

Nonstop to Mars

By JACK WILLIAMSON

# ARGOSY



WEEKLY

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## FAST and LOOSE

by MARCO PAGE

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Action Stories of Every Variety  
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Cover by G. J. Rozen

*Illustrating The Axe Bites Deep*

*This magazine is on sale every Wednesday*

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He staggered across that terrible land—alone

# Nonstop to Mars

By JACK WILLIAMSON

*Here is the record of Lucky Leith's incredible flight; how he piloted his ancient ship through the thunder between two worlds—to become the first Robinson Crusoe of space. A complete novelet*

## I

SOMETHING was queerly wrong—with either the ship or the air. And Carter Leigh knew that it couldn't be the ship. The creaking old *Phoenix* might be obsolescent in a world that the new cathion rockets had conquered, but he knew every bolt and strut of her. Knew her well enough to take her apart and put her up again, in the dark. And loved her, for her loyalty through six years and half a million miles of solo flight.

No, the trouble couldn't be in the *Phoenix*. It had to be the atmosphere.

He couldn't understand it. But the barometric altimeter had kept luring him

down, toward frozen peaks that loomed a thousand feet higher than they should have been. The engine labored, and the thrust of it weakened dangerously. And the wind that struck him over the pole was a screaming demon, more freakishly violent than he had ever met before.

It baffled him. Through all the endless, weary night, deaf with the long thunder of the loyal old engine, sitting stiff with cold even in his electrically heated suit, gulping coffee from a vacuum jug, pouring over charts and studying instruments with aching blood-shot eyes—ever since the last strange sunset, he had hopelessly picked at the sinister riddle.

Nonstop flights were nothing new to

Carter Leigh. Men, looking at the long record of his feats, had nicknamed him "Lucky." But he had something more than luck. In his lean body there was the tremendous endurance that it took to fly on, hour after straining hour, when most men would have dropped over the stick.

And this flight—nonstop from Capetown to Honolulu, across the bottom of the world—had promised to be no harder than the rest. Not until he saw that last sunset.

Behind him, beyond the cragged granite fangs of Enderby Land, as he climbed above the ramparts of the polar plateau, the sunset had been frighteningly strange. An incredible wheel of crimson, rolling along the rim of the world, it had been winged and tufted with eldritch green.

The aurora was another disquieting scrap of the puzzle. It burned above him all that night, whenever the sky was clear, until all the white antarctic wilderness seemed on fire with its sinister and shifting brilliance.

The cold was another thing. Leigh had made polar flights before. But never had he met such merciless temperatures. The motor, even with cowl ventilators closed, grew sluggish with it. It crept into the cockpit and probed deep into his body.

Beyond the pole and Marie Byrd Land, over the dark Antarctic again, he met a wall of cloud. He tried to climb over it. Heavy and dull with altitude and fatigue, he opened the oxygen valve. The vital gas revived him a little. But the plane could not scale the summits of vapor. He flew into them—wondering.

**S**AVAGE winds battled in the cloud, and it was riven with lightning. Rain hammered the ship, and froze on it, until the ice dragged it almost to the surface. Leigh fought the elements, and fought the mounting weariness in him, and came at last unexpectedly into the calm of a strange northward dawn.

The aurora was fading from a sky grown brilliantly clear. Studded with white points of icebergs, the gray South Pacific was

sliding back at three hundred and fifty miles an hour—still a good pace, he thought stubbornly, even if the rockets were three times as fast.

Leigh was peeling an orange, beginning to hope that all the terror of the night had been the child of fancy and fatigue, when he saw the thing in the northeast. Against the red and green of a suddenly disturbing dawn, it fell like a silver thread.

A white, spiral vortex—the funnel of a great tornado. He saw a blob of gray mist about the foot of it, marching over the sea. The upper end of it, oddly, was lost above the bright wings of dawn.

Leigh had never seen a storm just like this one. At first he thought there was no danger to him. But the white, writhing snake of it whipped toward him with an appalling quickness.

It seized the *Phoenix* in a sudden blast of wind, sucking the ship toward that racing funnel. Sea and sky spun madly. He was lifted so swiftly that his eardrums ached. Grimly he fought it, with all his calm skill and all the familiar strength of the ship.

He fought—and won. The white pillar left him fluttering in its wake and marched on into the west. Hurried observation of the higher sun told Leigh that he had been flung fifteen hundred miles northward.

But he knew, with a sinking in his heart, that the *Phoenix* was crippled. Her right aileron had been twisted and jammed by the force of that incredible wind. He would have to set her down.

