunt, straightforward little Holland was the first nation to propose openly a wholesale transfer of population. Ted read the note, or at least the version of it given the press on February 21st. In substance it simply repeated the arguments Kay had read from the London paper—the plea to humanity, the affirmation of an honest and industrious citizenry, and the appeal to the friendship that had always existed between the two nations; and the

communication closed with a request for an immediate reply because of "the urgency of the situation." And an immediate reply was forthcoming.

This was also given to the press. In suave and very polished diplomatic language it pointed out that the United States could hardly admit nationals of one country while excluding those of others. Under the terms of the National Origins Act, Dutch immigrants would be welcomed to the full extent of their quota. It was even possible that the quota might be increased, but it was not conceivable that it could be removed entirely. The note was in effect a suave, dignified, diplomatic 'No.'

March drifted in on a southwest wind. In the Southern states it brought spring, and in Washington a faint forerunner of balmy weather to come, but to the Gulf Stream countries it brought no release from the Arctic winter that had fallen on them with its icy mantle. Only in the Basque country of Southern France, where vagrant winds slipped at intervals across the Pyrenees with the warm breath of the deflected Stream, was there any sign of the relaxing of that frigid clutch. But that was a promise; April would come, and May—and the world flexed its steel muscles for war.

Everyone knew now that war threatened. After the first few notes and replies, no more were released to the press, but everyone knew that notes, representatives, and communiqués were flying between the powers like a flurry of white doves, and everyone knew, at least in Washington, that the tenor of those notes was no longer dove-like. Now they carried brusque demands and blunt refusals.

Ted knew as much of the situation as any alert observer, but no more. He and Asa Gaunt discussed it endlessly, but the dry Texan, having made his predictions and seen them verified, was no longer in the middle of the turmoil, for his bureau had, of course, nothing to do with the affair now. So the Geological Survey staggered on under a woefully reduced appropriation, a handicap shared by every other governmental function that had no direct bearing on defense.

All the American countries, and for that matter, every nation save those in Western Europe, were enjoying a feverish, abnormal, hectic boom. The flight of capital from Europe, and the frantic cry for food, had created a rush

of business, incessant, avid, and exports mounted unbelievably. In this emergency, France and the nations under her hegemony, those who had clung so stubbornly, to gold ever since the second revaluation of the franc, were now at a marked advantage, since their money would buy more wheat, more cattle, and more coal. But the paper countries, especially Britain, shivered and froze in stone cottage and draughty manor alike.

On the eleventh of March, that memorable Tuesday when the thermometer touched twenty-eight below in London, Ted reached a decision toward which he had been struggling for six weeks. He was going to swallow his pride and see Kay again. Washington was buzzing with rumors that Sir Joshua was to be recalled, that diplomatic relations with England were to be broken as they had already been broken with France. The entire nation moved about its daily business in an air of tense expectancy, for the break with France meant little in view of that country's negligible sea power, but now, if the colossus of the British navy were to align itself with the French army —.

But what troubled Ted was a much more personal problem. If Sir Joshua Lovell were recalled to London, that meant that Kay would accompany him, and once she were caught in the frozen Hell of Europe, he had a panicky feeling that she was lost to him forever. When war broke, as it surely must, there would go his last hope of ever seeing her again. Europe, apparently, was doomed, for it seemed impossible that any successful invasion could be carried on over thousands of miles of ocean, but if he could save the one fragment of Europe that meant everything to him, if he could somehow save Kay Lovell, it was worth the sacrifice of pride or of anything else. So he called one final time on the telephone, received the same response from an unfriendly maid, and then left the almost idle office and drove directly to her home.

The same maid answered his ring. "Miss Lovell is not in," she said coldly. "I told you that when you telephoned."

"I'll wait," returned Ted grimly, and thrust himself through the door. He seated himself stolidly in the hall, glared back at the maid, and waited. It was

no more than five minutes before Kay herself appeared, coming wearily down the steps.

"I wish you'd leave," she said. She was pallid and troubled, and he felt a great surge of sympathy.

"I won't leave."

"What do I have to do to make you go away? I don't want to see you, Ted."

"If you'll talk to me just half an hour, I'll go." She yielded listlessly, leading the way into the living room where a fire still crackled in cheerful irony. "Well?" she asked.

"Kay, do you love me?"

"I—No, I don't!"

"Kay," he persisted gently, "do you love me enough to marry me and stay here where you're safe?"

Tears glistened suddenly in her brown eves. "I hate you," she said. "I hate all of you. You're a nation of murderers. You're like the East Indian Thugs, only they call murder religion and you call it patriotism."

"I won't even argue with you, Kay. I can't blame you for your viewpoint, and I can't blame you for not understanding mine. But—do you love me?"

"All right," she said in sudden weariness. "I do."

"And will you marry me?"

"No. No, I won't marry you, Ted. I'm going back to England."

"Then will you marry me first? I'll let you go back, Kay, but afterwards —if there's any world left after what's coming—I could bring you back here. I'll have to fight for what I believe in, and I won't ask you to stay with me during the time our nations are enemies, but afterwards, Kay —if you're my wife I could bring you here. Don't you see?"

"I see, but—no."

"Why, Kay? You said you loved me."

"I do," she said almost bitterly. "I wish I didn't, because I can't marry you hating your people the way I do. If you were on my side, Ted, I swear I'd marry you tomorrow, or today, or five minutes from now—but as it is, I can't. It just wouldn't be fair."

"You'd not want me to turn traitor," he responded gloomily. "One thing I'm sure of, Kay, is that you couldn't love a traitor." He paused. "Is it goodbye, then?"

"Yes." There were tears in her eyes again. "It isn't public yet, but father has been recalled. Tomorrow he presents his recall to the Secretary of State, and the day after we leave for England. This is goodbye."

"That does mean war!" he muttered. "I've been hoping that in spite of everything—God knows I'm sorry, Kay. I don't blame you for the way you feel. You couldn't feel differently and still be Kay Lovell, but—it's damned hard. It's damned hard!"

She agreed silently. After a moment she said, "Think of my part of it, Ted — going back to a home that's like—well, the Rockefeller Mountains in Antarctica. I tell you, I'd rather it had been England that sunk into the sea! That would have been easier, much easier than this. If it had sunk until the waves rolled over the very peak of Ben Macdui—" She broke off.

"The waves are rolling over higher peaks than Ben Macdui," he responded drearily. "They're—" Suddenly he paused, staring at Kay with his jaw dropping and a wild light in his eyes!

"The Sierra Madre!" he bellowed, in such a roaring voice that the girl shrank away. "The Mother range! The Sierra Madre! The Sierra Madre!"

"Wh—what?" she gasped.

"The Sierra—! Listen to me, Kay! Listen to me! Do you trust me! Will you do something—something for both of us? Us? I mean for the world! Will you?"

"I know you will! Kay, keep your father from presenting his recall! Keep him here another ten days—even another week. Can you?"

"How? How can I?"

"I don't know. Any way at all. Get sick. Get too sick to travel, and beg him not to present his papers until you can leave. Or—or tell him that the United States will make his country an alternate proposal in a few days. That's the truth. I swear that's true, Kay."

"But—but he won't believe me!"

"He's got to! I don't care how you do it, but keep him here! And have him report to the Foreign Office that new developments—vastly important developments—have come up. That's true, Kay."

"True? Then what are they?"

"There isn't time to explain. Will you do what I ask?"

"I'll try!"

"You're—well you're marvelous!" he said huskily. He stared into her tragic brown eyes, kissed her lightly, and rushed away.

* * * * *

Asa Gaunt was scowling down at a map of the dead Salton Sea when Ted dashed unannounced into the office. The rangy Texan looked up with a dry smile at the unceremonious entry.

"I've got it!" yelled Ted.

"A bad case of it," agreed Asa Gaunt. "What's the diagnosis?"

"No, I mean—Say, has the Survey taken soundings over the Isthmus?"

"The Dolphin's been there for weeks," said the older man. "You know you can't map forty thousand square miles of ocean bed during the lunch hour."

"Where," shouted Ted, "are they sounding?"

"Over Pearl Cay Point, Bluefields, Monkey Point, and San Juan del Norte, of course. Naturally they'll sound the places where there were cities first of all."

"Oh, naturally!" said Ted, suppressing his voice to a tense quiver. "And where is the Marlin?"

"Idle at Newport News. We can't operate both of them under this year's budget."

"To hell with the budget!" flared Ted. "Get the Marlin there too, and any other vessel that can carry an electric plumb!"

"Yes, sir—right away, sir," said Asa Gaunt dryly. "When did you relieve Golsborough as Secretary of the Interior, Mr. Welling?"

"I'm sorry," replied Ted. "I'm not giving orders, but I've thought of something. Something that may get all of us out of this mess we're in."

"Indeed? Sounds mildly interesting. Is it another of these international fiat—money schemes?"

"No!" blazed Ted. "It's the Sierra Madre! Don't you see?"

"In words of one syllable, no."

"Then listen! I've flown over every square mile of the sunken territory. I've mapped and photographed it, and I've laid out the geodetics. I know that buried strip of land as well as I know the humps and hollows in my own bed."

"Congratulations, but what of it?"

"This!" snapped Ted. He turned to the wall, pulled down the topographical map of Central America, and began to speak. After a while Asa Gaunt leaned forward in his chair and a queer light gathered in his pale blue eyes.

* * * * *

What follows has been recorded and interpreted in a hundred ways by numberless historians. The story of the Dolphin and the Marlin, sounding in frantic haste the course of the submerged Cordilleras, is in itself romance of the first order. The secret story of diplomacy, the holding of Britain's neutrality so that the lesser sea powers dared not declare war across three thousand miles of ocean, is another romance that will never be told openly. But the most fascinating story of all, the building of the Cordilleran Inter-continental Wall, has been told so often that it needs little comment.

The soundings traced the irregular course of the sunken Sierra Madre mountains. Ted's guess was justified; the peaks of the range were not inaccessibly far below the surface. A route was found where the Equatorial Counter Current swept over them with a depth at no point greater than forty fathoms, and the building of the Wall began on March the 31st, began in frantic haste, for the task utterly dwarfed the digging of the abandoned Canal itself. By the end of September some two hundred miles had been raised to sea-level, a mighty rampart seventy-five feet broad at its narrowest point, and with an extreme height of two hundred and forty feet and an average of ninety.

There was still almost half to be completed when winter swept out of the north over a frightened Europe, but the half that had been built was the critical sector. On one side washed the Counter Current, on the other the Equatorial Drift, bound to join the Gulf Stream in its slow march toward Europe, And the mighty Stream, traced by a hundred oceanographic vessels, veered slowly northward again, and bathed first the shores of France, then of England, and finally of the high northern Scandinavian Peninsula. Winter came drifting in as mildly as of old, and a sigh of relief went up from every nation in the world.

Ostensibly the Cordilleran Inter-continental Wall was constructed by the United States. A good many of the more chauvinistic newspapers bewailed the appearance of Uncle Sam as a sucker again, paying for the five hundred million dollar project for the benefit of Europe. No one noticed that there was no Congressional appropriation for the purpose, nor has anyone since wondered why the British naval bases on Trinidad, Jamaica, and at Belize have harbored so large a portion of His Majesty's Atlantic Fleet. Nor, for that matter, has anyone inquired why the dead war debts were so suddenly exhumed and settled so cheerfully by the European powers.

A few historians and economists may suspect. The truth is that the Cordilleran Intercontinental Wall has given the United States a world hegemony, in fact almost a world empire. From the south tip of Texas, from Florida, from Puerto Rico, and from the otherwise useless Canal Zone, a thousand American planes could bomb the Wall into ruin. No European nation dares risk that.

Moreover, no nation in the world, not even in the orient where the Gulf Stream has no climatic influence, dares threaten war on America. If Japan, for instance, should so much as speak a hostile word, the whole military might of Europe would turn against her. Europe simply cannot risk an attack on the Wall, and certainly the first effort of a nation at war with the United States would be to force a passage through the Wall.

In effect the United States can command the armies of Europe with a few bombing planes, though not even the most ardent pacifists have yet suggested that experiment. But such are the results of the barrier officially known as the Cordilleran Intercontinental Wall, but called by every newspaper after its originator, the Welling Wall.

* * * * *

It was mid-summer before Ted had time enough to consider marriage and a honeymoon. He and Kay spent the latter on the Caribbean, cruising that treacherous sea in a sturdy fifty-foot sloop lent for the occasion by Asa Gaunt and the Geological Survey. They spent a good share of the time watching the great dredges and construction vessels working desperately at the task of adding millions of cubic yards to the peaks of the submarine range that was once the Sierra Madre. And one day as they lay on the deck in swimming suits, bent on acquiring a tropical tan, Ted asked her a question.

"By the way," he began, "you've never told me how you managed to keep Sir Joshua in the States. That stalled off war just long enough for this thing to be worked out and presented. How'd you do it?"

Kay dimpled. "Oh, first I tried to tell him I was sick. I got desperately sick."

"I knew he'd fall for that."

"But he didn't. He said a sea voyage would help me."

"Then—what did you do?"

"Well, you see be has a sort of idiosyncrasy toward quinine. Ever since his service in India, where he had to take it day after day, he develops what doctors call a quinine rash, and he hasn't taken any for years."

"Well?"

"Don't you see? His before-dinner cocktail had a little quinine in it, and so did his wine, and so did his tea, and the sugar and the salt. He kept complaining that everything he ate tasted bitter to him, and I convinced him that it was due to his indigestion."

"And then?"

"Why, then I brought him one of his indigestion capsules, only it didn't have his medicine in it. It had a nice dose of quinine, and in two hours he was pink as a salmon, and so itchy he couldn't sit still!"

Ted began to laugh. "Don't tell me that kept him there!"

"Not that alone," said Kay demurely. "I made him call in a doctor, a friend of mine who—well, who kept asking me to marry him—and I sort of bribed him to tell father he had—I think it was erysipelas he called it. Something violently contagious, anyway.

"And so—?"

"And so we were quarantined for two weeks! And I kept feeding father quinine to keep up the bluff, and—well, we were very strictly quarantined. He just couldn't present his recall!"

TIDAL MOON (1938)

BOB AMHERST shivered a little despite the heated interior of the autobus, but grinned none the less as he made out the frosty towers of Hydropole. He was always glad to return to the polar city, if only for the pleasure of staring up at buildings piled story upon story like those of his native Syracuse on a gray planet some half a billion miles sunward.

Hydropole, south polar city of Jupiter's third major moon, Ganymede, was a chilly town at all seasons with its thirty degree Fahrenheit mean, and its variation of only ten degrees. But it was certainly the only settlement on the satellite that was worthy of the title of city.

Amherst had served four terrestrial years on the watery planet as collector for Cree, Inc., moving from town to town gathering the precious medicinal moss, to take it finally to Hydropole, the rocket port, for transshipment to Earth.

He was one of the hundreds of such collectors for the giant company, each with his own route, each picking his own way from town to town, riding his hipp (the sea-horse of Ganymede, *Hippocampus Catamiti*) through the wild torrents of the afterfloods, past mountains whose locked valleys were apt to spill countless millions of tons of water upon him with no warning save the crash of the bursting mountain walls.

Only in Hydropole was there safety. Situated on the south pole, it escaped the great wash of water which, due to the strong gravitational pull of Jupiter, every three months encircled the tiny moon.

As a result, only in, and for a few miles around Hydropole, was there vegetation. Save for the strange moss, cree, which clung so close to the rocky crevices of the mountain that even the raging tides could not pry it loose, not a living plant broke the great, gray expanse of rock.

So, on Ganymede, all life revolved about the blue moss, cree. Ages back, the Nympus, natives of Ganymede, had carried it deep underground where,

piled layer after layer on the solid rock around the doomed villages, it served as earth. There, with seeds garnered from the small area about Hydropole, they grew the small variety of food on which they lived.

Above ground the moss had a deep, blue color. As litmus paper, colored by the Earth lichen, *rocella tinctoria* shows the presence of acid or alkali by its color change, so Ganymedian cree reacted to the ammoniated atmosphere of the planet. The air underground, however, artificially produced, had little ammonia content, and there the moss was red. Indeed, even the mountain cree, after being washed by the hydrogen containing waters of the flood, for a short time showed red.

Up to a short time ago, the gatherers had had only a limited time in which to pick the moss. Red cree lacked the medicinal quality of the blue in which, partly because of its chemical reaction to the ammoniated air and partly due to the latent eggs it harbored, lay the curative power so much in demand on Earth. Now, however, Carl Kent had evolved a formula by which cree picked red might be endowed with the healing power of the blue. So, in the area around his small trading station in Aquia, red as well as blue cree was gathered.

The autobus turned silently down the wide street of Hydropole. Robot-guided, insulated from noise and cold, it was certainly preferable to traveling by hipp. But hipp travel was unavoidable from here on. The trip to Aquia verged on the wet side of the planet—the side from which burst the mighty floods. So, added to steep, rocky drops, impassable by autobus, were the dank, muddy flats which only the hipp could traverse.