Whistling the tune of *Barbara Allen*, which always seemed to cheer him, Leigh searched the maps. He found a pinprick of land named Manumotu—the only possible haven in a thousand miles—and turned the limping amphibian toward it, flying with rudder and throttle.

One more failure. Two, he reflected bitterly, in a row. For the last flight, two months ago, had failed also, from a cause as strange as that tornado.

A "bipolar" flight, Tick Tinker had called the last one. Tick was the tireless

little publicity man, one-legged and one-eyed, who was Leigh's partner in his singular business of wresting a living from the air. "Bipolar," because the route from Croydon back to Croydon along the prime meridian included both the poles. Leigh had safely rounded the planet, with but three scheduled stops. But the flight had failed just the same, because of the Stellar Shell.

"We're an out-of-doors advertising firm, Lucky," Tick used to say. "You fly for attention value. And I sell it to the makers of oil and piston rings and what-have-you. And it's a legitimate business, so long as you can keep in the headlines."

But all the headlines two months ago had been about the Stellar Shell. Some astronomer named Gayle, the day Leigh took off from Croydon, announced discovery of a mysterious missile plunging out of the depths of space, toward the solar system. The "bipolar" flight had earned no more than a few sticks of space on the inside pages. For the black streamers ran:

**STELLAR SHELL SHOT AT PLANETS;  
WILL OBJECT STRIKE EARTH?  
ASTRONOMERS BAFLED**

When Leigh came in to Croydon again, the flight completed in three grueling days, there was no crowd to meet him, staggering away from the dusty, oil-spattered *Phoenix*, he himself paused to buy a paper.

**COSMIC BULLET HITS MARS;  
EARTH SPARED;  
NATURE OF OBJECT UNKNOWN**

There had been no more news of the Stellar Shell, nothing more than the speculations of bewildered scientists. But the flight was already ruined. Tick Tinker had radiographed:

**CONGRATS ON BIPOLAR FLIGHT. BUT STELLAR SHELL HOGGED THE HEADLINES. FLIGHT TOTAL LOSS FINANCIALLY. YOUR NAME GETTING RAPIDLY UNKNOWN. TESTIMONIALS BEGGING AT CUT RATES. URGENT RELEASE DETAILS NEW PUBLICITY FLIGHT. SUGGEST SOMETHING NONSTOP POLAR. USE ZEROLUBE BRAND OILS FOR TESTIMONIAL.**

And so Tick's message had brought him here, dead with fatigue and heading to-

ward a speck of rock that probably had no inhabitant.

**T**HE motor covered the windshield with a thin spray of oil, and Leigh stopped his whistling briefly to curse all Zerolube products. He plugged in his helmet phones and switched on the little battery transmitter. It was good for just ten minutes of continuous sending—the *Phoenix* had no room for heavier equipment, not even emergency rations.

"SOS!" he called. "Pilot Leigh in airplane *Phoenix* forced down by storm. Will try to land on Manumotu. SOS—"

The instant reply surprised him:

"Manumotu Station, Gayle Foundation, calling airplane *Phoenix*. Dr. E. K. Gayle speaking. Land on north beach. I will stand by to assist you. Come in, airplane *Phoenix*."

"Airplane *Phoenix* calling Manumotu Station," gasped Leigh, relieved. "Thanks, doc. I'll be seeing you, if I can keep out of the water half an hour longer. Signing off."

It took an hour—an hour that seemed endless to Carter Leigh fighting the fatigue in him and nursing the crippled plane. But at last Manumotu came out of the sparkling northward haze. A cragged volcanic summit appeared sheer on three sides, edged on the north with a scrap of coral beach.

He crossed the beach. A broad rocky bench above it was tufted with tropical green. A long shed-like building of white sheet metal stood upon it, a white tent, and a great pile of crates covered with brown tarpaulins. A white flag waved. Then he saw the tiny figure running from the tent toward the beach.

The landing was hazardous. The crippled wing caught the crest of a wave and covered the plane with spray. She staggered, but came up bravely. He taxied in and rolled up on the binding coral sand.

Following the signals of the flag, he brought the *Phoenix* to a safe dry stop where a rocket must have been moored, for there were deep wheel-marks in the

sand, and the hibiscus bushes beyond were scorched black as if from rocket jets.

Heavily, his legs as stiff as if they never had been straightened before, he climbed out of the cockpit. The person with the flag came to meet him. A slim young figure, in boots and breeches, khaki shirt open at the throat, yellow head bare. A crisp voice, brisk, impersonal, greeted him:

"Hello. You are the famous Lucky Leigh?"