Amherst zipped the parka-like garment closed about his long, muscular body, pulling the sillicellu visor before his rugged features before he stepped from the autobus. The cold was penetrating. Even vacuum suits—misnamed, for they did not work on the principle of the thermos bottle but had the inner layer held from the outer by thin, radium-warmed wires—were scant enough protection.

Turning, he watched the Nympus unload the autobus. There was something revolting about them as they waddled about on their short legs, jointed only

at hip and ankle; their heads, flaring into strange mushroom tops almost hiding their noseless faces; their arms, long and webbed to their bodies.

'Umhurr.' He turned to the queer, throaty croak. It was the Nympus' version of his name.

'Yes?'

'Go see.' One long, webbed arm pointed in the direction of the rocket port office.

'Oh, thanks.' He walked toward the circular glass dome, under which MacGowan sat looking, for all the world, like some giant god's experiment under a bell jar.

'Hello, Bob. How goes it?' MacGowan's round, smooth-cheeked face was sharp contrast to Amherst's rather angular, wind-beaten features.

'As always. What's new here?'

'Nothing. Except there's a rumor that they've discovered red cree on Io.'

'Io? That's Jupiter's first major moon.'

'Right. And a skin exporting company called Ionian Products has it tied up as tightly as Cree, Inc., has Ganymede.'

'Well, red cree is no good, Mac. There's no curative power in it.'

MacGowan leaned back in his chair.

'You forget,' he answered, 'that since Carl Kent's discovery we pick red cree on Ganymede.'

'Yes. I did forget.' Amherst stretched his long legs before him. 'I haven't been to Aquia since the formula's been in use there.' For a moment his thoughts dwelt on the small domed settlement, on the young girl, Carol Kent, with her pixie face and laughing eyes. 'Say,' he sat up suddenly as the full implication of MacGowan's words penetrated his mind, 'that's bad. Those birds will glut the market!'

'Well, so far it's only a rumor. And Carl Kent is the only one who knows his formula anyway. Still, you'd better tell him when you get to Aquia. I got the dope two months ago.'

'Amherst shook his head.

'That's ironic. In 2083, two months' old news has to be carried by hipp. It's like going back to post medievalism.'

'It is. But you know radio is useless on the flood belt of Ganymede. The atmosphere's too disturbed. It's only at Hydropole that we can get reception.' MacGowan's eyes caught a notation on his desk. 'Oh, I almost forgot. I've got company for you to Aquia.'

'Who?'

'Kirt Scaler.' He spoke into his desk transmitter. 'Ask Mr. Scaler to come in.'

'I don't know what he's here for,' he continued, turning back to Amherst, 'but his papers are in order and I don't think he'll cause you much trouble.'

Yes, Amherst agreed, as Kirt Scaler entered, this man certainly looked as if he could take the hazardous journey to Aquia in his stride. His red-brown eyes, on a level with Amherst's own, had the serene out-flowing look of the hardened adventurer. One saw him gazing long distances, accepting danger, meeting and conquering it. His teeth flashed white against tawny skin, and the steely grip of his hand did not belie the reckless strength of his appearance.

'Business trip?' Amherst asked.

'No, just touring.'

Amherst smiled at the idea of anyone's taking a pleasure trip on Ganymede.

'You've traveled by hipp, I suppose.'

'No. This is the first time I've left earth.'

Strange how mistaken one can be, Amherst reflected. He could have sworn this man had been hardened by such adventure as existed, nowadays, only on the planets.

'In that case,' he smiled, 'you've got something interesting in store for you tomorrow.'

Flood time was coming near. Seasickness and Amity, the two hipps, were restless. Always, at flood time, the instinct to be free rose in them, filling them with a wild yearning to buck the mountainous tide of water, to swim fiercely to the top, there to sport with the large Gamma Rorqual, that ferocious whale-like mammal with the long spiked tooth from which only the hipps, because of their hard, outer shell, were safe.

Even when the flood was not imminent, hipps were not the easiest riding. They walked with a queer, undulating motion: the two feet forward first while the body rested on the tail, then the tail brought to meet the feet. On their twenty-foot long body, the rider had to pick his seat carefully. If he sat too near the head, the animal would not move: too near the tail meant that he would be jarred at every step. A little behind the legs was best. There he could ride with a minimum of jolting.

Night was coming on. Though the men had been out only a few hours, the sky was already darkening. Days were short in Ganymede. Thus far, they had spoken intermittently; the discomforts of travel occupied much of their attention. Scaler, it turned out, was a rather taciturn man, revealing little of his past and nothing of his reasons for touring Ganymede. He rode silently, looking neither right nor left, keeping his eyes fastened on the green-scaled back of Amity, his hipp.

There was, however, not much to look at. If one excepted the scattered stilt houses in the flats, nothing broke the monotony of mountains, rocks and mudholes. Still, Amherst reflected, stilt houses ought to be interesting to a man from Earth. He remembered the first time he had seen the square boxlike hives made of compressed cree, standing on twenty-foot poles—how he had wondered if, indeed, they could survive the flood. No one had stayed above ground long enough to find out.

Carl Kent, however, with his inquiring mind, had found out how they worked. At the first ten feet of water, the Nympus drew the stilts up through the sides of the house, allowing it to float. But no one, save the Nympus who lived inside one, could say for sure whether it survived the

flood, for the water carried it so far from the original starting point that there was no way of checking.

Suddenly a scream broke the air—a raucous, harsh scream, but, unmistakably, a scream of pain. They were rounding down a mountain and, as they covered the next turn, they came upon a hideous struggling mass of flesh. While from a slimy, flat body long tentacles gripped the rock, others clung to the writhing form of a Nympus. Creeping, in the manner of a snake, they encircled his flailing arms, drawing the heavy body with its long center spear greedily toward the native.

Scaler stared horrified, his face paling behind the visor. The animal looked like some grotesque nightmare. Amherst drew his gun and fired. There was a soft hiss, before the thing collapsed, spilling its yellowish blood on the rock.

The Nympus sprang to his feet, chattering wildly, then, rushing to a crevice in the mountain where the cree showed blue, placed a handful of the wet moss on his wounds.

For a moment the tentacles waved feebly; then, falling into the sticky mess which had once been a body, lay still. Only the long spear retained definite shape.

'There,' Amherst said, 'is evolution in a nutshell.'

'It hadn't evolved very far,' Scaler breathed deeply. 'It looked like a jelly fish with a horn.'

'Perhaps it was once jelly fish,' Amherst returned. 'It's hard to tell now. It has metamorphosed too often from its original form. Like the butterfly which goes through successive stages from egg to larva, larva to chrysalis, chrysalis to butterfly, this, starting out as an amoeba-like protoplasm and, like the amoeba, absorbing food at every part of its body, changes form each time it surrounds its prey.'

'You mean it doesn't absorb, it *becomes* what it eats?'

'Exactly. This amoeba attaches itself to a higher form of life and becomes that form, always, however, retaining its original power of *becoming* its next

prey. But, here's the strange thing: certain characteristics of its previous meal may remain even after it has adopted another form. This one, for example, was part Gamma Rorqual, as you can see from the spike, part land leet—it had land leet tentacles—and if we hadn't come along, it would have been part Nympus as well.'

'Funny planet,' Scaler remarked.

Slowly, they continued down the mountain, reaching now and then a bleak plateau which wind and water had swept to glassy smoothness. The flying mammals which always heralded the flood swooped overhead.

As they crossed one of the plateaus, above the roar of the wind they heard a loud beating. A mammoth bird, jet black against the mountain, its two sets of wings flapping alternately at a spread of thirty feet, came toward them. Flying the gale, it neared them quickly. For a second, the men sat transfixed; then, wrenching themselves from the coma of fear, drew guns. Seasickness beat her tail frantically, jolting Amherst's gun from his hand.

'Don't shoot, Scaler,' he yelled, diving after the spinning weapon. 'You'll never kill it.'

Before Amherst could reach his gun, Scaler fired. His shot, far to the right, missed the body. Yet the bird dropped, thrashing, to the ground. Again he fired and, with a scream so shrill it hurt their eardrums, it lay still.

'Whew! That was close,' Amherst said. 'Say, how did you know?'

'Know what?'

'Know enough to break the wing muscle.'

'It's a Blanket Bat,' Scaler answered. 'It doesn't kill, but it draws electrical energy from its prey and leaves it weak to the point of helplessness. That's the only way you can ground them too. There's a similar species on Io.'

'Right.' Amherst looked speculatively at his companion. 'But I was sure a man with no planetary experience would have aimed left, at the heart. That would have been unfortunate. For, as you undoubtedly know inasmuch as

you hit it squarely on your second shot, the heart of the Blanket Bat is in the center.'

Scaler shrugged.

'Even on Earth,' he answered, 'those things get around.'

When they reached the bottom of the mountain, it was too dark to go further. Jupiter shone pale and ghostlike in the night sky and far off, a tiny pinprick in the black, was Earth. The wind had risen, so they tethered Seasickness and Amity to a rock and took shelter in the lee of the mountain. A few land leets, disturbed by their presence, dragged themselves slowly from the rock. Amherst, who always preferred fresh food to the concentrates of his kit, caught and cooked them in the ray stove for dinner. The octopus-like animals were good eating, so afterward the two men settled down contentedly for the night.

The next morning, as soon as the sun had risen, they started on their way. Today their travel was over the flats where, every now and then, a stilt house stood high on the bleak landscape. Once in awhile they found a Nympus lying lazily before one, but they did not stop. In the outlying sections, Nympus spoke a Ganymedian patois which few Earthmen understood.

As they splashed along, Scaler broke a long silence to ask, 'By the way, Amherst, just what is cree?'

'Cree is the source of the drug *crephine* used in the treatment of all the malignant diseases. It not only deadens pain, but heals.'

'But there's so much of it on Ganymede,' Scaler objected, 'it doesn't seem as if there'd be use for all of it.'

'It takes over a bale of cree to produce one ounce of *crephine,'*Amherst answered, 'And in the past ten years the demand for it has increased enormously. Besides, on most of Ganymede the time for picking is short.'

'You mean on account of the floods? But why *most* of Ganymede then? Why isn't gathering time short on the whole planet?'

'Because,' Amherst started—then, 'I was thinking of Hydropole,' he amended. 'The floods don't cover that but, of course, there's little cree there. Yes, the time for gathering is short on account of the floods.'

'And on account of the color change after the floods?' Scaler asked slyly.

'Yes, that's true. How did you know?'

'I guess I read it somewhere. By the way,' he asked casually, 'what's the trader at Aquia like?'

'Carl Kent? He's a nice fellow. Lives there with his daughter, Carol.'

'Is that where we stay out the flood?'

'Yes. They're glad enough to see a new face.'

'There's no way of leaving the village during flood time, I suppose.'

'None whatever. You couldn't open a door against the pressure of the water even if you wanted to, which no one does. Once underground, you've got to stay there!'

Scaler hummed to himself a few minutes before he spoke again.

'When does this next flood pass?' he asked finally.

'Let's see.' Amherst shifted his position on Seasickness' back. 'It's due in two days now. You can probably leave Aquia about May twelfth, terrestrial date. By the way,' he faced Scaler squarely, 'how do you expect to get back to Hydropole? You'd never find your way alone.'

'Oh, I figured that out with MacGowan. I'll wait there until you make the trip to Dripwater and Weepy Hills. You always stop at Aquia on your way back, don't you?'

'Yes. But I can't see what you expect to do for two months in the settlement at Aquia.'

'More sightseeing, perhaps,' Scaler smiled.

When night came on, they did not stop. Flood time was too close to waste time in rest. Now, near the wet side of the planet, mudholes occurred

frequently; though the hipps braved them valiantly, progress was slow. The wind had increased and, riding against it, they were forced to hold their seats tightly.

After a few hours, they came to a mountain. Knowing the dark, rocky climb would slow them still more, Amherst decided to cut around on the flats. Riding the uncharted ground, half asleep, suddenly he felt a bright light shining on him. In the mountain's shadow, the night was black and the unexpected glare shocked him awake. From the side a huge, black bulk, that blinding light in its center, moved toward him. A grinding sound, as of rocks rubbed one on the other, deadened his ears, above everything, he was conscious of the light.

Scaler, riding nearest the mountain, continued forward, but Seasickness suddenly switched her course, heading straight for the glare. Amherst jerked the guiding rein, but she did not turn. Then, as the beam fell full on him, he felt himself being drawn. Ahead was the light, bright, warm, hypnotizing —at either side was nothing.

He felt his mind sinking, felt his body go lax, lean forward. Then something flew before his eyes. For a second, the light was blocked off, and in that second his strength flowed back. At once, he realized the thing ahead had been drawing his will from him—that if he were ever to get away, he must shield Seasickness' eyes and pull the rein hard. Now the bulk was so close that he could make out a great, yawning hole, inside which a piston-like rod moved up and down.

As he stared, a rock rolled into the hole and, on the descent of the piston, was ground to bits. With a mighty effort, he shut his eyes. Then, raising his visor to the freezing air, he gripped Seasickness' reins in his teeth and, blindfolding her with his hands, pulled with all the strength he had in him. She swerved.

Now—if the thing didn't change direction, they were safe. Otherwise they were sunk. Without looking full into the light, Amherst watched breathing deeply to still the pounding of his heart. Safe! The thing moved steadily forward, unaware that its prey had escaped.

Scaler, outside the hypnotic power of the light, asked what the trouble was.

'We couldn't change direction while the light shone on us,' Amherst told him, 'But that wasn't the strangest thing. That beacon or animal or whatever it was, *ate rocks!* Outside of the Pyramid Builder of Mars, I've never heard of that before.'

'Evidently it wanted to add you to its mineral diet,' Scaler observed.

'And it almost did.' Amherst laughed in relief. 'So it must be the extreme of omnivorous, needing life as well as minerals to keep it going.'

'Just another verse in the saga of evolution.' Scaler shifted his position on Amity's back and closed his eyes for a few minute's rest.

* * * * *

Two terrestrial days later they sighted the domes of Aquia which, huddled on the Ganymedian waste, resembled the half-buried eggs of some giant bird, left ages back to turn the same slate gray as the rest of the landscape. Faint on each dome were the outlines of a door, sole evidence of human habitation in the clustered mounds. Still, to the two men, stiff and tired after days and nights of riding, the sight of the small, domed village was cheering.

'So this is Aquia,' Scaler sighed. 'Aquia of Ganymede. It sounds almost Biblical.'

From far away came a dull roar. 'Just to make it more so,' Amherst answered, 'here's the flood.'

Bob Amherst looked admiringly at the slim girl in the trading station.

'Is it you, Carol, or is it what you're going to be ten years hence?' he said lightly, his eyes twinkling. Last time he had seen the girl, she had been a gangling child of sixteen or so; now she was a blonde goddess, rounded, appealing, vital. Her golden hair and blue eyes were in sharp contrast to the drabness of the trading station. She seemed to have grown up all at once.

'I hope it's both.' She shut the door against the freezing outside air.

'Why, you're beautiful.' To hide his astonishment, he spoke to her as a child. 'Your hair is combed, and your face is clean, and—'

'And you're too fresh.' Her eyes turned to Scaler.

'Oh, I forgot. This is Mr. Scaler, Carol.'

Scaler's brown eyes swept over her appreciatively.

'Where's your father?' Amherst asked.

Carol's face sobered.

'Father didn't come back last flood time. I'm carrying on.'

Didn't come back! There was no need to say more. Everyone knew what it meant to be caught away from the domed village when the torrents of water came thundering down. It was tough! Carl Kent could be spared least of the traders on Ganymede. And it was a pity that he had to go so soon after his precious formula had been completed. It was too bad for Carol, too. She was all alone now.

They followed her through the underground passage which led from the trading station to her living quarters. Under the domes, so exact in their engineering that they could withstand the terrific pressure of water during the flood, the air was warm. They removed their vacuum suits.

Outside Carol's door which, like all the rest opened onto a central square, Nympus and Earthmen scurried about to make ready for the deluge. Like a huge ant hill, the village teemed with activity. Tanks had to be made ready to store the water from which their oxygen came. The nitrogen mixers had to be checked so that they would be prepared to blend perfectly the two gases and insure the air supply for the duration of the flood.

While Amherst went about his business, looking over the cree, tethering the hipps in their floating cages anchored to the village, seeing that all was ready for the tidal rush, Scaler and Carol sat together in the warm, Earthlike room that Carl Kent had furnished.

'When you said you were carrying on here, the most important trading station on Ganymede, I could hardly believe it.' Scaler's warm, brown eyes rested admiringly on the girl's face.

'I have to. I'm the only one who could. Father was caught in the flood before he had a chance to set up laboratories in the other stations.'

'Was he planning to? I should think it would be dangerous to let too many people learn his secret.'

'Not at all,' Carol answered. 'There's no cree anywhere but Ganymede, and Cree, Inc., covers the entire planet.'

'Oh, I didn't know.' He moved over to sit next to her. 'It's too bad for you to bury yourself here,' he said abruptly. 'You don't belong. You should be living on Earth—seeing, doing and, most important, being seen.'