"In person" he grinned. "And thanks for showing me the way in, doc—"

His jaw fell. This was a woman—a girl. Her intent oval face was dark with sun. Her keen blue eyes were scanning his heavy, swaying body—not altogether, he thought, with approval.

"Oh!" he said. "I thought you were Dr. Gayle."

"I am," she said gravely. "Dr. Elene Kathrine Gayle."

His red eyes blinked at her.

"You—you aren't the Dr. Gayle who discovered the Stellar Shell?"

She nodded.

"My father was a leader in his field of science. He established the Gayle Foundation. But he has been dead five years. I have been trying to carry on his work." She studied him gravely. "Do you object to my discovery?"

"You ruined my last flight," he told her. "I lived through seventy-six hours of hell; I set a record for gasoline flight over both poles. And what with your Stellar Shell, the world never knew I had been off the ground."

"And, I suspect, was little the worse for the fact." Leigh flushed at the hint of sarcasm in her voice. "However—are you hungry?"

"Famished," he told her.

ON A rough pine table in the white tent, she slapped down two tin plates, split open cans of meat and butter, indicated a big vacuum urn of coffee, a huge jar of marmalade.

"Proceed," she said.

Leigh's dull eyes were watching her.

"You're the whole crew here?"

Her boyish yellow head nodded.

"Emergency," she said. "The Foundation is establishing twenty new meteorological observatories. Manumotu Station was the most important, because it is directly in the track of the phenomena we are investigating. Therefore, I took charge here myself."

"Alone?"

"I had two assistants. But Dr. French took acute appendicitis, and Cragin flew him out in the rocket. Should have been back yesterday. But didn't show up. I'm carrying on. . . . You said you were hungry."

She dumped half a can of corned beef into her tin plate, passed the remainder to Leigh. But he sat, wonderment rising against his mist of sleep, staring at her.

"Emergency?" he questioned.

She nodded.

"Something is happening to the atmosphere."

"I thought conditions were strange," he said, "flying over the pole."

She pushed back her plate to seize a notebook.

"What phenomena did you observe?" she demanded eagerly.

He told her in a tired sleep-fogged voice about the strangely gaudy sunset, the aurora, the phenomenal cold, the unaccountably low barometric pressures, the singular tornado that had crippled the *Phoenix*.

"What does it all mean?" he concluded.

"What is happening?"

"I'm here to find out," she told him. "Sunset and aurora probably due to abnormal electronic bombardment of the ionosphere. But the storms and pressure disturbances are still not accounted for. Unless—"

Her yellow head shook.

"The only conceivable answer is too appalling."

She looked quickly at her wrist watch, dumped the debris from her plate into a pail beside the table, wiped plate and spoon clean with a paper napkin. She rose.

"Excuse me. But the duties of both my assistants have fallen upon me. My time is budgeted. I have forty-eight minutes a day for meals. Now I have instruments to read."

"So that's how a lady astronomer lives." Leigh grinned. "If I can help you—"

She shook her head with evident disapproval.

"I doubt it. Our work here doesn't consist of publicity stunts. . . . Eat as much as you like. You'll find a cot behind the partition. I'll radio directions to your rescue party. Please keep in mind, when you leave, that it is the policy of the Gayle Foundation to avoid unnecessary publicity. Especially, we don't want to alarm the world about these current meteorological phenomena, until we have more comprehensive data."

LEIGH was staring at her, a slow anger rising in him. "Look here, you think I'm a pretty bad egg?"

Her keen eyes swept him impersonally.

"Frankly, Mr. Lucky Leigh," her cool voice said, "your existence and your stunts annoy me. I can't see that you serve any creative function. In the precarious early days of gasoline aviation such men as you, testing equipment and exploring routes, may have served a useful end. But now that rockets are as fast and as certain as the sun, you are a mere anachronism."

Leigh opened his mouth to protest. But the girl held up a brown imperative hand.

"I've got no time to listen to you," she said. "Because I have vitally urgent work to do. I am already upsetting my schedule. But I've wanted for a long time to tell you a thing or two."

Her smooth face was flushed a little. He listened to her, grinning.

"Now," she went on swiftly, "if you were trying to fly nonstop to Mars, even if you never got there, that would be a different proposition. Because you would be expanding the horizons of science. You would be doing something different and important.