Carol smiled. She had never visited the small pinprick in the black called Earth, but she had read of it, read of its cities built into the air, its underground highways, its beautiful women. 'Tell me about the World,' she said softly. 'Is it so different from Ganymede?'

'So very different, I don't know where to begin.'

'I've always wanted to see New York.' She looked enviously at Scaler.

Amherst entered the room in time to hear her last words.

'It's nothing but froth, Carol,' he broke in. 'There are many things on Earth we wouldn't want on Ganymede.'

Scaler smiled.

'Gangsters and greed,' he said, 'went out long ago.'

'Gangsters did,' Amherst answered shortly. Suddenly the thought of Scaler's presence during the long flood period annoyed him. Perhaps, without knowing, he had been looking forward to being alone with Carol. Now, he realized that Scaler, shut in the underground village with nothing to occupy his time, would make that impossible.

At that moment, deep underground as they were, they heard the crash of mountain walls as the flood came pouring down. As always, in the village of the cree-gatherers, it was quiet, almost menacingly quiet, as if everyone stood impassive, waiting to see whether or not this time the domes would hold. For a few hours, until the air tanks were working efficiently, they would have this strange, dead sensation in their heads.

As Amherst had foreseen, Carol and Kirt Scaler spent much time together. Often they walked the narrow tunnels leading to the farms and there stood on the flat-covered expanse, like some tremendous basement, the water valves overhead dripping flood water brought from the surface to the crop below. And sometimes they stood by the nitrogen mixers, deafened by the mighty roar as the artificial air came pouring out.

Indeed, Scaler seemed to have perpetual interest where life at Aquia was concerned. Often Amherst entered a room to hear him questioning Carol about various technicalities. But at other times, he fought clear of anything to do with Ganymede and, instead, talked at length about the world Carol had never seen. At such times, she listened fascinated, a faraway look in her blue eyes as if they saw, through Scaler's, the things he was describing.

As the days passed, Amherst became more and more aware of Scaler's attraction for the girl though, as yet, he was not sure whether it was the man himself who charmed her or the world he came from. Thinking to find out, he waited for one of the few times that he and Carol were alone together. Then, walking over and taking her chin in his hand, he asked, 'Just how much do you know about Kirt Scaler, Carol?'

'Not very much. What difference does it make?'

'It might make a lot. It might be a revival of the old, old stories of the city slicker and the farmer's daughter.'

She jerked away angrily.

'Mind your own business, Bob Amherst.'

He put his arm around her.

'You're my business.'

'Since when.'

Lacking an answer, he pulled her to him and kissed her roughly. She jerked away, flouncing angrily from the room.

He watched her go absentmindedly, not so much concerned with her anger as with trying to decide what it would mean to him if she were indeed serious where Kirt Scaler were concerned.

Since Carl's death, he had felt an increasing sense of responsibility for Carol—and something more too. For Carol, even as a young girl, had aroused in him a more than friendly interest. So the thought of her falling in love and, perhaps, marrying someone else was painful. Besides, the more he saw of Scaler, the more he realized how uncommunicative the man really was. He had not yet given reason for his trip to Aquia other than the obviously ridiculous one of 'touring.'

And surely, attractive as Carol was, tales of her charm had not drawn him almost four hundred million miles through space. Still, aside from Scaler's interest in the life at Aquia, so far Carol seemed his only excuse for coming.

* * * * *

For the next few days, Carol treated Amherst coolly, never giving him a chance to speak to her alone and continuing to spend much time in Scaler's company. Amherst seldom entered a room but that he saw the golden head in close proximity to the brown, and heard, with a twinge at his heart, the soft note in Scaler's voice.

As the days passed, however, Scaler seemed to become restless. Often he wandered the village alone, not waiting for Carol. Once Amherst found him scanning a terrestrial calendar and figuring on a small pad he carried. Consequently, Amherst's heart lightened a bit, though, as yet, he could not break through Carol's reserve.

Just a day and a half before complete ebb, he was sitting alone in the trading station when the girl entered.

'It's funny,' she said abruptly, 'I can't find the formula. I know it by heart, of course, but the paper is gone.'

'Gone!' Amherst jumped to his feet, recalling, for the first time in weeks, the rumor that red cree had been found on Io.

'Don't get excited, Bob,' she said coldly, seating herself leisurely. 'What would anyone want it for?'

'They've discovered red cree on Io.' Amherst was halfway out the door. What a fool he had been not to tell Carol, especially after he had been told to bring the news to Carl. She hurried to follow him.

Inside the laboratory, he turned to face her.

'It's my fault,' he groaned. 'I should have told you. News of your father's death must have knocked it from my mind. Are you sure it's gone? Nothing seems to have been disturbed.'

'Yes. I kept it here.' She opened a drawer.

'Who has been in this room, Carol? Who, besides yourself, has ever been here?'

'Some Nympus gatherers, when Father was alive.'

'Who else?' Amherst paced the floor impatiently. 'They haven't the intelligence to steal it.' He paused for a moment. 'Did you ever bring Scaler in?' he asked.

'Yes, once. He wanted to see red cree under treatment.'

'Of course he did.' Amherst turned abruptly. 'Stupid of me not to have suspected it. He was undoubtedly sent here by Ionian Products just to get the formula. Touring, indeed! No wonder he recognized the Blanket Bat!'

'What shall we do?' Carol rummaged helplessly through the papers in the drawer.

'Search the village. He can't possibly leave until the water ebbs and that's at least a day and a half away. He must be here somewhere. There's no place else to go.'

They hunted the village for Scaler, but the search was fruitless. It seemed impossible for a man to disappear in the small underground village, and yet

five precious hours had gone and they had found no trace of him. It was incredible.

'Bob, what will it mean to Cree, Inc., if Ionian Products exports blue cree to Earth?' Carol asked anxiously after a while.

'Severe competition, a glutted market, shrinkage in sales, eventual bankruptcy, perhaps. You know there's an enormous expenditure required to keep the company going on Ganymede.'

'Then we've got to find Kirt Scaler. Father would—would have hated that!'

'I know.' Amherst stood undecided for a moment. 'There's only one thing left for us to do though: we must start over. Somewhere, we have missed him.'

Three hours later, footsore and weary, they returned again to the farms, their second quest as unproductive as the first.

Far in the distance a lone Nympus worked the field, at the entrance to the tunnel.

'You know strange Earthman?' Amherst spoke wearily to the toiling Nympus.

'Yeh.' The crusty, mushroom head nodded rapidly.

'Have you seen him today?'

'Yeh.' The head nodded again.

'Where!' Amherst grasped the green, scaled shoulder. The Nympus waved an arm vaguely toward the outskirts of the farm, to the bare rock wall where the farm ended.

'Where?' Amherst shook the native's shoulder excitedly.

'In Iticht phulph.'

'In locked valve,' Amherst shouted. 'Of course. It's the only place he could be.'

At that moment, far down the farm, almost where the rock wall began, a stream of water shot heavily to the earth. 'That's the one,' Amherst cried. 'That valve was just opened to the outside. Carol,' he cried as he started running toward the water, 'get me a vacuum suit and bring it here—quickly!'

When he reached the spot, the water had thinned to a narrow stream. Evidently ebb was over. A mound of cree earth beneath the pipe opening showed how Scaler had managed to reach his hiding place. Through the slanting man- sized aqueduct, Amherst could see light from above. Undoubtedly Scaler had just escaped. Probably knowledge that the Nympus farmer had seen him, had made him aware of the danger of hiding there longer.

However, it was impossible to follow until Carol returned with the vacuum suit. He waited impatiently, comforting himself with the thought that Scaler could not get very far in the torrents of the afterflood on foot, and that, as no one had been above ground since the flood started, there was no hipp tethered outside to carry him. As relief for his impatience, Amherst piled more cree on the mound Scaler had left. It would save time when Carol arrived with the suit if he could raise himself easily to the opening in the rock ceiling.

At last Carol, clad in a vacuum suit herself, came running across the field.

'You can't come,' Amherst told her. Hurriedly he stepped into the garment she handed him. Without replying she stood watching him draw his long body through the pipe opening.

Creeping up the slanting hundred yard aqueduct as quickly as possible, Amherst emerged dripping to the wet Ganymedian surface. A few seconds later, Carol appeared.

'Go back.' He was trying to free his sillicellu visor of the mud it had gathered on the ascent through the wet pipe. Scaler was not in sight.

A rocket ship, however, was visible in the sky. He started walking, Carol beside him. Scaler might easily be in the valley on the other side of the hill.

'What's that ship doing?' Carol asked. 'It can't land here.'

'It looks as if it's going to.'

True, the ship was coming lower. A mile or so in front of them, it lost altitude rapidly. Wonderingly, they watched it, knowing no rocket ship had ever landed in the muddy areas of Ganymede until, straining their eyes, they saw a ladder unfurling from its fuselage. So that was going to be the manner of Scaler's escape!

Amherst started to run, splashing through the water and mudholes which slowed his progress. Carol followed, gaping with the exertion of pulling her self in the heavy suit through the sticky mud.

Hopelessly, they saw the ship dip behind the brow of the hill, to rise a second later with a black dot clinging to its downflung ladder. As they watched disconsolately, the red speck soared high in the sky. Red! The color of the space ships of Io! For, since the signing of the Interplanetary Peace Treaty, each planet colored its space ships differently. There was no doubt now where their formula was going.

Carol sat down despondently. For a few moments neither spoke. At last they rose and, silently, started to walk toward the village of the cree gatherers.

'What was the formula, Carol?' Amherst asked finally. 'As long as Scaler is taking it to Ionian Products, I might as well know.'

'It was simple,' the girl said. 'It merely duplicated the chemical changes taking place in the moss after the passing of the flood. The color change in cree is due to ammonia in the air, as you know. Well, part of the medicinal value lies there and part in latent eggs deposited in the moss. Father's formula was exactly that: an equal mix of blue gallnuts and ammonia.'

Bob Amherst stopped abruptly. 'Gallnuts, did you say? Blue gallnuts?'

Yes. It's the name given the vegetable excrescence which forms around the egg of the gall-ant. We breed gall-ants, pulverize their eggs and— '

'Carol!' Amherst pounded his knee in delight. 'We're saved! Much good our formula will do them,' He waved toward Io, ghostlike in the pale sky.

'Why? They've got the cree on Io.'

'They've got the cree all right, and they've got the formula—but they haven't got the ants! And they'll never get them either. Gall-ants can't live in methane—I remember that from Biology—and the air on Io is mostly methane!'

'Why can't they?'

'Because their systems are geared to breathing ammoniated air— exactly the opposite of methanated air. Don't you see? Ammonia is a base: methane is a hydrocarbon, an acid.'

'Well, can't they make ammonia?'

'Of course. But where will they get the ants? Gall-ants breed only on Ganymede, in Ganymedian cree. To get the ants they'd have to buy our cree and, inasmuch as they'd have to use the ant eggs to get the gallnuts to make the formula to turn their cree blue,' Amherst drew a long breath, 'the ants couldn't reproduce. So they'd have to continue buying our cree to get the ants to get the nuts to get—'

'I see,' Carol interrupted. 'Never mind the rest.'

'Besides which,' Amherst continued, 'even after they succeeded in turning the cree blue—if they succeeded, which they wouldn't, inasmuch as we wouldn't sell them the cree to get the ants to get the nuts and so forth — they'd have to keep the methanated air of Io away from it. Otherwise it would turn red again. Think what that means: hundreds of bales of cree vacuum-packed to shield them from contact with the outside air. It would raise the cost of production so enormously, they couldn't compete with us anyway.'

'I guess you're trying to say they can't use the formula. Anyway, I'm relieved.' Carol sighed.

'So am I—for another reason, though.'

'What other reason is there?'

'That it was only the formula Scaler wanted after all.'

'What do you mean, only?' She turned to face him before the smooth, round dome of the trading station.

'For awhile I thought it was you.'

'Oh that.' Carol scuffed one foot on the ground. 'Yes, he wanted me too. I refused him.'

'But why? You seemed to like him well enough at first.'

'I did,' she said slowly, 'at first. It was that kiss changed my mind —that rough one.'

THE RED PERI (1952)

THE Dutch rocket *Aardkin*—out of Middleburg, passengers and freight—dropped gingerly toward the mist and cloud-girt Earth some twelve thousand miles below, underjets cushioning the fall. This last leg of the journey from Venus was the ticklish part of the trip; for the great cigar-shaped rockets, beautifully swift in space, were anything but maneuverable in a strong gravitational field; and Captain Peter Ten Eyck had no particular desire to descend in either central Europe or mid-Atlantic, to the resultant disgust of the home office. He wanted to hit Middleburg in Zeeland.

Off to the right appeared a very curious shape, visible no more than a quarter of a mile away through the bridge room port. "Donder !" said Captain Ten Eyck feelingly.

At the same moment the annunciator beside him remarked, "Cut your jets!"

"*Aasvogel*!" rejoined the captain. "*Vaarken*!" His other epithets were somewhat too expressive for permanent record.

The apparition against the black sky was swiftly drifting closer. It was distinguishable now as a glittering, metal rocket, but in no way like the tapering, cylindrical *Aardkin*, nor like any other rocket—save one.

It was a tubular triangle, from each corner of which rose a strong girder to meet an apex above. In effect, its sides and girders outlined a skeleton tetrahedron, and from the apex of the girders, the blue atomic blast flared down to spread fanlike into the space below. As it approached, the strange vessel was dwarfed by the giant freighter; it was no more than a hundred feet on a side, not an eighth the length of the *Aardkin* .

Again the annunciator uttered its metallic tones. It was responding, apparently, to a beam from the stranger. "Cut your jets!" it repeated. "Cut your jets, or we'll top you!"

Captain Ten Eyck ended his mutterings in a heavy sigh. He had no wish to have his vessel exposed to the withering blast of the pirate. He grumbled an

order into the box beside him, and the roar of the jets ceased. Whatever maneuverability the lumbering freighter possessed was gone now; there was no longer any chance of ramming the agile attacker.

With the cessation of the jets came also complete weightlessness, since they were in a free fall; but a twelve-thousand-mile fall takes considerable time to become serious. Ten Eyck sighed again, ordered the floor magnets on, and waited phlegmatically for further directions. After all, he reflected, his cargo was insured, and Boyd's Marine could afford the indemnity. Besides, Boyd's was an English concern, and he had no mind to risk a good Netherlands ship and—if he did say it himself—a good Netherlands captain to save an English insurance company from loss.

The door to the bridge room opened. Hawkins, the first officer, clattered in. "What's here?" he shrilled. "The jets are off—" He caught sight of the glistening shape beyond the port. "The *Red Peri*! The blasted pirate!"

Captain Ten Eyck said nothing, but his pale blue eyes stared moodily at the painted figure plainly visible on the attacker's bull—the figure of a crimson winged imp. He needed no sign to identify the pirate; the queer construction of the vessel was proof enough, for there wasn't another such ship in the sky.

The voice sounded again. "Open your air lock." Ten Eyck gave the order and stalked grimly out to receive the boarding party. He heard the thud of the extending gangway as it struck, and the faint grind as the magnet bit to the freighter's hull. There came a brisk pounding on the inner door of the lock. The captain gave the order to open, his voice curiously equable. He was thinking again of the insurance company.

Most of the *Aardkin* 's score of passengers were crowded along the passage. The cutting of the jets, and perhaps the sound of Hawkins' voice from the beam room as he called hopefully for assistance, had apprised all of them of the events, and the glittering triangle of the *Red Peri* indicated their nature.

The lock swung inward, opening upon the steel-ribbed, rubber-sheathed tunnel of the gangway.

Figures in space suits, worn either for disguise or simply as precaution against the possible need of cutting their way in, filed through the circular doorway, automatics and gas guns menacingly visible.

There were no words spoken; a dozen buccaneers clanked methodically away toward the aft bold, and one, a slighter figure, stood grimly guarding the lock. In five minutes they were filing back, dragging whatever loot they had found, with the queer movement of inertia without weight—much as if they floated the objects through water.

Ten Eyck saw the cases of *xixtchil* pods, valuable as so many diamonds, disappear into the lock; and the seventeen crated ingots of Venusian silver followed. He swore under his breath as he recognized the casket of emeralds from the mines in the Dutch Alps of Venus, and wondered blasphemously how they had managed to crack the *Aardkin*'s safe with neither torch nor explosive.

Glancing into the purser's office, he saw a queer, jagged hole in the big steel box, that looked more as if it had rusted or simply broken away than as if it had been cut. Then the freebooters were silently passing back to their vessel, having neither addressed nor molested officers, crew, or passengers.

Except, perhaps, for one: among the group of watchers was young Frank Keene, American radiologist and physicist returning from the solar-analysis stations of Patrick's Peak in the Mountains of Eternity. He had edged close to the air lock, and now, as the departing marauders passed through, he suddenly leaned forward with narrowed eyes, and peered boldly into the cloudy visor of the guard.