"But your old gasoline wreck is as far behind the times as you are, Leigh. It is a rocket that will make the first flight to Mars. I know a man who may pilot the first rocket there. He is Laird Cragin—you never heard of him, because he isn't a publicity flyer. But he is test pilot for the experimental space rockets that the Foundation has been working on, in association with some Army engineers. You ought to meet him. Because whether he ever gets to Mars or not, he's trying to do something real."

Carter Leigh gulped.

"Listen, Miss Gayle," he protested. "You've got me all wrong. I used to like the glory, I admit. But now it's just a business. I've come to hate the clamor and the crowds, and I always skip the banquets. Tick Tinker is my contact man; he releases the publicity, does the testimonials, handles all the business end. We're just trying to make a living."

Her brown chin squared. And, through the gray haze of fatigue that filled his mind, Leigh suddenly perceived that a lady astronomer could still be very good to look at.

"It is possible," her cool crisp voice was saying, "to make a living in a way that helps others besides yourself. Here you are hopping about the planet, with about as much aim and intelligence as a beheaded flea, while God-knows-what is happening to the very air we breathe!"

She turned decisively away from him.

"You are as extinct as the dodo, Mr. Nonstop Leigh," she told him. "The only difference is that you don't know it. Sleep on that. I've got a barocyclonometer to read."

## II

CARTER LEIGH sat over the rough table, staring out of the tent after her hastening boyish figure. He had seen suddenly, behind her brisk impersonal efficiency, that she was very tired—and somewhat frightened.

His brief anger at her frank criticism

was all turned back upon himself. After all, it was true that such men as Lindbergh and Byrd and Post and Corrigan hadn't left much to be accomplished in the field of nonstop gasoline flight.

No, he deserved her scorn.

But what had frightened her? What *was* happening to the atmosphere? Leigh's mind grappled for a vain moment with the problem, but he could not concentrate now. All he wanted was a chance to sleep.

He stood up, his body stiff and wooden, and reeled to the cot beyond the canvas partition.

"Dammit," he muttered, "what do I care if Lieutenant Laird Cragin flies to Mars on a tissue-paper kite?"

He was asleep before his head touched the pillow. . . .

"Leigh!"

The crisp voice of Elene Gayle awakened him, tense with a suppressed alarm. The tent was dim in the light of an oddly purple dawn. Pausing at the entrance of the tent, her face so gray and tired he knew she had not slept, she called urgently:

"That tornado is coming again. You had better see after your ship."

He tumbled out of the tent and saw her running ahead toward the long metal shed that covered her precious instruments. The dark ocean seemed ominously calm, and the sunrise above it was as splendid as the last.

Against it he saw what the girl, with obvious hesitation, had called a tornado.

It walked out of the flaming east—an endless spiral filament of silver, dropped like some cosmic fishing line from the depthless purple above the fiery sunrise. The foot of it danced across the sea. It moved by incredible bounds. And it was wrapped in a gray wisp of storm.

Leigh caught his breath and started running toward the plane that was standing unmoored on the long white beach where he had climbed out of her on the day before.

But this white funnel of destruction came with the same unthinkable velocity that he had witnessed before. Before he

had moved a dozen steps, the white tent sailed over his head. The abrupt, freakish blast of air hurled him flat. His eyes and ears and nostrils were filled with coral sand.

For no more than twenty seconds the tempest shrieked against the black peak above. Abruptly, then, the air was almost still again. There was only a fluttering queerly chill breeze from the east, following in the storm's wake.

Spitting sand and gasping for breath, Leigh staggered to his feet. The funnel of the storm, like the guide-rope, he thought, dangling from some unseen balloon, was bounding away into the gray west. Its sorrowful howling swiftly diminished.

Leigh turned ruefully toward where he had left the *Phoenix*. The battered old crate had been neatly flipped over on her back by the prankish blast of wind. Leigh shook his head and whistled a few bars of *Barbara Allen*.

"Too bad, old girl," he muttered. "But, considering the state of Tick's exchequer and the high cost of salvage, it looks like goodbye for us."

**H**E TURNED to survey the station. The tent was gone. The supplies, cooking utensile and blankets that it had covered were scattered across the beach to the uneasy sea. The tarpaulins had been ripped off the long stack of crates; tumbled in confusion were red drums of Kappa-concentrate rocket fuel, long cylinders of oxygen, bright tins of gasoline, miscellaneous cases of food and equipment.

But where was the lady astronomer?

A sudden unreasonable alarm tightened Leigh's throat. He was too well seasoned, he kept telling himself, to get unduly excited over any girl—especially a female scientist who didn't like him anyhow. But he was running through the wrecked camp, shouting her name with a quaver in his voice.