"Huh!" he mid. "A redhead, eh?"

The guard said nothing, but raised a steel-guantleted hand. The metal thumb and forefinger bit viciously into Keene's suntanned nose, and he was thrust violently back into the crowd, with two spots of blood welling from the abused organ.

Keen grunted in pain. "O.K., fellow," he said stolidly. "I'll see you again some day."

The guard spoke at last in a voice that clinked out metallically from the helmet's diaphragm. "When you do, there'd better be two of you." Then this figure followed the rest; the outer lock clanged shut; the magnets released the gangway's grip; and the *Red Peri* , agile as a swallow and swift as a comet at perihelion, flared into the black void.

Beside Keene sounded the voice of Captain Ten Eyck. "What a ship! Mynheer Keene, is that not a ship—that *Red Peri*?"

He was still exclaiming over it at intervals during the laborious task of laying a new landing course; and when, an hour later, a blunt little League rocket appeared in answer to Hawkin's call, he informed its officers flatly that the pirate was hopelessly beyond reach. "Even if your fat *beeste* of a boat could match its acceleration, which it couldn't."

A year later Frank Keene had almost completely forgotten the *Red Peri* and the red-headed pirate, though occasionally, during the interval, mention of the famous marauder had brought his experience to mind. After all, when a freebooter has scoured the skyways for nearly fifteen years without capture, he becomes something of a legend, a figure of heroic proportions. Papers and broadcasts give daily references to him, and he is blamed for, or perhaps credited with, many a feat performed by some less-celebrated desperado.

The lair of the *Red Peri* remained a mystery, though League ships scoured asteroids, the far side of the desolate Moon, and even the diminutive satellites of Mars. The swift pirate, striking invariably as his victim inched gingerly through some planet's gravitational field, came and went untouched.

But Frank Keene had little time at the moment for consideration of the famous freebooter. He and his companion, fifty-five year old Solomon Nestor of the Smithsonian, were out where few men had ever been, and in a predicament that was perhaps unique. They were dropping their rocket *Limbo* toward the rugged, black disc of Puto, two billion miles from home, and they were not happy about it.

"I tell you," growled Keene, "we're got to land. Do you think I'm settling on this chunk of coal from choice? We've got to make repairs. We can't navigate with one stern jet gone, unless you have a notion to fly in circles."

Old Solomon was a marvel on hard radiations, stellar chemistry, and astro-physics, but hardly an engineer. He said plaintively, "I don't see why we can't zigzag."

"Bah! I told you why. Didn't I spend five hours figuring out the time it'd take to reach the nearest inhabited place? That's Titan near Saturn, just one billion—one billion, I said—miles from here. And at the speed we could make zigzagging, because we couldn't keep a constant acceleration, it would take us just exactly four years and three months. We've got food enough for three months, but what would we live on during the four years? Atomic energy?"

"But what can we do on Pluto?" queried old Nestor. "And why didn't we carry a spare jet?"

"Jets aren't supposed to melt off," muttered Keene disgustedly. "As for what we can do, maybe we can find a virgin deposit of some refractory metal—platinum or iridium or tungsten, or any other with a high melting point—and build up a jet long enough to keep the blast from melting our stern away. Because that's what it'll do if we try running it this way."

"There's tungsten here," observed the older man hopefully, gazing down at the black expanse. "Hervey reported it, and so did Caspari. But there isn't any atmosphere, or rather, what there is, is liquid or solid, except about half a centimeter's pressure of helium. Pluto has a diameter of about ten thousand miles, a surface gravity of about 1.2, and an albedo—"

"Not interested," grunted Keene, and then, relenting, "Listen, Solomon, I'm sorry. I guess I'm taking it out on you because we had a defective jet. But it's a hell of a mess all the same, and somebody's going to suffer for it when we get back. With all the money the institute has, you'd think they'd be able to afford respectable equipment." He glared down through the floor port. "There she comes!"

With a rasp and a jar, the *Limbo* came to rest. Outside, a mixed column of dirt and smoke billowed around the glasses, rose and then settled as quickly as a burst of sand, in the near vacuum that surrounded the ship.

Keene cut the blast. "Come on," he said, turning to a space suit swaying on its hook. "No use wasting time. We'll take a look around." He clambered into the heavy garment, noting irritably its greater weight on the surface of the black planet. The Plutonian gravitation added thirty-six pounds to his Terrestrial hundred and eighty.

"No gun?" asked Nestor.

"Gun? For what? This planet's dead as the brain of whoever tested that jet. How can there be organic life in no air and ten degrees absolute?" He pulled open the inner door of the air lock. "Well," he said, his voice sharply metallic through his helmet's diaphragm, "here goes the Smithsonian Expedition for the Determination of the Intensity of Cosmic Radiation in Extra-planetary Space. We determined it all right; now the only problem of the expedition is to get home with our statistics." He flung open the outer door and stepped out on the black surface of Pluto.

So far as Keene knew, he was the fourth man and Nestor the fifth to set foot on the black planet. Atsuki, of course, was the first, if one credits his figures and photographs, the intrepid Hervey the second, and Caspari the third. Here on this lonely outpost of the solar system, high noon was hardly brighter than full moonlight on Earth, and the queer, black surface that gives Pluto its low albedo made it seem still darker.

But Keene could distinguish the outlines of fantastic mountains beyond the hollow where the *Limbo* rested, and innumerable mysterious crags and hillocks, unweathered by wind or water, loomed closer. Directly to his right lay a patch of glistening, snow-like white; but he knew it wasn't snow, but frozen air. One dared not step in such a drift; for the cold would bite through his insulated space suit, since frozen air was a far better conductor of heat than the rocky ground.

Overhead glittered all the stars of the galaxy, as changeless as though he stood on a pleasant green planet two billion miles sunward, for what was

two billion miles to the infinite remoteness of the stars? The landscape was bleak, black, desolate and cold. This was Pluto, the planet that circled at the very edge of the System.

The two started heavily toward a ridge where something glowed faintly, something that might be virgin metal. Strangely, their own footsteps were audible, for the substance of their space suits conducted the sound; but all else was a vast and ominous silence. They did not speak, for their suits, designed only for emergency repairs in space, had no radio; and to communicate it was necessary to touch hand or arm to one's companion; over such a material bridge, sound traveled easily enough.

At the ridge Keene paused, glowering down at a vein of bright, starlighted fragments. He placed a hand against Nestor's shoulder, "Pyritic," he grunted. "We'll have to look farther."

He turned right, treading heavily under nearly sixty pounds mom than his Earth weight. Surely, he mused, old Solomon Nester wouldn't be capable of an extended search in such circumstances. He frowned; Caspari had reported great quantities of heavy metals here, and they shouldn't need such a lengthy search. He stopped sharply; a stone came sliding past him on the rocky surface. A signal.

Off in the dusk Nestor was gesturing. Keene turned and hurried back, clambering along the uneven terrains with such haste that his breath shortened and his visor began to cloud. He clapped his hand on the old man's arm. "What is it?" he asked. "Metal?"

"Metal? Oh, no." Nestor's voice was triumphant. "What did you say about no organic life on Pluto, eh? Well, what about inorganic life? Look there!"

Keene looked. Out of a narrow chasm or cleft in the ridge something moved. For a moment Keene thought he saw a brook flowing, but a brook—liquid water—was an impossibility on Pluto. He squinted sharply. Crystals! Masses of crystals, gray-white in the dusk, crawling in a slow parade.

"I'll be damned!" he said. "Caspari didn't say anything about this."

"Don't forget," said Nestor, "that Pluto has thirty-six per cent more surface than the whole Earth. Not a ten-thousandth part of it has been explored—probably never will be, because it's such a task to get a rocket here. If Atsuki—"

"I know. I know," interrupted Keene impatiently. "But these things aren't tungsten or platinum. Let's move on." But he still stared at the crawling, faintly radiant mass. In the silence he heard infinitely faint rustlings, cracklings, and susurrations, transmitted through the ground to his feet, and thence to his helmet. "What makes them move?" he asked. "Are they alive?"

"Alive? I don't know. Crystals arc as close as inorganic matter comes to life. They feed; they grow."

"But they don't live!"

Old Solomon Nestor was in his element now. "Well," he proceeded in professorial tones, "what is the criterion of life? Is it movement? No; for wind, water, and fire move, while many living forms do not. Is it growth? No; for fire grows, and so do crystals. Is it reproduction? Again no; for again fire and crystals reproduce themselves, if their proper food supply is present. Then just what differentiates dead matter from living?"

"That's what I'm asking you!" snapped Keene.

"And I'm telling you. There's just one, or perhaps two criteria. First, living things show irritation. And second, and more important, they show adaptation."

"Eh?"

"Listen," continued Nestor. "Fire moves, grows, feeds, and reproduces, doesn't it? But it doesn't run away from water. It doesn't betray the irritation life shows in the presence of a poison, though water's poison to it. Any living thing that encounters poison makes an attempt to throw it off; it develops antibodies or fever, or it ejects the poisonous matter. Sometimes it dies, of course, but it tries to survive. Fire doesn't.

"As for adaptation, does fire ever make a voluntary attempt to reach its food? Does it deliberately flee from its enemies? Even the lowest form of life

known does that; even the miserable amoeba makes positive gestures of adaptation to its environment."

Keene stared more closely at the sluggish crystalline stream, which was now impinging on the black plain at his feet. He bent over it, and suddenly perceived a fact that had hitherto escaped him.

"Look here," he said, touching old Solomon's arm. "These things are organisms. They're not loose crystals, but masses of them."

It was true. The rustling crystals moved in glittering chunks from thumbnail size to aggregations as large as dogs. They crackled and rustled along, apparently moving by a slow shifting of the lower crystals, much as a snake moves on its scaly belly, but far stiffer and slower. Abruptly Keene sent his metal boot crashing into one. It shattered with a blue flash of released static electricity, and the pieces passively resumed their progress. "They certainly don't show irritation," he remarked.

"But look!" shrilled Nestor. "They do show adaptation. There's one feeding!"

He pulled Keene a few feet down the ridge. There was a small bluish deposit of something that looked like frozen clay, a product, perhaps, of the infinitely remote past when Pluto's own heat had maintained liquid water and gaseous air to grind its rocks to powder. A crystalline mass had paused at the edge, and before their gaze it was growing, gray-white crystals springing out of it as frost spreads over a winter-chilled windowpane.

"It's an aluminum-eater!" shrieked Nestor. "The crystals are alums; it's eating the clay!"

Keene was far less excited than old Solomon, perhaps because he was considerably more practical.

"Well," he said decisively, "we can't waste any more time here. We need refractory metal, and we need it bad. You try along the ridge, and I'll cross over."

He broke off suddenly, staring appalled at the foot with which he had shattered the moving crystals. On its surface glittered a spreading mass of tiny, sparkling points!

A break in the surface of his space suit meant death, for the oxygen generator could certainly never maintain its pressure against any appreciable leakage. He bent over, scraping desperately at the aluminum feeders, and then realized that the infection would spread—had spread to his gauntlets. While Nestor babbled futilely and inaudibly behind his visor, Keene rubbed his hands in the gritty, pyritic soil on which he stood.

That seemed to work. The rough substance scoured away the growing crystals, and with frantic vigor he rasped a handful along his shoe. If only no hole, no tiniest pin prick had opened! He scoured furiously, and at last the metal surface showed scratched and pitted, but free of the growths.

He stood up unsteadily, and placed his hand against the gesturing Nestor's side.

"Keep away from them!" he gasped. "They eat—"

Keene never finished his sentence. Something hard jarred against the back of his armor. A metallic voice clicked, "Stand still—both of you!"

II

"What the devil!" gulped Keene. He twisted his head within his immovable helmet, peering through the rear visor glasses. Five—no, six figures in blue metal space suits were ranged behind him; they must have approached in the inaudibility of a vacuum while he had been scouring his suit free of the crystals. For a moment be had an eerie sensation of wonder, fearful that he faced some grotesque denizens of the mysterious black planet, but a glance revealed that the forms were human. So were the faces dim in the dusk behind the visors; so had been the voice he had heard.

Keene hesitated. "Listen," he said. "We're not interfering with you. All we want is some tungsten in order to fix our—"

"Move!" snapped the voice, whose tones traveled through the weapon hard against Keener back. "And remember that I'm two thirds inclined to kill you anyway. Now move!"

Keene moved. There was little else he could do, considering the appearance of the threatening automatics in the hands of their captors. He tramped

heavily along, feeling the thrust of the muzzle against his back, and beside him Solomon Nestor trudged with pace already showing the drag of weariness. The old man touched his arm.

"What's this about?" he quavered.

"How do I know?" snorted Keene.

"Shut up!" admonished the voice behind him.

They walked past the looming shape of the *Limbo*—five hundred feet past it, a thousand. Directly ahead was the other rim of the cup-shaped depression in which they had landed, high, black cliffs in fantastic shapes. Suddenly Keene started; what had seemed but a smaller cliff showed now as a skeleton, tetrahedral frame of metal, three webbed shafts rising to a point from a tubular triangle below.

"The *Red Peri* !" he gasped. "The *Red Peri*!"

"Yeah. Why the surprise?" queried the sardonic voice. "You found what you were looking for, didn't you?"

Keene said nothing. The appearance of the pirate ship had amazed him. No one had ever dreamed that the swift marauder could operate from a base as infinitely remote as the black planet. How could even the agile vessel scour the traffic lanes of the minor planets from dusky Pluto, two billion miles out in the empty cosmos?

To his knowledge only two ships—three, if Atsuki hadn't lied—had ever reached those vast depths before their own *Limbo* , and he knew what endless travail and painful labor each of those journeys had cost. In his mind echoed Captain Ten Eyck's words of a year and a half before. "What a ship!" he muttered. "Lord, what a ship!"

There was an opening in the cliff wall as they rounded the bulk of the *Red Peri* . Yellow light streamed out, and he glimpsed an ordinary fluorolux bulb in the roof of the cavern. He was shoved forward into the opening, and suddenly his visor was clouded with moisture. That meant air and warmth, though he had seen no air lock, nor heard one operate. He suppressed the

impulse to brush a metal-sheathed hand across the glass, knowing that he couldn't wipe the condensation away in that fashion.

The voice again, still queerly sardonic, yet somehow soft. "You can open your helmets. There's air."

Keene did so. He stared at the figures surrounding himself and Nestor, some still helmeted, others already removing the uncomfortable space suits. Before him stood a figure shorter than the rest, and he recalled the red-haired pirate on the *Aardkin*. The short one was twisting the cumbersome helmet.

It came off. Keene gulped again at the face revealed, for it was that of a woman. A woman? A girl, rather, for she seemed no more than seventeen. But Keene's gasp was not entirely surprise; mostly, it was sheer admiration.

Her hair was red, true enough, if one could call red a lovely and subtle shade between copper and mahogany. Her eves were bright green, and her skin was the silken, soft, and pale skin of one whose flesh is but seldom exposed to the sunlight, yet gently tanned by the violet-rich rays of the fluorolux.

She let the cumbrous metal suit clank away from her, and stepped out in the quite civilized garb of shirt, shorts, and dainty, laced buskins, such as one had to wear in a space suit. Her figure—well, Keene was only twenty-six, but even old Nestor's pallid eyes were fixed on her as she turned toward them. She was slim, curved, firm; despite her slimness, there was a litheness and sturdiness to her limbs, the result, perhaps, of a lifetime under the supernormal gravitation of Pluto.

"Take off your suits," she ordered coldly, and as they complied, "Marco, lock these up with the rest."

A tall, dark individual gathered up the clanking garments. "Yes, commander," he said, taking a key she held out and moving away into the cavern.

"Commander, eh?" said Keene. "So you're the Red Peri!"

Her green eyes flickered over him: She surveyed his own figure, which was still hard and brown and powerful from his swimming days at the university. "You," she said impassively. "I've seen you before."

"You have a good memory," he grunted. "I was on the *Aardkin* ."

She gave him a momentary smile of amused remembrance. "Yes. Did your nose scar?" She glanced at the organ. "I'm afraid not."

People—two or three of them—came hurrying up the long corridor of the cave to stand staring curiously at Keene and Nestor. Two were men; the third was a pale, pretty, flaxen-haired girl. The Red Peri glanced briefly at them and seated herself on a boulder against the rocky wall.

"Cigarette, Elza," she said, and took one from the pale girl.

The scent of tobacco tantalized Keene, for such indulgences were impossible in the precious air of a space ship. It had been four months since he had smoked, in the frigid little town of Nivia, the city of snow on Titan.

"May I have one?" he asked.

The green eyes turned an icy glance on him. "No," said the Red Peri briefly.

"Well, I'll be—Why not?" He was angered.

"I don't think you'll live long enough to finish it," responded the girl coolly, "and our supply is limited here."

"Yeah, limited to what you find on looted freighters!" he snapped.

"Yes," she agreed. She blew a tormenting plume of smoke toward him. "I'll tell you what I'll do. I'll trade you a cigarette for the information as to how you managed to trace us here."

"Trace you?" he echoed, puzzled.

"That's what I said. It's a generous offer, too, because I'm quite capable of torturing the knowledge out of you."

Staring into her lovely, glittering green eyes, Keene was not disposed to doubt her capability. He said mildly, "But we didn't trace you here."

"I suppose," she retorted, "that you came to Pluto looking for a good business corner. Or perhaps on a little camping trip. Is that your story?"

He flushed under her cool insolence. "We came here by accident," he growled. "One of our afterjets melted off, and if you don't believe it, go look at it."

"Jets don't melt unless they're planned to," said the Red Peri coldly. "And what were you doing in the neighborhood of Pluto anyway? And I suppose that out of all the millions of square miles of surface, you just accidentally picked this valley as a landing place. Well, it won't do you any good to lie, because you're going to die regardless, but you might die a little less painfully if you tell the truth."

"It just happens that I'm telling the truth!" he blazed. "Whether you believe it or not, we landed in this valley by pure chance. We're the Smithsonian's expedition to study cosmic rays in outer space, and you can verify that by our clearance papers from Nivia."

"A good disguise for the secret service," she sneered. "You could get any sort of government papers you want, couldn't you?"

"Disguise! Listen, if we were hunting the Red Peri, do you think we'd come armed with cameras, interferometers, electroscopes, polariscopes, and fly-wing bolometers? Search our ship; you'll find one gun in it—one measly automatic. I'll tell you where it is. It's in the upper right-hand drawer of the navigation table. And we landed here because Pluto was the nearest solid place to where we burned off our jet—and that's the truth!"

The Red Peri's glance was faintly speculative. "I don't see," she said thoughtfully, "that it makes much difference. If you're telling the truth, it simply means that you're a very unlucky expedition, because I certainly can't let you go, and I haven't any particular desire to keep you here. In other words, it still looks very much as if you were destined to die." She paused. "What are your names?"

"This is Smithsonian's Professor Solomon Nestor," he said, "and I'm Frank Keene, radiation engineer."

Her green eyes shifted to the old man. "I've heard of Solomon Nestor," she observed slowly. "I really shouldn't like to kill him, but I don't see exactly what other course is open." She flashed her gaze back to Keene. "Do you?" she asked coolly.

"You could take our words not to give out any information," he grunted.

She laughed. "The Red Peri trusts very little to promises," she retorted. "Anyway, would you give your word to that?"

For a full half minute he stared into her mocking eyes. "I wouldn't," he said at last. "When I entered the Smithsonian's service I took their usual oath to uphold the law in the far places. Maybe many of their explorers consider that oath just so many words; I know some of them have found wealth at the expense of the institute. But I keep my oaths."

The Red Peri laughed again. "No matter," she said indifferently. "I wouldn't trust my safety to any one's word. But the question of your disposal still remains!' She smiled with a faint hint of malice. "Would you prefer to die instantly, or do you think you can stand the torture of suspense while I check your story and think it over? Because frankly, I think it will he necessary to kill you anyway. I see no alternative."

"We'll wait," said Keene stolidly.

"Very well." She flipped away the stub of her cigarette, crossed her dainty legs, and said, "Another, Elza."

Keene looked sharply at the yellow-haired girl as she held a light to the cigarette. There was something dimly inimical in her manner, as if she were struggling to suppress a hatred, a hidden enmity.

She withdrew the flame with an abrupt, irritable gesture.

"That's all," said the green-eyed leader. "I'll lock you up somewhere until I'm ready."

"Wait a minute," said Keene. "Now will you answer a few of my questions?"

She shrugged. "Perhaps."

"Are you the only Red Peri?"

"The one and only," she smiled. "Why?"

"Because you must have been born like Lao-tse at the age of eighty, then. These raids have been going on for fifteen years, and you're not a day over seventeen. Or did you start your career of piracy at the age of two?

"I'm nineteen," she said coolly.

"Oh. You began at four, I suppose."

"Never mind. Any further questions?"

"Yes. Who designed your ship, the *Red Peri*?"

"A very clever designer," she said, and then murmured softly, "a very clever one."

"He must have been!" snapped Keene angrily.

"He was. Have you anything else to ask?"

"You haven't answered one question so far," he growled. "But here's another. What do you think will happen when the *Limbo* doesn't arrive in Nivia when due? Don't you know that the next government rocket will be out to look for us? And don't you realize that they'll look for us first on Pluto? Your base here is bound to be discovered, and if you murder us it'll go just that much harder with you."

The Red Peri laughed. "That isn't even a good bluff," she said. "Titan isn't a quarter of the way between the Earth and Pluto, and it's getting farther from us every day. The next conjunction of Saturn and Pluto is fifty years in the future, and about the only time your clumsy rockets can make the jump is at conjunction. You ought to know that.

"And what's more, by the time you're missed, there won't be a thing to do but give you up as lost, and you'll not be the first Smithsonian expedition to be lost. And finally, if they did send out a searching party, how would they expect to find you? By blind reckoning?"

"By radio!" grunted Keene.

"Oh. And have you a radio on the *Limbo* ?" she asked gently.

He groaned and subsided. Of course there was no radio on the little expeditionary rocket; all its precious space was occupied by fuel, food, and necessary equipment, and besides, what possible use could a radio be to explorers out in the lonely vastness of extraplanetary space? The nearest settlement, Nivia on Titan, was hundreds of millions of miles beyond range of the most powerful beam yet developed.

The Red Peri knew as well as he how utterly hopeless was the expectation of any search for himself and Nestor. They'd simply be given up, called martyrs to science, regretted by the few experimenters who were interested in their results, and then forgotten,

"Any more questions?" asked the flaming-haired one inoctingly.

Keene shrugged, but suddenly and unexpectedly old Solomon Nestor spoke. "That entrance," he squeaked irrelevantly, pointing to the arch of the cave. "How do you keep the air here from rushing out?"

Keene whirled and stared in amazement. It was true; the cave was open to the frigid, airless outdoors; he could see the dusky Plutonian twilight through an unglassed, unblocked archway.

"At least that question is sensible," said the Red Peri. "We do it with a field."

"A field!" echoed Keene. "What sort—"

"You've asked enough questions," she cut in tartly. "I answer no more." She turned. "Elza, take these two into any unoccupied room with a metal door. If they're hungry, send them food. That's all."

She rose without a glance at the prisoners. Keene's eyes followed the exquisitely graceful figure as she trod as lightly as if she walked an Earthly corridor, followed by the five men who remained. Her radiant hair glowed far down the length of the passage until she turned aside and vanished.

He and Nestor followed the flaxen-haired Elza, and behind them, grimly silent, came the two men who had first appeared with her. She led them past a number of niches, side aisles, and several obviously artificial

chambers. The cavern seemed to stretch indefinitely into the depths of the Plutonian mountain, and was undubitably a natural cave, though here and there the floor or walls showed signs of human workmanship. At last the girl indicated a chamber to the right, and they entered a small room, furnished comfortably enough with an aluminum chair, a table, and two couches. These last were covered with deep and gloriously beautiful brocades, beyond doubt plunder from some freighter's cargo.

"This is yours," said Elm, and turned toward the door. She paused. "Are you hungry?" she asked.

"No," said Keene. He saw the two men standing in the corridor, and lowered his voice. "But will you talk to us a while, Elza? Alone?"

"Why?"

"I'd like to ask you something."

"What is it?"

He dropped his voice to a whisper. "You hate the Red Peri don't you, Elza? As much as we do?"

She turned abruptly to the door. "Father," she said evenly, "will you and Basil bring something to eat? I'll stay here; you can bolt the door on us."

There was a murmur without.

"Hush!" she said. "You heard. These two are gentlemen." The door closed and she faced them. "Well?"

"Can we be heard here?" asked Keene, glancing around the rock-walled chamber.

"Of course not. The Peri has no need to spy on her followers. She's clever enough to read men's feelings in their glances and the tone of their voices."

"Then she must know you hate her, Elza."

"I haven't said that I hate her."

"But you do. Does she know it?"

"I hope not."

"But you just said that she could read—"

"I said men," cut in the flaxen-haired girl.

Keene chuckled. "Why do you hate her, Elza?"

Her blue eyes hardened. "I will not say."

"Well, it doesn't matter, I suppose." He shrugged. "Elza, is there any chance of our escaping? Would you help us to—say, to steal the *Red Peri*? Our own ship's useless."

"They've gone to repair it. As for the *Red Peri*, I don't think you could operate it. It doesn't control like your rocket. I don't know how to run it."

"I could make a good try at it," said Keene grimly. "It would have to be the *Red Peri* anyway. They could run the *Limbo* down in three hours and blast it." A thought struck him. "Unless we could cripple the *Red Peri* first."

"I don't see how you could," said Elza. "She has the key to it hidden somewhere. And how could you even reach it? The space suits are locked up, too. You can't even step beyond the entrance."

That brought a new thought. "How do they seal the air at the entrance, Elm?"

"I don't understand how."

Solomon Nestor spoke. "I know that. She said they used a field. She meant—"

"Never mind now," said Keene. "Elza, are there any others here that might—well, side with us against the Peri?"

"No men. All of them worship her and"—her face darkened —"half of them love her."

"For which you can hardly blame them," muttered Keene. "She's about as lovely a female devil as you'd find this side of hell. Still, one would think she'd have some enemies, if only because of her cruel nature."

"She isn't cruel," said Elm reluctantly. "She's ruthless and arrogant and proud, but she isn't cruel—not exactly. I don't think she really enjoys torture."

"Well, her green eyes look cruel enough. Say, Elza, that dark fellow she called Marco. What of him?"

The girl flushed. "He's Marco Grandi. Why do you ask me about him?"

"Because he looks like a sly, calculating, shrewd customer, and there's a big reward for the Peri. I thought we might work on him."

Elm's flush darkened to anger. "He's—he's wonderful!" she blazed. "And if you think money would tempt him—or any of us—you're wrong. Each of us has a dozen times the amount of the reward."

Keene saw his error. "I'm sorry," he said hastily. "After all. I just caught a glimpse of him." He paused. "Does he, by any chance, love the Red Peri?"

She winced. "He's no different in that way than the rest."

"I see. But you—perhaps—wish that he were different—in that way?"

Elza brushed a white hand across her face. "All right," she said sullenly. "I love him. I admit it. That's why I hate her. He's dazzled; he thinks she'll learn to care for him; he can't see how utterly heartless and indifferent she is. That's why I'll do what ever I can to hurt her, but nothing to endanger him. If I help you, you must swear to protect him. If you escape, you must swear to that."

"I'll swear to it, but—can you help us?"

"I don't know. I'll try. I don't think she really wants to kill you, or she'd have blasted you there in the corridor. It isn't her way to hesitate and temporize and think things over. But you are a problem to her."

"That's good news," said Keene. "Say, how many residents are there in this pirate's paradise?"

"A hundred and five, including the children."

"A hundred and—Lord! This must be a pretty well established colony. How old is it?"

"Sixteen years. Her father built it, and it's almost self-supporting. There are gardens off in the side passages." She frowned. "I've lived here since I was four. I'm twenty now."

"And have you never seen the Earth?" Keene saw a chance now to offer more tangible inducement for aid. "Elza, you've missed the most glorious planet in the system—green fields and white snow, great cities and rolling, blue oceans, life, people, gaiety—"

"I went to school there for five years, at Gratia," she interposed coolly. "Don't you suppose we all visit there? Only of late the Peri has refused to let me go. I—I suppose she suspects."

"If we escape," said Keene softly, "you'll be free to live there forever. There will be life and happiness for you, Elza, once this pirate queen is taken and her band destroyed."

"Destroyed?" Her face paled again. "Not Marco. Not my father and my brother Basil. You promise me that. Promise it!"

"I'll promise. All I want is to bring the Red Peri to justice. I don't care about the rest, but—he rubbed his nose—"I've a little score to settle with her. Just the Red Peri herself."

A knock sounded. "Elza!" came a voice.

"Yes, father. Unlock the door and I'll take the tray." She turned.

"But you'll help?" whispered Keene. "With the Red Peri gone, you and Marco—do you understand, Elza? Will you help—just against her?"

"To my last breath!" she whispered.

III

Keene woke with a sense of unaccustomed luxury, and for a moment was at a loss to account for it. Then he realized that it was the sweetness of the air, strange to his nostrils after so many months of an atmosphere that, despite

the hard-working rectifiers of the *Limbo* , was anything but sweet. He wondered casually where the Red Peri secured her colony's supply of oxygen.

The Red Peri! He sat up sharply at the memory of the fantastically lovely pirate princess, for despite the reassurance of the girl Elza, he mistrusted the intentions behind the Peri's mocking green eyes. He rose, fumbled for the light switch, and glanced at his wrist watch. Though night and day were one in the cavern, he perceived that Pluto's ten-hour night was past, and that whatever daylight the black planet enjoyed was trickling over it.

Old Nestor still slept. Keene pulled a hanging aside and found water in a tiny pool; he bathed and pulled on the shirt, shorts, and shoes that were the only clothing he possessed. He ran his hand over his sandy, one-day beard, but his razor was inaccessably remote on the *Limbo* . Then he turned to see old Solomon's pale-blue eyes blinking at him.

"Morning," he grunted. "Glad to see we weren't murdered in our sleep by our pleasant hostess."

Solomon Nestor nodded. "I haven't slept so well since we left Nivia," he quavered. "Fresh air is a blessing."

"Yes. Wonder where she gets it."

"Mines it, I don't doubt," said Nestor. "There are millions of tons of it frozen out on the surface."

"That's true."

"And," continued the old man, "did you notice anything queer about it?"

"No, except that it smells good and fresh."

"I did. When that yellow-haired girl—Elza—lighted the Peri's cigarettes, did you notice the cast of the flame? Purple, distinctly purple."

"So what?"

"Why, it means neon. Nitrogen is scarce here; Hervey and Caspari both said that, and so they use neon as their filler. No one can breathe pure oxygen,

and neon is a good substitute for nitrogen, nearly the same density, and absolutely inert and nonpoisonous. That's important to remember. It may help us."

"Help us?"'

The old man waggled his head. "You'll see."

"Say," asked Keene suddenly, "what is the explanation of the cave entrance? We walked right through it—vacuum on one side, air on the other. She said they did it with a field remember?"

"I remember. She meant an electrostatic field. You know that like charges repel, and the molecules of air, battering against the field, acquire the same charge. They're repelled; they can't cross the field. It's like the electric wind from a static discharge, but here the wind that tries to blow in just balances the wind that tries to go out. Result, no wind either way."

"But we walked through it. Motion through a field produces a current. I didn't feel any."

"Of course not. You didn't walk through at a mile per second like a gas molecule, did you? Whatever current your motion produced was instantly grounded through your body and space suit, which are conductors. Air at normal pressure is a very poor conductor, so it retains its charge. Gases do retain static charges, as witness ball lightning."

"I see," muttered Keene. "Clever. Better than an air lock as far as convenience goes, though heat must radiate away through the field. But if they use atomic heat, they can afford a little waste."

"There'd be less loss there," said Nestor, "than to the rock walls. Heat could radiate, true enough, but it couldn't escape by conduction. A vacuum is the best heat insulator there is; look at our thermos containers on the *Limbo* . Radiation at temperatures below red heat is a very slow process. And remember that, too."

"I will," grunted Keene, "but right now I'm remembering that we have had no breakfast. Do you suppose her method of execution is slow starvation?"

He strode over to the door and pounded vigorously on it. "Hey! Hey, out there!"

There was no response. Irritably, he seized the knob and rattled it, and almost fell backward as the door swung smoothly open. It was unbarred!

"I'll be hanged!" he exploded. He peered into the deserted corridor. "Do you suppose this is Elza's doing?"

"If it is, it's not much help," said old Solomon.

"No. All the same, I'm going to take a look around. Come on; perhaps we can find some space suits."

"You'd need the key to the *Red Peri*, too, or at least the key to the *Limbo* , if they've locked it. I think"—old Nestor's brow wrinkled—"I'll sit right here and figure out something I've been thinking of. Even old heads sometimes get ideas."

"Suit yourself," grunted Keene, with very little faith in the potential ideas of the impractical old scientist. He strode boldly into the passageway.

There was no one visible. He turned left and proceeded toward the entrance of the cavern. Ahead of him a figure came suddenly out of an aisle—a feminine figure. He recognized the girl Elza, carrying a bright aluminum spade, and called her name softly.

She turned. "Hello," she said briefly, as he fell into step beside her.

"Been burying some pirate treasure, Elza?"

"No. Just some seeds in the garden."

"Did you unlock our door?" he asked.

"I? Yes. The Peri ordered it unlocked."

"Ordered it! Why?"

"Why not? Can you escape from here?" She gestured at a massive metal door as they passed. "Behind that is her room, and behind another within it

are the space suits and the keys to both ships. You're as much a prisoner as ever."

"I know, but isn't she afraid—well, of violence? We could kill her."

"She isn't afraid of anything," said Elza. "Anyway, what good would killing her do? It would be simply committing suicide."