"Miss Gayle! Can you hear me? Elene!"

"Dr. Gayle, if you please."

Her crisp voice came from the interior



of the long observatory shed. Half the metal roof had been ripped off. Most of the equipment inside seemed to have been demolished by a huge boulder the wind had hurled from the dark cliffs above. But the slim calm girl, save for the disorder of her short yellow hair and a smudge of grease on her brown cheek, looked untouched. She was ruefully fingering a tangle of twisted levers and crumpled recording drums.

"No more barocyclonometer," she said. "But my visual observations make it imperative that we get in touch with the outside world at once. I believe my worst fears are justified."

"Well, Dr. Gayle," Leigh offered, "if you discover any need of my services, just say so."

"I doubt that you would be very useful." From the preoccupation of her voice, he knew she gave him less than half her mind; her eyes still measured the smashed equipment. "If you can repair your plane, you had better get away from here before tomorrow morning. Manumotu is an unhealthy locality, just now. And I'm afraid you'll find that the world has got more pressing matters to attend to than organizing relief expeditions to rescue stunt fliers."

"Thank you, Doctor." Leigh bowed. "I hope you can stand a shock. I believe the flying days of the old *Phoenix* are over."

"In that case"—her voice was still abstracted—"you had better salvage what you can of the supplies and equipment. After all, if what I fear is true, it won't make any great difference whether you ever leave Manumotu or not."

Leigh spent all morning stacking the tumbled crates and drums so that they made three walls of a tiny low shelter, roofing it with the torn tarpaulins, and collecting there the food and useful articles he found on the beach.

**A**T NOON, when he carried a plate of food and a steaming tin of fresh coffee to the girl in the observatory building, he found her covered with grime,

laboring in tight-lipped silence with the starting-crank of a little motor-generator. She waved him aside.

"I've no time to eat," she told him. "I've data of the utmost importance to send. It's urgent that I get in touch with Washington and our rocket laboratory at Alamogordo. And there's something wrong with this plant."

Leigh glanced at the balky mechanism. He set the plate on an empty packing box beside her and rolled up his sleeves.

"Did it occur to you," he inquired, "that, having made a living out of flying gasoline engines for the past ten years, I might know something about them? I see that your carburetor is smashed. If you'll eat your dinner, I'll make you a new carburetor out of a milk can."

Her face showed a weary relief. "If you can do it," she agreed.

While Leigh found tin snips and an empty can, she sat down on the concrete floor beside the packing box. She gulped the hot coffee, wolfed a sandwich of canned ham, and reached for another. In the middle of it, her yellow head dropped forward on her knees. Leigh heard a long sigh and knew she was asleep.

"Poor kid," he muttered.

Even the staccato *chek-chek-chek* of the little motor ten minutes later did not wake her. Leigh twisted the flap of tin that regulated the mixture, then swiftly checked the hookup of the short-wave transmitter.

He snapped on the receiver. Static snarled at him. An unfamiliar sort of static. The whining ululation of it was oddly like the howling of the storm that had passed. It rose and fell regularly.

Through it, however, he picked up some station—and what he heard stiffened him with fear. For a time he listened, absorbed; then suddenly he hurried to wake the girl.

"It's fixed?" she gasped, starting up. "I didn't mean to sleep—there isn't time."

He caught anxiously at her slim brown arm.

"Elene," he demanded, "what's happening? I was just listening. There's some-

thing frightful going on. What is it? Do you know?"

Her blue eyes stared at him. They were dark with sleep—and, he thought, terror. Quick and anxious, her low voice demanded:

"Just what did you get?"

"Storms," he said briefly. "Phenomenal storms. Unseasonable bitter cold. Ice storms even in the tropics. Tidal waves. One against the Atlantic seaboard has probably killed a hundred thousand already. Communications broken everywhere, of course. Panic increasing."

He drew her light body toward him.

"Something has gone wrong with the air, Elene. Do you know what it is? And when it is going to stop?"

Her head nodded slowly.

"I'm afraid I know what it is," she said. "My dispatches can't bring any comfort to the world."

"What is it?"

Her arm twisted free.

"No time to tell you now," she said. "I've got to talk to Washington and New Mexico. And to Laird Cragin—if he's still alive. Our work here has got to be finished tonight. After dawn tomorrow, there may not be any Manumotu."

Leigh gasped. "But—"

Hastening toward the radio, she paused briefly.

"I'll show you tonight," she promised him. "If the seeing is good enough for the telescope, and if we're still alive by then."

She had no more attention for him. He prepared food for himself, ate, and then spent an hour making the tiny little shelter more secure against whatever the girl expected to happen at dawn. And then, heavy with accumulated fatigue, he slept again.

THE air was unwontedly cool on the beach when he woke, and another sunset of uncanny splendor flamed red to the zenith. He kindled a fire of driftwood, set out another meal, and called the girl. Sipping gratefully from a tin of scalding coffee, she gave him a brief smile.

"You have ability, Leigh," she told him.

"Ability that has been wasted." Her dark eyes studied him. "Now, I'm afraid, you've very little opportunity left to make use of it."

Sitting silent for a moment in the dancing firelight, she began pouring the cool coral sand through her fingers into little white pyramids.

"If my deductions check out tonight," she said, "I'm afraid the creative functions of our present civilization are just about at an end. The planet will doubtless remain habitable for certain forms of life. Men may even survive in such places as Death Valley. But it will be a little strange if the human race ever recovers its supremacy."

"Tell me—" Leigh began.

She looked at her watch and studied the darkling eastward sky.

"In ten minutes," she said, "I can show you—show you why the earth is no longer a very safe place for nonstop fliers."

Leigh caught his breath.

He looked from the girl into the low, many-colored flames of the driftwood and slowly back again.

"Dr. Elene Gayle," he told her very gravely, "I feel that your frank comments have given me the right to express an equally candid opinion of female astronomers."

She nodded and looked back into the east.

"I haven't been following my profession altogether for fun, although I enjoy it," he told her. "I have been trying to save up two hundred thousand dollars. That would be enough to begin the manufacture of a gadget I have invented for the greater comfort of rocket passengers, and to build a home."

There was weary loneliness in his voice now.

"For hundreds and thousands of hours, cramped in the cockpit of the old *Phoenix*, I have endured fatigue and the need of sleep by dreaming of that home. Sometimes it is on a Florida key and sometimes it is in a little green valley that I have seen in the Colorado Rockies."

He looked at the girl across the fire.

"But always the most important thing about it was the woman who would live in it with me. I have had one in mind and then another. But none of them, Dr. Gayle, has fitted as well as you do—except, I must hasten to add, in certain regards.

"You must realize that I am telling you this just to make a point—since, what with crackups and your Stellar Shell, Tick Tinker and I have never had more than fifty thousand in a joint account."

A smile touched his lean face in the firelight.

"Physically," he told her, "you would do admirably. And you have intelligence, quickness, and, I believe, a sense of humor. But unfortunately you have other qualities that outweigh all these.

"Try to imagine yourself living a civilized life in a civilized home," he challenged. "You just couldn't do it. You wouldn't fit in—not with a schedule of forty-eight minutes a day for food.

"I hope I've made my point—that female astronomers who completely ignore the fact that they are women are just as out of place in a civilized world as extreme nonstop fliers."

Her first low laugh, and the light of amusement in her eyes, halted his argument. But her laughter grew higher and more breathless until she could not stop. Leigh saw that she was hysterical. He dashed a tin can of cold sea-water into her face. She caught a sobbing breath and mopped at her eyes. With another glance at her watch, she rose abruptly.

"Come," she said in a shaken voice. "And let's see if there'll be any homes in the world ahead."

### III

**T**HE squat mass of the twelve-inch reflector looked through a slit in the end of the building that had escaped destruction. Its clockwork, beneath the humming of the little motor-generator, made a muffled ticking.

Visible in the dim light of a shaded bulb,

the girl twisted the turret and swiftly set the circles. Before she had done, Leigh knew that her object was the red point of Mars in the east.

For a long time, sitting with her eye to the lens, she was silent. Leigh could see the trembling of her small hand, touching the control wheels again and again. At last she rose and stood staring eastward through the slit, rubbing at her red eyes. Her face was bloodless.

"Well?" said Leigh.

"It's what I thought," she whispered. "Mars!"

Leigh moved into the seat she had left. His eye found the ocular. In its little disk of darkness, a single star burned with changing red and blue. And the disk of Mars, still too near the horizon for good observation, blurred and rippled as if painted on a black flag flying in the wind.

Even for a moment of good seeing, when the image steadied, that mistiness did not clear. But he could distinguish the wide dark equatorial markings—darker, in fact, than he had supposed them—and the white ellipse of the south polar cap.

Two things he saw that puzzled him. Beside the polar cap was a little dark fleck—the darkest marking on the planet—that had an oddly purplish color. And across the yellow-red of the planet, toward it, was drawn a twisting silver thread.