"That's true," said Keene. They were approaching the entrance with its invisible electrostatic seal; now they stood staring out over the dismal, black, airless, Plutonian valley, where a thousand feet away was the dark cylinder of the *Limbo* . Suddenly a flare of light appeared beside it, flashed a moment, then vanished.

"What's that?" he asked sharply.

"Father's out there welding your jet. She thinks she may have a use for your ship."

"For what?"

"I don't know. It has exactly the lines of a League guard rocket. Perhaps she plans to use it as a decoy."

"And perhaps," said a cool voice behind them, "as a flying mausoleum with you two among the occupants."

They whirled. The Red Peri was approaching with her steps muffled by the soft buskins on her feet; besides her stalked Marco Crandi. Keene did not fail to note Elza's flush as she met the gaze of the dark man, but he felt a surge of anger at himself as he realized that his own face was reddening under the green eyes and mocking smile of the red-haired girl. He spat angrily, "You're a pleasant player when you hold all the cards!"

She said only, "Have you eaten breakfast?"

"No."

"Well, perhaps that explains your ill temper. Elza, go order a tray for two sent to my room, and one to Professor Nestor. And you, Marco—suppose you leave me."

"Here with him?"

She laughed and tapped an automatic at her belt. "I can take care of myself. Do you doubt it? You can go, Marco."

He muttered, "Yes, commander," and backed reluctantly away. The Red Peri turned her glorious, taunting eyes on Keene, smiled again, and said, "I've checked over your ship. Your story's straight enough."

"Well? What about us, then?'

"Oh, I haven't decided. You may have to die; it's more than likely that you will, but with no malice on my part. Purely as a matter of convenience, you understand."

He grunted. "Why'd you have our door unlocked?"

"Why not? I'm sure you can't escape. Look here." She took the bright aluminum spade Elza had placed against the wall, and thrust it half through the field into the airless outdoors beyond. He stared at it; except for a slight change in color as its crystals rearranged under the slow radiation of its heat, it seemed unaltered. When the knuckles of her dainty hand began to whiten with the cold of the metal, she tossed the implement on the floor at her feet.

Now it changed. Instantly white frost formed on the part that had been exposed; glittering crystals grew an inch thick, fuzzy covering, and began to spread along the handle. They sprang out as swift as the second hand on a watch, an inch—two inches deep.

The Peri laughed. "Would you like to stroll outside?" she gibed. "It's not cold—just ten above zero. Above absolute zero, I mean. Cold enough to liquefy and freeze all gases but hydrogen and helium. How long do you think it would take to freeze that hot blood and hotter head of yours?"

"Bah!" he said. "What's to keep me now from overpowering you, dragging you into some room, and using you as hostage to bargain for our safety?"

"If you could," she retorted coolly. "Even then it would be a poor idea; if you killed me your own death would follow very soon and very painfully; if you

didn't, I'd never be bound to any promises you wrung from the others. Your wisest course is to leave things as they are until I decide what to do with you. And incidentally," she added, with a narrowing of her green eyes, "don't pin your faith on Elza."

"On—Elza?" He was startled. "What do you mean?"

"Oh, I know she hates me. She's in love with Marco, or fancies so. I amuse myself by tormenting her, and I suspect that she'd go to some lengths for revenge, but she's quite as helpless as you. As a matter of fact, I'm doing her a good turn, for Marco is not particularly honorable. So I save her and insure his loyalty to me, all with one stroke."

"You—devil!" Keene gasped. "If there's one thing I'd like above all else, it's to drag you to justice. Ever since that day on the *Aardkin*—"

"When I pinched your nose?" she queried sweetly. "Here, then." With a rapid snap of her hand she twisted the same member with painful violence, laughed into his exasperated face, and turned away. "Come on," she ordered. "Here's breakfast."

"I'll be damned if I'll eat with you!" he snarled.

She shrugged. "As you like. This is all the breakfast you'll get, I promise you."

After all, breakfast was breakfast—he growled and followed her to the massive metal door; as it swung open he forgot a part of his anger in sheer amazement at the luxury of her chamber.

She had, apparently, culled the prize plunder of a score of raids to furnish this room. There were deep, silken rugs on the floor, rich tapestries, paintings from the salon of some luxurious Venusian liner, delicately worked aluminum furniture, even a carved mirror whose utter perfection must have originated in the incomparable lost art of Mars.

The man who bore the breakfast tray placed it silently on a table and withdrew. Here was another surprise. Eggs! And fresh ones, too, judging by the smell.

"Oh, we have a few chickens," said the Red Peri, reading his glance. "Enough to supply me, at least. Feeding them is rather a problem, you see."

Keene remembered his anger in time to reply with an irritable "humph!" For a moment he wondered why the exquisite presence of the Peri should affect him so violently, for he realized that much of his irritation was directed at himself. But of one thing he was certain, and that was that his most ardent desire was to humble the arrogant, self-sufficient, proud, and mocking pirate princess, to see her pay the assigned penalty for her crimes.

Then he frowned. Was be anxious to see her punished? What he really wanted was simply to see her arrogance and insolence humbled, to see her—well, frightened, or pleading with him, as a sort of recompense for the contemptuous way in which she treated him.

She spoke. "You're a silent table partner," she observed, "and yet I'm rather glad you two blundered in. I was getting frightfully tired and bored; I was considering paying a little visit to civilization."

"I suppose you realize," he growled, "that if we ever get back to Earth, your little visits are over. I'd be very glad to furnish a full description of the Red Peri."

"And do you think I'm the only red-head alive?"

"You're probably the most beautiful, and you know it."

She laughed contemptuously. "Keene, if you think you can play the sophisticated giver of compliments to my innocence, think again. I've been around. I've spend enough time in London, Paris and New York to know the social game. In fact, I have a carefully built-up identity there; my terrestrial friends think I live on Venus. So don't try what they call a fish net on me."

Her words gave him an idea. "Fish net?" he echoed with a deliberate air of sadness. "No. It's just that I have the misfortune to be about half in love with you, while the other half is pure hatred." Suddenly he wondered how much of a lie that really was.

She laughed again. "I half believe you."

"Which half?"

"Never mind. But," she added derisively, "whichever half it is, remember that it takes a better man than you to win the Red Peri's love."

"I didn't say I wanted it!" he snapped. "All you are to me is a vicious law breaker, and all I want is the chance to see you taken."

"Which you'll never have," she returned coolly. She leaned back in her chair and slipped a cigarette from a box. "Smoke?" she asked.

It was in the nature of a peace offering. He accepted both the truce and the cigarette, and puffed with thorough enjoyment.

"Keene," said the Peri, "would you like to see our establishment?"

He nodded. If the girl were proffering friendship, or at least tolerance, he was in no position to refuse it while she held the upper hand. But he would not accept it under false colors.

"Listen," he said, "there are lots of things I like about you. You've plenty of courage, and you've the devil's own beauty. But get this. If I see any chance of escape or any chance to capture you, I'm taking it. Is that plain?"

She nodded. "Keene, if you ever outwit the Red Peri, you're welcome to your winnings. But you never will."

She rose, and he followed her into the stone-walled corridor, glancing briefly at the mysterious archway with its invisible electrostatic seal.

"If your power ever failed," he said, "what would happen to your air here?"

"It won't fail. It's generated directly from disintegration. No moving parts at all. But if it should"—she gestured to the cavern roof—"there's an emergency air door. It will close instantly if there's any appreciable outward current. There's plenty of power to retain our atmosphere; we only keep a pressure of eleven to twelve pounds,"

"About the same as the altitude of Denver," he muttered as he followed her. "Prepared for anything, aren't you?"

He was really impressed by the neat little gardens in the side aisles, raised on Plutonian soil carefully selected for the proper elements. "But nitrogen is a troublesome job," she explained. "There's little of it to be had, and what there is is all mixed with frozen argon. We fractionate it, and then form ammonia, and so finally get it into usable form."

"I know the process," he said.

They penetrated deeper into the series of caverns that pierced the black Plutonian mountain. The fluorolux lights were fewer now, and there were long stretches of dim side passages with no lights at all.

"They're sealed off," said the Peri. "We're approaching the seal of the main cavern now. Do you see where it narrows ahead there? That's an electrostatic seal, but the side passages are blocked with concrete to keep out the crystal crawlers."

"The crystal crawlers!" echoed Keene. He had almost forgotten those curious creatures of the plutonian Salley. "Why don't they come through the electrostatic seal?"

"They do, but they seldom get far. You'll see why."

"What are the things?" he asked. "Are they alive? No one —Atsuki or Hervey or Caspari—ever reported them."

"I think they originated in these caverns. This whole region is honey-combed, and those in the valley are just strays. Explorers wouldn't be apt to encounter them."

"But are they alive?" he persisted.

"No-o-o," said the Red Peri slowly. "Not exactly alive. They're—well—on the borderline. They're chemical-crystalline growths, and their movement is purely mechanical. There are half a dozen varieties—aluminum feeders and iron and silicon and sulphur feeders, and others." She smiled impishly. "I have a use for at least one sort. Do you remember, or did you notice, the safe of the *Aardkin*? An iron feeder comes in very handy at times."

He grunted; somehow it pained him to hear the girl refer to her piratical activities. Before he could make any other reply they came suddenly into a large natural cavern beyond which showed the narrow opening which the Peri had indicated as the place of the electrostatic seal. A single light shed a dim radiance from far above, and in the faint luminosity he perceived a narrow, deep gash, a gorge or pit, that crossed the chamber irons wall to wall and even split the walls in dark tunnels to right and left.

"Here is our crawler trap," said the girl. She indicated a curious span across the chasm, a single heavy girder of metal that bridged the twenty-foot gap in four sharp zigzags. A precariously narrow bridge; the girder was no more than twelve inches in width.

"Copper!" he said.

"Yes. Apparently there are no such things as copper feeders to destroy our bridge. Do you see how the trap works? The crystal crawlers have no eyes nor sense of touch; they just crawl. The chances are infinitely against any of them moving at the proper angles to cross the gap. They go crashing down and crawl away below; although one blundered across once.

"Most of them aren't dangerous except to whatever they feed on." She gestured. "Beyond the seal is our air supply. There's a regular frozen subterranean sea of neon, argon, and oxygen, and we can draw on it almost forever. Don't you want to cross over and look at it?"

Keene stepped to the brink of the chasm and peered down. It was deep; the light from above trickled away into a mysterious darkness where only a few faint sparkles responded—crystals, doubtless, for a slow flicker of movement showed. He scowled at the precarious slenderness of the copper zigzag, and then, cautiously, he abandoned dignity, dropped to his knees, and crept slowly across on all fours.

It was only when he reached the far side and stood erect that he became conscious of the Peri's contemptuous sniff of laughter, and turned to see her walk casually and steadily across the angling span, balancing as easily as if she trod a wide roadway. He flushed a slow red; the girl had nerves of steel, true enough, but he realized she had done this as a deliberate taunt.

She strode to the narrow opening, where he now perceived the ring of copper points whence issued the electrostatic field, and above, on the roof, a suspended emergency lock like that at the outer arch. "There," she said, pointing. "You can see it."

He squinted into the darkness. A dozen feet away, the passage seemed to widen again, but into such a vast hollow that tile light from behind him failed utterly to show its bounds. But dimly and faintly as a sea of ectoplasm, he made out a shimmering, illimitable expanse of white, a vast subterranean drift of Pluto's fossil air.

"There goes the pipe to it," said the Peri. "We can get all we need by the simple process of heat, but now and then we have to lengthen the pipe. That's why this end of our colony is sealed by electrostatic. Oh! O-o-oh!"

She broke off in a startled scream. Keene whirled; the cave floor between the two of them and the bridge was covered with a rustling, irregular parade of blackish crystals!

"What's the matter!" he gasped. "We can kick them aside." He moved as if to do so.

"No!" cried the Pea. She seized his arm, dragging him back. "They're carbon feeders! Don't you understand? They're carbon feeders! Your body has carbon. They're—Look out!"

IV

Keene started back, realizing that a gray-black, flat- crystalled, dully shining lump was almost at his feet. He stared at the crawling masses; they had come, apparently, from beyond a jutting wall of rock to his right. The floor was speckled everywhere with them, and now and again one slipped with a faint tinkle over the edge of the central pit. But there were hundreds more; one couldn't wait here until the floor had cleared. He skipped aside; another had silently approached almost to his feet.

He acted. Suddenly he seized the Peri, raised her bodily in his arms, and dashed in an angling, irregular course for the bridge. The girl squirmed and said, "Put me—" Then she lay very still as he picked his way as delicately as a

dancer, sidestepping, skipping, twisting, to the copper spars—and over it. Half running, he took the four sharp angles, and at last, breathless, he set the Peri on the rock on the far side.

She looked coolly up at him. "Well!" she said calmly. "Why did you do that?"

"That's pretty thanks for it!" he snapped.

"Don't you think I could have done as well?" she retorted. "I asked you why you did it"

"Because—" He paused. Why had he done it? He suddenly realized that he had no desire to see the exquisite Peri die. To see her humbled, yes. Even to see her punished—but not to see her die. "It was pure impulse," he finished grimly. "If I had thought a second or two, I'd have left you to die."

"Liar!" she said, but smiled. "Well, I thank you for your intentions, though I could have done quite as well alone. But you're very strong, and—Frank!" Her voice rose. "Your foot! Your shoe! Quickly!"

He blinked down. Scarcely visible on the leather, a grayish-black coating of crystals was spreading, and almost immediately came a prickling pain in his toe. With a growling oath he kicked violently. The skin buskin went sailing in an arc over the pit, to fall squarely among the crawlers. Instantly it was a fuzzy mass of needlelike crystals.

The Peri was on her knees. "Your toe!" she wailed. Swift as a serpent she planted her own dainty foot firmly upon the arch of his. From somewhere she snatched a tiny, jeweled penknife, its blade flashing sharp as a razor. Still resting her full weight on his foot, she cut.

Despite his bellow of pain and surprise, she sliced away half his toenail and a goodly strip of skin beneath, kicked the bloody strip into the pit, examined her own pink toes for a moment, and faced Keene. For the first time in their acquaintance she seemed shaken; her wild, green eyes were wide with concern.

But it passed instantly. "Fool!" she snapped. "Fool!"

He was staring aghast at his bleeding toe. "Good Lord!" he muttered. "That was a narrow escape. Well—I'm not so sparing in my thanks as you. I say thanks for it."

"Bah! Do you think I want carbon feeders on this side of the pit? That's why I did it!"

"You could have pushed me into the pit, then," he retorted. "And I wish I had!" she snapped. She turned abruptly, and padded, barefooted, up the cavern toward the colony.

Keene shifted his remaining buskin to his injured foot and limped after. He was in a turmoil of emotions. There was something splendid about this pirate princess, something more than the simple fact of her exquisite and fantastic beauty. He swore angrily to himself for even admitting it, but limped hastily until he caught her.

"What's your name?" he asked abruptly.

"If you need a name to address me," she said coldly, "let it be commander."

"The only person I'll call commander is one I'm willing to serve, and that'll never be the Red Peri."

She glanced sidewise at him. "What's a name, anyway?" she asked in altered tosses. "See here. You're Frank Keene, but you're neither keen enough to outwit me nor frank enough to admit you love me."

"Love you!" he snorted. "Love you! Why—" He broke off suddenly. "Even if it were true," he went on, "do you think I'd have anything to do with a pirate, a murderess? However I felt, I'd still exert every effort to bring you to justice. How many deaths have you caused? How much suffering?"

"I don't know," she said. "But murder? I never killed anybody except in sheer self defense."

"So you say. What about the atrocities on the Hermes ?"

She looked up at him. "Frank," she said softly, "I had nothing to do with the Hermes . Don't you realize that people blame everything on the Red Peri? Every captain who suffers from some sneaking little freebooter blames me

for it. Why, I'd need a hundred ships to commit all the crimes they've pinned on me."

"But you're a pirate, nevertheless."

"Yes, but I have my reasons. I have, Frank. And—Oh, why should I justify myself to you, anyway? I don't care what you think of me."

"All the same," he growled, "I'll tell you what I think. I think your parents should have given you a series of good spankings. You're nothing but a spoiled, reckless, dangerous child."

"My parents," she echoed.

"Yes. Do you think they'd he proud of you now?"

"I hope," she said slowly, "that one of them would be." She paused at the door of her chamber, unlocking it. "Come in here," she ordered sharply.

He followed her into the lavish interior. She disappeared into an adjacent room, returning in a moment with a bottle and a strip of gauze. "Here," she said. "Dress your toe."

"It's nothing. It needs no dressing."

"Dress it!" she snapped. "I want no cases of infection here."

"I might"—he observed as he took the bottle—"die of the infection and thus save you a murder."

Her green eyes seemed to soften. "Remember this, Frank," she said in a low voice. "I could have let you die back there at the edge of the pit. I could have, but I didn't."

He had no answer. For a moment he gazed thoughtfully at the exquisite delicacy of her face, and then, irrelevantly, he asked again, "What is your name?"