The image blurred and shimmered again, and Leigh rose impatiently from the instrument. A little ache throbbed in his unaccustomed eyes. He turned anxiously to the girl.

"Still I don't understand," he said. "I saw a little purple circle, not far from the polar cap. And a queer white thread twisting into it. But everything looked hazy."

"That's just it," her tired voice told him. "Mars is hazed and dim with atmosphere—atmosphere stolen from the Earth. That silver thread is the other end of the tube of force that we have been calling a tornado—sucking air from the Earth across to Mars!"

It took a moment for the full meaning

to strike him. Then swiftly he felt the shock of it run through his whole body, and he swayed a little, standing there.

"But," he muttered at last, "I thought there were no Martians!"

"It has been pretty well agreed that there are no intelligent inhabitants," she said. "My father gave up the last great attempt to signal Mars ten years ago. But since that time something has happened to Mars."

"What?"

"It just happens," she told him slowly, "that that purple-blue spot, under the other end of the vortex tube, is exactly where the object we called the Stellar Shell struck Mars, two months ago."

He stared at her, in the dim observatory.

"Then—you think—"

"The inference is inevitable. The Stellar Shell was a ship. It brought living beings to Mars, from somewhere. They needed a heavier atmosphere for survival. Across on Earth—now, at opposition, less than fifty million miles away—they saw the atmosphere they required. With the same science that built and navigated the Stellar Shell, they have reached across to take what they require."

Leigh caught his breath.

"Why didn't they land on Earth in the first place?"

"Why should they, if they are able to reach from one world to another to take what they want? Perhaps Mars, with half the Earth's sunlight and a third of its gravity, suited them better in other regards."

Leigh's brain was spinning.

"Stealing the world's air! How possibly can they do that?"

"I saw one clue," the girl told him. "The two satellites are very difficult objects, even with the refinements of this instrument. It was hard to find them. When I did, they were both much too far from the planet. They are plunging out into space, away from their old orbits!"

"And that means—"

"It means that they have been cut off from the gravitational attraction of Mars.

I think that is because the gravitational pull of the planet, by a power of science quite beyond our grasp, has been focused into a tube of force that reaches fifty million miles across space to our atmosphere."

"That queer tornado?"

"Exactly." The girl nodded. "Our atmosphere is being drawn up it. It seems to race around the Earth every day, because the Earth is turning under it. The violent air currents it causes, and the very loss of air, generate the storms. The unusual sunsets and auroras are doubtless due to the incidental forces that form and direct the tube."

**B**ESIDE the girl, Leigh peered up through the narrow slit. In the bar of purple sky, Mars was a baleful orange-red point. His staggered mind groped for understanding of its menace.

"What can they be?" he whispered.

The girl's own voice was dry.

"Probably they are interstellar voyagers. They came from the south, quite possibly from one of the nearer stars in Centaurus. Beings capable of such a flight must be as far from our comprehension as we are from that of the ants. And we must be as helpless before them."

"Ants can sting," muttered Leigh. But a breath of night air through the slit seemed strangely cold, and he shuddered again. "When do you suppose they'll stop?"

Elene Gayle's yellow head shook in the dimness, wearily.

"Who knows? We could spare them half our atmosphere, and still survive in the lowlands, though the climate everywhere would be far more severe. Possibly they will be satisfied in time. Possibly the advance of the Earth in its orbit will break their tube of force—until the next opposition, two years away."

"Mars is a smaller planet," Leigh said. "They shouldn't need so much air."

"Because of the lighter gravity," the girl told him, "to get the same pressure and density, they would need more."

"So we are at their mercy? Is there nothing to be done?"

Her face was gray and hopeless.

"People will react in the ways predictable from their known characteristics," she said. "Most of the world's population has already been driven into a helpless panic. The governments that stand will try to mobilize their armies—against an enemy they will never even see before they die. Only a few scientists will try to make a calm analysis of the problem, try to discover what, if anything, can be done. I doubt that anything can be done."

#### IV

THE rocket arrived before midnight. Elene Gayle had been at the radio all evening, guiding it in with her signals listening to the reports of planet-wide confusion and terror; and trying in vain to get some message through to her Foundation's rocket research laboratory on the New Mexico desert.

When the blue luminescent cathion jets streaked across the stars, Leigh ran with flares to light the beach. It plunged down at an alarming angle, a forward blast checking it in a great cloud of blue flame, and two men tumbled out of it.