She smiled. "Peri," she said.

"Really? Peri what? That's a strange name."

"Yes. It's the Persian word for imp or elf."

"I know. I've worked in Iraq. But it means more than just that; it's the name given to the child of a disobedient angel, waiting to he admitted into paradise."

Her features grew suddenly wistful. "Yes," she murmured. "Waiting to be admitted into paradise."

"But Peri what?" he repeated.

She hesitated. "If I told you," she said slowly, "you might understand. I think I will tell you, Frank. Did you ever hear of Perry Maclane?"

He frowned. "Perry Maclane," he muttered. "I—think so. Wait a minute. Do you mean Red Perry Maclane, the inventor who had the famous legal battle with Interplanetary? But that was years ago, years and years. I was a child of seven or eight; you must scarcely have been born."

"I was just born. Perry Maclane was my father."

"Red Perry your father? And—the ship! I see—*Red Peri* , named after him."

"Named by him, after me. He built it. He built it purposely to be a pirate craft, and you can't blame him!"

"Can't blame him! Why not?"

"Listen to me, Frank." Her glorious eyes were intense and serious. "Perry Maclane was robbed by Interplanetary and their associates. Do you know how dangerous space travel used to be, twenty-five or thirty years ago? Even fifty years after the first colonies were founded on Venus, it was a gamble with death to travel there.

"Trade was all but impossible; because the rocket blasts kept failing, and ships kept crashing in trying to land, or even plunged into the Sun. And then the thermoid expansion chamber was developed; the blasts became steady, safe, usable. Trade was possible, and Interplanetary became an enormous, wealthy corporation. But do you know who invented the expansion chamber? Do you?"

"Perry Maclane did! He invented it and patented it. But Interplanetary wouldn't let a little thing like honor stand in their way. They copied the

patent; they claimed one of their engineers had developed the chamber first; they fought the case through every court, and at last they fought Perry Maclane out of money, and won. It took four years to do it; and as the last year I was born and my mother died; and Perry Maclane was ruined.

"But he didn't give up. He worked at anything he could find—he, the greatest rocket engineer in the world! He dug sewers and planned drainage systems; he did any sort of work, but meanwhile, all the time, he was carrying the idea of revenge.

"Evenings he worked on the plans of such a ship as no one had dreamed of, a rocket with inherent stability, one that could flash through gravitational fields as easily as through interplanetary space, instead of teetering down on its jets, wobbling and compensating and inching lower. And when he had it—I was three then—he found those who supplied money to build it.

"He wasn't the only man Interplanetary had ruined; others hated the corporation, too. So he built the *Red Peri*, and began raiding corporation ships. He had no trouble manning his ship; he could have had a thousand men; but he picked and chose among the best for his crew.

"At first he worked out of the Australian desert as a base, but that became dangerous. He thought of the Moon, and of an asteroid; but at last, because he had a ship to which planetary distances meant nothing, he came here to build his colony. Save for the years I spent at school, I've lived here ever since."

"But what of Red Perry Maclane?" asked Keene.

"He was killed three years ago. Do you remember when Interplanetary's Captain Thorsen of the Lucrece shot one of the pirates? That was my father; he died and was buried as he wanted to be—in space. It was I who killed Thorsen, with my own hand as he shot at me."

He stared at her. Those were certainly tears in the glorious, emerald eyes. "Peri," he said softly, "but what will he the end of it? Arc you going on all your life pursuing revenge for your father? You're not really hurting Interplanetary, you know; they carry insurance. But you are slowing down

the development of the planets. It's come to a point where people are actually afraid to travel."

"Good!" she flashed. "Then it's less trade and fewer fares to swell the coffers of Interplanetary."

"But—good heavens, Peri! With a design like that of your ship you could make millions legitimately!"

"Oh, of course!" she retorted sarcastically. "Just as my father did from the thermoid expansion chamber."

There was no answer to that. He shook his head sadly. "Then do you intend to live out your life as a pirate until you're finally captured, or until you die out here on this miserable black planet?"

"I do not. I intend to carry out the plans of Red Perry Maclane. He wasn't fighting out of blind passion, you know. He built up his organization, here and on Earth, for a single purpose. Little by little, the plunder we take from Interplanetary goes back to Earth, to be turned into cash and securities, in banks in New York, London, Berlin, Paris, Tokyo. When I have enough—and a hundred million dollars will be enough—do you know what I'll do?"

"I don't, Peri." His eyes were glued to her tense, lovely face.

"Then listen!" she said fiercely. "I'll open a line competing with Interplanetary. I'll build ships like the *Red Peri*, and I'll drive their corporation to ruin! I'll have them groveling and begging, but this time I'll have money enough so they can't fight with crooked lawyers and bribed judges. I'll annihilate them!"

For a long time he stared at her strange loveliness, her wild, green eyes and flaming hair. "Oh, Peri!" he said at last, in tones of sadness. "Don't you see how insane such a plan is? Don't you know that once you produce the design of this ship, you'll be known as the pirate? No one else knows of it."

"I don't care!" she blazed. "The law can't touch anyone with a hundred million dollars. My father learned that from Interplanetary." And at his continued silence, she snapped, "Your advice would be to take it lying down, I suppose. I prefer to fight."

"But you don't have to declare war on the whole Earth on account of an injury done your father."

"War on the Earth? I haven't. But"—her green eyes glowed fiercely—"if I ever should, I could give them such a war as they never dreamed of!"

"What do you mean, Peri?"

"I'll tell you! Suppose I were to take one of those carbon feeders, like the ones that nipped your toe. Suppose I took just one tiny Crystal and dropped it in the jungles of Africa or in Middle Europe or in the wheat belt of America. All life has carbon in it. What would happen to the pretty, green Earth, Frank? What would happen to the crooked lawyers and the bribed judges, and all the rest, honest and dishonest, right up to the heads of Interplanetary itself?"

"My Lord!" he said.

"Can't you see the crystal crawlers rustling their way along?" she cried. "Wheat fields, houses, horses, humans!"

"Listen!" he said huskily. "Do you know what I ought to do? I know what my duty is. It's to kill you, right now and here, while I've got you alone. Otherwise that mad and reckless spirit of yours may some day drive you to do just that. I ought to strangle you now, but—by heavens—I can't!"

All the passion drained suddenly from her face, leaving it alluringly wistful. "I'm glad you said those last two words, Frank," she murmured. "Look." She raised her arms; he saw her hand resting firmly on the butt of her revolver. "Would it please you," she asked softly, "if I promised you never to think again of that particular revenge?"

"You know it would!"

"Then I promise. And now, tell me if you still blame me for being—the Red Peri. Do you?"

"I don't know. I think—perhaps—you are justified for feeling as you do, but, Peri, it's madness."

"What would you want me to do?"

"Why—the sane course, the honorable course, would be to make restitution, to return everything you've stolen; and then to give yourself up, to expiate the wrongs you've done, and so be free to live without the need of burying yourself out here at the edge of nothingness. I don't say you could do all of that, but at least you could return what you've taken and live as you were meant to live—honorably and happily."

"Honorably and happily!" she echoed bitterly. "Yes, except for the realization that I had failed my father."

"Your father was wrong, Peri."

She blazed in sudden anger. "Oh, you're too smug and self-righteous to live. I was going to offer you your freedom; I thought you'd understand and protect me, but now do you think I dare trust you to return to Earth? Now you'll stay as my prisoner!"

"Some day," he said evenly, "I'll drag you back to justice, Peri, and after you're free you'll thank me for it."

"Get out!" she cried. "You're stupid! I hate stupidity!"

He looked quietly at her angry, exquisite face, rose, and stalked out of the door. For a moment he stood irresolute in the corridor; then he strode toward the room he shared with Solomon Nestor, ignoring the glances of a number of residents as he went. And as he opened the door, the first person he saw was the girl Elza, in close conversation with the old man.

They looked up as he entered, and the flaxen-haired girl drew away, staring at him with a curious expression in her blue eyes.

"Oh, bosh!" said the old man. "Elza, you're simply letting your imagination make you nervous. Listen, Frank—this girl came running here to tell me that you've been spending hours in the Red Peri's company, and that you were probably falling under her magic charms; and now Elza's afraid you're going to betray her to the Peri. Ridiculous, isn't it?"

"Utterly!" snapped Keene, wondering how much of it was ridiculous. He felt himself reddening, and repeated hastily, "Utterly ridiculous!"

"You see?" said old Nestor triumphantly. "All right, Elza, let's get on with this. You say you're sure you can't smuggle space suits to us?"

"I'm sure I can't. They're kept locked up by the Red Peri, and I can't get to them."

"But your father and brother wear them when they go to either ship, don't they?"

"Yes, but I wouldn't dare ask them. They'd tell the Peri. I know that."

"Well," said old Solomon thoughtfully, "if we can't get space suits, we'll have to do without. But you can get the key to one of the ships, can't you?"

"Not to the *Red Peri* ," said Elm. "To your ship, perhaps, because my father has that while he's working on it. I could steal it away from him, I think. He just keeps it in a desk."

"What good would the *Limbo* do us?" grunted Keene. "They could run us down with the other. They could blast us to bits."

"They could, but they won't," retorted the old man. "You leave this to old Solomon. Now Elza when will your father have the jet repaired?"

"I think he's finishing it now."

"And could you smuggle the key to us to-night?"

"I think so. I'll try. To-night or tomorrow."

"Good!" said Solomon Nestor. "You run along now, Elza. You'll have your revenge on the Red Peri—if you're a good girl."

The yellow-haired girl vanished. Old Nestor turned quizzical eyes on Keene and mid mockingly, "Ridiculous, eh! Utterly ridiculous!"

"What?"

"That you should be impressed by the Red Peri. How could so unattractive a being effect the redoubtable Frank Keene? Very ridiculous!"

"Oh, shut up!" growled Keene. "I admit she's beautiful, and I admit that what she told me has changed my opinion of her. All the same, I think she's

arrogant and overbearing. I'm just as anxious as ever to see her take a fall, and if I can trip her, that's fine. But I don't see how the key to the*Limbo* helps."

"Yost will. Tell me what the Peri said to you:"

Keene recounted the story of "Red" Perry Maclane. Despite himself, he told it with a tinge of sympathy, and when, after concluding it, he described the events at the copper bridge, he was uncomfortable aware of old Nestor's steady gaze. He finished his tale and stared defiantly back.

"Well!" said the old man. "I suppose you realize that she risked her life for you—or at least the chance of having to cut off a finger or two. What if she'd touched the carbon feeders on your toe?"

"I-I hadn't thought of it."

"And now that you do think of it, are you still so bitterly determined to humble her?"

Keene considered. "Yes!" he snapped. "I am. I don't want to hurt her, but I do want to get back at her for the way she's insulted, browbeaten, and mocked me. I want to see her take a fall."

"Even though it means capture for her?"

Keene groaned. "Listen, Solomon. Right now I'm so puzzled that I'm not sure. But I do know that I want to see the Red Peri paid back for the way she's acted toward me."

"All right. I think you're in love with her, Frank, though it's none of my business."

"Damn' right it isn't!"

"But," proceeded Nestor, "just how badly do you want to do this?"

"With all my heart!"

"Would you risk your life and hers to do it?"

"My life," said Keene grimly, "but not hers."

"Good enough. Now the first thing to do is talk you out of a few superstitions."

"I haven't any."

"You have, but you don't know it. Listen, now." The old man bent closer and began to talk in a low, earnest voice. At his first words Keene paled and started; then he sat very still and very intent. After five minutes of listening, he drew a deep breath, expanding his mighty chest to the full.

"I used to plunge at the university," he said exultantly. "I could hold my breath for four minutes. I can still do three and a half!"

"That's plenty," said Nestor.

"Yes, if it works. If it works!"

"If I were you," said the old man, "I'd find out—now!"

For a full minute Keene stared at him. Suddenly he nodded, turned swiftly away, and darted out into the corridor. In five minutes he was back again, but sadly changed, for his lips were swollen, his eyes red, and his breath a rasping gurgle. But he was sniffing.

"It works!" he gasped triumphantly. "It's unadulterated hell —but it works!"

V

Elza did not appear that night, although Keene tossed and twisted wakefully far miserable hours. In the darkness the thing he had to do appeared grotesque, fantastic, impossible; and this despite the fact that he had already tested the truth of old Solomon Nestor's reasoning. His toe ached and his lips and eyes burned, but more painful than all else was the idea of inflicting harm on the courageous and proud Red Peri.

When, well toward the end of the ten-hour Plutonian night, he finally fell into troubled slumber, it was but for a brief while, and he rose sullen and morose to pace the floor of the chamber.

The fluorolux light awakened old Nestor. For a few moments he watched the pacing Keene, and then asked, "Did Elea come?"

"No, and I hope she doesn't," snarled Keene. "I hope she couldn't get the key—and if she does get it, I'm not going through with this!"

"It's your business," said Nestor indifferently. "It doesn't mean anything to me, because I'd never live through it, not at my age. I have to stay here anyway, and I shan't mind, because Elza said they'd move my instruments into the cave; and I can work here almost as well as farther out in space. But if you love the girl so intently, why don't you act like a human being and tell her so?"

"Love her!" yelled Keene. "Just because r feel like a dirty dog at the thought of this, doesn't mean I love her! She's a girl, isn't she?"

"And a very beautiful one."

"Bah! She's a girl, and I hate to fight women!"

"Well, don't then," suggested old Solomon.

"Yet I want like the very devil to get back at her."

"Then do."

"And yet, in a way I can't blame her."

"Then don't."

Keene resuming his pacing. In another minute he stopped, faced the old man, and said defiantly, "Solomon, I can't do it. I know she's a pirate and a menace to trade and civilization, but I can't do it."

Before the other could reply, a knock sounded on the door. Keene whirled. "I hope," he muttered, "that it's breakfast—just breakfast."

It was. Elza brought it in silently, placed it on the table, and retired; and Keene felt a vast surge of relief. She hadn't managed to get the key! He was almost ready to sing until he picked up his cup of coffee and there it was—the familiar key to the outer door of the *Limbo*'s air lock.

He met old Nestor's amused, blue eyes with a cold glare, and it was hardly softened by the other's murmur: "After all, Frank, you don't have to use it."

"I know I don't!" he snarled. "I have a fine choice, haven't I? I can stay here the rest of my life, if our hostess doesn't take a notion to kill me, or I can escape by following your scatterbrained plan of doing a thing I hate. I can't escape alone, for they'd simply run me down with their pirate ship."

"Or you could turn pirate," suggested Solomon Nestor.

"Gr-r-r!" said Keene amiably.

He was unaccustomed to this sort of agonized indecision. He had never encountered a situation that pulled so many ways at once; for in all his experience right had been right and wrong had been wrong—yet now he was not at all sure but that the laws of relativity operated in the moral field as well as in the physical. Certainly the Red Peri was not entirely in the wrong, yet equally certainly she was a pirate, a menace to progress, an antisocial being, and therefore a criminal. If she would only give up this mad purpose of hers; if she would make restitution; if she—He swore bitterly and strode out of the door, scarcely realizing that the *Limbo*'s key was in his pocket.

He turned at random toward the outer arch of the cave. Figures in space suits were passing in and out through the electrostatic seal, and he noticed that the outgoing men were laden with cases, boxes, cans, and bundles. He stood at the very edge of the seal and stared out into the dim, nightlike morning of the black planet. Beside him a row of metal-clad figures clanked outward, their footsteps dropping to sudden silence the instant they trod into the airless outdoors. He watched them carry their burdens to the *Red Peri* , where an air lock swung open to admit them. They were loading the ship.

Keene stared disinterestedly, without comprehension. Then, abruptly, the meaning dawned on him. He stiffened, peered closely through narrowed eyes, and spun to accost a metal-sheathed figure that approached, Marco Grandi, for he could see the dark, aquiline features behind the visor.

"What's this?" Keene snapped. "You're cargoing the *Peri*. For what?"

Grandi made no answer, and Keene planted himself squarely in the other's way. "For what?" he blazed.

The metallic voice of the diaphragm clicked. "Stand aside. We're busy."

"I'll keep you busy!" he roared. "I'll—I'll—"

"You'll what?" queried the cool tones of the Peri.

Keene whirled. The girl stood at his side, clad in an all-enveloping, clinging robe of bright green that echoed the infinitely more brilliant emerald of her eyes.

"They're stocking the *Red Peri* !" he shouted.

"I know it."

"Why? For what purpose?"

"For purposes of business."

"Business! You mean for purposes of piracy!"

"Piracy," she said coldly, "is my business."

"It was your business, you mean!" With a great effort he controlled himself and faced the mocking, green eyes. "Peri," he said more calmly, "I want to talk to you."

"It isn't mutual."

"I want to talk to you," he repeated stubbornly, "alone." He glanced at the hostile eyes of Marco Grandi.

The Peri shrugged. "Go on out, Marco," she ordered, and then to Keene, "Well? What is it?"

"Listen," he said. "I want you to quit this business. I want you to be fair to yourself. You're capable of infinitely greater things than piracy."

"I know it. When I'm ready, I'll achieve those greater things."

"Oh, revenge!" he snapped. "Suppose you succeed. Do you think you'll be any happier?"

"And if I'm not," she countered, "what is it to you?"

He drew a deep breath. "It's a lot to me," he said soberly, "because you see, Peri, I happen to love you."

Her green eyes did not change. "What you call love," she said contemptuously, "isn't my conception. If you loved me you'd take me exactly as I am."

"I was brought up to believe in honesty, Peri"

"And I," she retorted, "was brought up to believe in honor. Red Perry Maclane's honor needs avenging, and there's none but his daughter to see to it."

Keene pounded his fist impatiently against the wall. "Peri," he said at last, "do you love me?"

She made no immediate reply. From somewhere in her heavy silken gown she produced a cigarette, lighted it, and blew a gray plume of smoke toward the seal. "No," she said.

"Why did you risk your life for me back there at the pit? What if you had touched the carbon feeders?"

She glanced out into the cold, black valley. "I may have thought I loved you then," she murmured, eyes still averted. "That was before I knew how little you could understand my feelings. We're just—not the same sort."

"I think we are," said Keene. "We've simply learned different moral codes, but—Peri—my code's the right one. Even you can see that."

"It's not for me. What my father wanted is the thing I want and the thing I'm going to do."

He groaned and abandoned that line of attack. "What do you expect to do with Solomon Nestor and me?"

She made a helpless little gesture. "What can I do? I have to leave you here." She turned her green eyes back to him. "Frank, if you'd promise to keep this place and my identity a secret, I think I'd be willing to release you."

"I can't promise that."

Her voice hardened. "Then here you stay."

"So you've given up the idea of killing us?"

"Oh," she said indifferently, "I'm always indulgent to those who claim to be in love with me."

Her attitude angered him. "You're pretty confident, aren't you? If you leave us here while you're off pirating, you know damn well we'll be doing our best to overcome you."

"And I know damn well that you'll never outwit me," she retorted.

Keene's hand suddenly encountered the *Limbo*'s key in his pocket. "I won't, eh?" he muttered. "See here, Peri. Are you determined once and for all to stick to this scheme of yours?"

"Once and for all, I am."

"And it makes no difference that I tell you I love you?"

She turned abruptly and faced the grim outdoors, staring over the dead, cold, black Plutonian landscape. "It makes no difference, Frank."

"And nothing I can say will make a difference?"

She gestured impatiently, still staring far away. "Oh, what's the use of arguing? No, Frank."

He looked silently at her, seeing her, seeing her glorious hair flaming against the cold background of black mountains. He peered thoughtfully down the deserted corridor, and then at the *Red Peri* . The valley was lifeless; the men were within the vessel and the air lock was closed. Dim across the plain was the dull bulk of the *Limbo* , whose key was clutched in his hand.

"Well," he muttered sadly, "you've asked for it, Peri."

She did not turn. "For what, Frank?"

"For this!" he cried, and with a sudden lunge he sent her and himself staggering, unarmored, into the airless Plutonian plain, and into a temperature of ten degrees above absolute zero!

VI

Instantly he was in hell. The breath rushed out of his lungs in a faint expansion mist that dissipated at once, the blood pounded in his aching ear drums, his eyes seemed to bulge, and a thin stream of blood squirted darkly from his nose. His whole body felt terribly, painfully bloated as he passed from a pressure of twelve pounds per square inch to one of nearly zero. He fought his agony grimly; he had to hold consciousness as long as he could. But old Nestor had been right; he was living.

He had a momentary impression of the Peri's green gown billowing up from her glorious body like a balloon, to settle hack instantly as the bound air escaped. Then she whirled, eyes wide, mouth open and straining for air that simply was not there, hands clutching frantically at her gasping throat. She was in full command of her own agile mind, and she sprang convulsively for the archway and the seal. Grimly he thrust her back.

She was trying to scream. Her breast rose and fell in futile, soundless, panting gasps; moisture formed on her forehead and vanished instantly. Swift as a deer she darted again for the archway; and again he controlled his agony to smash her back.

For once in her life the Peri knew sheer panic. No longer had she the coordination of mind and muscle that might yet have encompassed escape. Fierce pain and utter fright had robbed her of it; and for a few seconds she could only thrust aimlessly against Keene's braced body, her hands fluttering frantically, her legs pushing convulsively, her lovely, pain-racked, wild, green eyes but inches from his own.

He had a double task now; he had to hold her back from the entrance and at the same time keep any part of her twisting body save her shod feet from contact with the searing cold of the rocky ground. He clutched her violently against him. Suddenly her struggles grew weaker, her hands went vainly to her tortured throat, her hands closed, and she collapsed.

They were almost at the air lock of the *Red Peri*. He saw it fly open, he glimpsed Marco Grandi's appalled face behind his visor, but he had no fraction of a second to lose. He swung the Peri across his shoulder and set

off on a staggering run for the *Limbo* , more than nine hundred feet away across a vacuum and a cold only less than those of space itself. Grandi could never catch him; no one could run in a space suit.

The Peri was not light; on Earth she might have weighed a hundred and fifteen pounds, but here it was more like a hundred and forty. His own weight was greater too, but he felt none of that; the excruciating torment that racked his body erased all lesser tortures.

He crashed unseeing through a parade of aluminum feeders, and blood spurted wildly from a tiny scratch on his ankle, and then—then he was fumbling at the *Limbo*'s lock.

The door flew open from its inner pressure; he bundled himself and the Peri within, pulled it to, and collapsed as the hissing of the automatic valve sent a heavenly stream of air against his face. He had crossed a thousand feet of vacuum and still lived!

The air pressure reached normal. He fought to his knees, opened the inner door, and dragged the girl through it. She lay with her magnificent hair streaming on the steel floor; blood trickled from her nose—but she breathed.

Keene had work to do. He thrust wide the feed to the under-jets, and the ship roared, rising shakily as he peered through the floor port at Marco Grandi plodding desperately across the plain. He let the *Limbo* rise aimlessly; later he could set a course.

He dragged the limp Peri to a chair. About her slim waist he twisted the iron chain from the aft ventilator, and locked it with the padlock of Nestor's empty bolometer case. The other end he locked carefully to a hand hold on the wall, and only then, laboring and gasping, did he turn his attention to the medicine kit.

He poured a half tumbler of whiskey and forced a good portion of it between the Peri's lips. Still pain-tortured, it was yet agony to him to see the lines of anguish on her unconscious face, and to hear the choking of her breath. She coughed weakly from the liquor, and moved convulsively as he

sprang back to the controls and set the *Limbo* nosing sunward. That was close enough for the present; later he could lay a course for Titan.

The Peri stirred. Her uncomprehending green eyes looked vaguely toward him, and then about the chamber. She spoke, "Frank! Frank! Where am I?"

"On the *Limbo* ."

"On the—" She glanced down; her hand had encountered the chain about her waist. "Oh!" she murmured, and stared at it a full half minute. When she looked up again her eyes were quite clear and conscious. "You—you've got me, Frank, haven't you?"

"Right where I want you," he said grimly. Strangely, there was no satisfaction in it. He had wanted to see her humbled, but now it was pure pain.

"Why—aren't we dead, Frank?" she asked slowly. "We were—in the airless valley, weren't we? How is it that we still live?"

"I'll tell you, Peri. It was old Solomon's idea. Everybody's been believing a lot of superstitions about space, but he figured out the truth. It isn't the vacuum that's dangerous, and it isn't the cold; it's the lack of air. We couldn't freeze, because a vacuum is the best insulator there is; we aren't like that aluminum spade of yours, because our bodies actually produced heat faster than we radiate it away. In fact, it really felt warm to me—as far as I could be conscious of any feeling in that hell.

"And as for all the gruesome stories of lungs collapsing and all that, every high school physics student sees the experiment of the mouse under the bell jar. An air pump exhausts the jar to the highest vacuum it can attain, the mouse loses consciousness—just as you did, Peri—but when the air returns, it recovers.

"Its lungs don't collapse because there's no outer pressure to crush them, and its body doesn't burst because the tissues are strong enough to maintain that much internal pressure. And if a mouse can stand it, why not a human being? And I knew I could stand lack of air longer than you."

"It seems you could," she admitted ruefully. "But still, Frank, that terrible drop in pressure! I see that we didn't explode from it, though it felt as though we should; but I still don't see why."

"I tell you because our tissues are too tough. Look here, Peri. The pressure at sea level on Earth is 14.7 pounds per square inch. The pressure on top of Mount Everest is four pounds per square inch. That's about six miles above sea level.

"A hundred and fifty years ago, way back in 1930, open airplanes flew over Mount Everest. The pilots didn't suffer much from lack of pressure; just as long as they had oxygen to breathe, they could live.

Yet from sea level to 29,000 feet altitude is a drop of eleven pounds per square inch—almost exactly the drop from the pressure in your cave to the pressure outside.

"The human body can stand that much of a drop; all it really does is cause altitude sickness. As a matter of fact, a pearl diver going down in four of five fathoms of water meets a greater variation than that. Plenty of South Sea skin divers work in that depth, utterly unprotected. What might have happened to us is the bends, but your own air system thoughtfully prevented that danger."

"M-my own air system?"

"Yes, Peri. The bends are the result of decreasing pressure, which ordinarily causes the blood to give up its dissolved nitrogen as bubbles. It's the bubbles that cause the disease. But your air doesn't contain nitrogen; it's made of oxygen and neon, and neon doesn't dissolve! So—no dissolved gases, no bubbles, and no bends."

"But—it's fantastic! It's impossible!"

"We did it. What do you think of that?"

"Why"—her voice was meek—"I think you're very courageous, Frank. You're the only man ever to see the Red Peri frightened, and you've seen that—twice."

"Twice? When was the other time?"

"When—when I saw the carbon feeders on your foot."

"Peri!" he groaned. "This whole thing has hurt me enough, but now if you mean—"

"Of course I mean it," she said, looking steadily at him. "I love you, Frank."

"If I dared believe you, Peri—you know I love you, don't you?"

A faint trace of her old mockery glistened green in her eyes. "Oh, of course," she said. "I could tell it because you've been so kind to me."

Her sarcasm tortured him. "I had to do it. I have to bring you over to my side of the fence, Peri—the honest side."

"And you think you can?"

"I can try."

"Really?" she taunted. "Frank, don't you know my ship will be alongside in a matter of minutes? You can't outrun the *Red Peri* in this tub. You have me helpless now, but I won't be so for long."

"Indeed? Well, tub or not, the *Limbo*'s solid. They don't dare blast the ship with you aboard, and if they try to tie up and cut their way in"—he turned narrowed eyes on her—"I'll ram the *Peri*! As I said, this ship is solid, far more solid than your triangular speedster. I'll smash it!"

The faint color that had returned to the Peri's face drained out of it. After a moment she said in very low tones, "What are you going to do with me, Frank?"

"Peri, I'm going to take you back to trial. After you've expiated your crimes—and with your beauty in an American court the sentence will be light—I'm going to marry you."

"Marry? Yes, I'd marry you, Frank, but don't you realize piracy is tried under maritime law? The penalty is—death!"

"Not for such a woman as you. Three years—no more."

"But I'm wanted in every country on Earth, Frank. They'll extradite me. What if I'm tried for murder in an English court?"

"Murder?" he echoed blankly. "I—I hadn't thought of that. My Lord, Peri! What can we do?"

"What we do is in your hands," she said dully. He saw tears in her green eyes.

"I—don't know. I swore a solemn oath to uphold the law, I—can't break an oath. Peri," he cried fiercely, "I have money. I'll fight through every court in the country to prevent your extradition. You'll return all you've taken. They'll be lenient; they have to be!"

"Perhaps," she said tonelessly, "Well, I don't care. You've won, Frank. I love you for it."

Impulsively he dropped the controls, strode over to the chained girl, and kissed her. He had to make it brief, for his own eyes were suddenly misty. At the controls again, he swore bitterly to himself, for he realized now that he could never risk bringing the Red Peri to trial. He thought somberly of his broken oath; that meant nothing if keeping it endangered the girl he loved.

He formed a plan. At Nivia on Titan there'd be an inspection of the ship. He'd hide the Peri—in a cool jet, perhaps—and tell his story without mention of her capture. He'd disclose the location of the pirate base and let the government rockets rescue old Solomon and destroy the colony. And then he—

Then? Well, he'd land the *Limbo* in Iraq. He had friends there who'd keep the Peri safe. He'd fly home and resign his damned official position, and so be free to marry pirate or murderess or any one he chose—and no one would ever know that the lovely Mrs. Keene had once been the dreaded Red Peri.

For the present he'd let the girl believe he was taking her back to punishment; at least that might frighten her into a respectable life. He smiled, and looked up to find the luminous green eyes fixed steadily and unhappily on his face.

Before he could speak the buzzer of the static field sounded the signal that warned of meteors. But meteors were rare indeed out here beyond the orbit of Jupiter. He stared back at the vast black disc of Pluto, and true enough, there was a little flare of light against the blackness that could mean only a rocket blast. Second by second the flame approached, and the *Red Peri* rushed toward him as if his own blast were silent.

The pirate ship paralleled his course. Suddenly the annunciator above him spoke; they had trained an inductive beam on it. "Cut your jets!" came the words in a cold metallic voice that was still recognizable as Marco Grandi's.

He had no means of reply, so he bored grimly on. The *Red Peri* flipped close beside him. "Cut your jets," came the order, "or we'll blast you!"

Keene thought suddenly of the communication system from the pilot room to the stern. If he spoke into that, and if their tubes were sensitive enough, it was possible that their receiver might pick up the induced current. He switched it on full.

"*Red Peri* !" he called. "Can you hear me? Can you hear me?"

Reply was immediate. "We hear you. Cut your jets!"

"I won't," said Keene. "If you come a single yard closer I'll ram you. The Peri's aboard, and if you blast this ship you'll kill her as well as me."

There was a silence. "How do we know she's alive?" asked Grandi's voice.

"Watch the forward port," said Keene. He unlocked the chain at the hand hold. The girl made no resistance as he led her to the port, following as meekly as a puppy on a leash.

"I'll have to make this look serious," he said. "I'm sorry, Peri." He twisted his hand roughly in her glorious hair and thrust her close against the port. After a moment he released her, led her back to her chair, and relocked the chain.

"*Red Peri* ," he called, "move away or I'll ram you. Keep a quarter mile distance."

There was no reply, but the pirate ship slanted silently away. Like a child's model it hung in the void, tenaciously paralleling his course. But he knew it was helpless; Grandi dared not risk the Peri's safety.

Nearly an hour passed before the Peri spoke. "I don't understand you, Frank," she said miserably. "When your life was in danger I risked mine to save you, but you risk your life to destroy me. Is that what you mean by love?"

"I risked mine, not to destroy you, but to save you," he muttered. "Peri, I couldn't bear the thought of your living such a life as you have been living. I want you to be happy."

"Happy," she echoed mournfully. "If this is your idea of happiness—" She left the sentence unfinished.

Hour after hour the pirate clung grimly beside them. After a long time Keene slept, trusting to the buzzer to rouse him if Grandi should attempt to cut through. The last thing he saw was the luminescent eyes of the Peri, and they were the first thing he saw on awakening. She sat as if she had not moved.

Another day passed. Pluto was a pallid, tiny disk far behind them, Neptune and Uranus were beyond the Sun; but Saturn gleamed brightly. All day the Peri was mournfully silent, and when he kissed her before sleeping, she clung to him almost as if in panic. He remembered that later, for when he awoke she was —gone.

Gone! The chain was missing, and only a square of paper—a star chart—lay on her chair. She wasn't on the *Limbo* , and the *Red Peri* no longer hung silent on the left. He seized the note in a frantic clutch. He read.

Frank—dearest Frank—this is farewell. I love you; and the proof of it is that I could have escaped before this while you slept; but I wanted to stay. I was all but willing to suffer before the law if it meant having you—but I can't. Not even three years, because I'd die without freedom.

I had an iron feeder in my pocket, for I always carry them on raids, as you remember from the Aardkin. It's eating the chain now, but it won't attack chrome steel; your floors and walls are safe.

Frank, if you had weakened, if you had promised me safety, I think I should have stayed, but—perhaps—then I should have loved you less than I do now.

Good-by

The note was unsigned. She had taken a red chart pencil and drawn a creditable picture of a tiny, winged elf—a red peri. Keene knew what she had done. There were no space suits on the *Limbo*, for he and Solomon had worn them to the pirate cave. She had signaled her ship, opened the air lock, and braved once more the vacuum of space to fling herself across. When he had finally exhausted his vocabulary of expletives and blasphemies, when he had at last called himself all the varieties of fool he knew, Keene realized what he had to do. He couldn't find her on Pluto, since the Peri would certainly move her base elsewhere for fear he'd direct a government rocket there. But what he could do, what he had to do, was to get a job on an Interplanetary freighter, and then wait. Sooner or later—sooner or later, he repeated grimly—he'd meet the *Red Peri* again.