The girl came with Leigh to meet them. The thin gray man with a pointed beard was Dr. Laymon Duval, assistant director of the Foundation. And the tall slender black-helmeted pilot, he knew without asking, was Laird Cragin.

Cragin was limping, patched with bandages. The girl nodded to the older man, greeted Cragin with a warm handshake. His handsome face smiled at her.

"Sorry to be late, Gay," he said. "But the freak storm cracked me up in the Marquesas Islands. Had to wait for Dr. Duval, in another fire-boat. But here we are!"

The thin grave voice of the older man cut in, anxiously:

"You are quite certain, Dr. Gayle—certain of the facts in your code message? You really believe that stellar invaders on

Mars are robbing the Earth of its air?"

"Duval," the girl asked briskly, "do I make mistakes?"

"Fewer than any man I know," he granted. "What action do you suggest?"

"Return at once," Elene Gayle said instantly. "Get full support from the President and the War Department. Rush our experimental rocket to completion in New Mexico. Arm it. Send it to Mars to stop the loss of atmosphere."

Duval's gray head shook, doubtfully.

"The only thing we can do," he admitted. "But you know I have been in charge at Alamogordo. And I'm reasonably certain that our rocket can't be completed before the air-loss, continuing at the present rate, will force abandonment of the project.

"Even," he added forebodingly, "neglecting the weeks required for the flight—"

"Anyhow," the girl broke in, "we must try. I'll fly back to America with you tonight."

"Tonight?" Carter Leigh echoed her last word. He groped instinctively for the girl's arm.

"I'll go with you, Elene," he said hoarsely. "I'll fly your rocket to Mars."

"Thanks, Leigh." She turned briefly toward him. "But you're not a rocket pilot." She turned back to Cragin. "Load fuel and oxygen. We've no time to spare."

"Hullo." In the smooth voice of Laird Cragin was no very cordial recognition. "So you're Lucky Nonstop Leigh? Well, it looks like you stopped, this time, in a rather unlucky spot. Better watch that storm at dawn. It cuts a swath around the world, every day, through the thirties. Perth and Buenos Aires already gone."

"Back in a moment," the girl said. "I've some notes to get."

Carter Leigh watched her run back into the dark, toward the observatory. Listening silently to Cragin, as he helped lift aboard a drum of the kappa fuel, he tried to hide the despair in him.

"Sorry, old man," Cragin was saying. "But I guess the job will fall to me. I've

been test-hopping the experimental models. If Gay sends her rocket to Mars, I'll go with it."

Leigh caught his breath. Laird Cragin was no doubt a brave and skilful man, even now promising to face certain death for the world's sake. But suddenly Leigh hated him with a blind savage hatred. He trembled, and his fists balled up. Tears swelled in his eyes, until the girl, running back out of the dark with a thick brief case, was only a misty shadow.

"We'd like to give you a lift, old man," Cragin's voice was smoothly regretful. "But this is only a three-place job. And we've no time—"

"Thanks," Leigh managed to say. "But I've got the old *Phoenix*."

Elene Gayle paused to take his hand. Her fingers felt strong and cool.

"Goodbye, Leigh," she said briskly. "Sorry we must leave you. Watch the storm. Make any use you can of our supplies and equipment here. Get north, if you can, out of its track."

Leigh did not answer.

Duval was already in the rocket. Cragin swung the girl in, leapt after her, slid forward the curved transparent hatch. Leigh stood stupidly motionless until the pilot opened it again to shout a warning.

He stumbled back. The blue electronic exhausts bellowed out about him. His skin tingled. Ozone burned his lungs. Blinded, he covered his eyes. When he could see again, the rocket was a dim blue star, dropping and dimming, north-northeast.

CARTER LEIGH stood alone on the beach, softly whistling the melancholy notes of *Barbara Allen*. Alone on Manumotu. It was midnight. Six hours, more or less, until that world-circling funnel should pass again.

Southward, beyond the dark loom of the peak, the strange aurora rose again. Sprays of green and orange crossed the zenith. That eerie light showed him the old *Phoenix*, lying upside down on the pale white beach. He plodded heavily down toward her.

"Well, old girl," he muttered. "Cracked up or not, it looks like we've got to make one more flight—unless we want to be picked up by that wind between the worlds."

He stopped abruptly on the coral sand. His eyes lifted swiftly from the battered old crate on the beach, up to the red and baleful eye of Mars, now well past the meridian. His mind pictured that silver cord from world to world. And his lips pursed for a soundless whistle.

"Well, why not?"

He stumbled to the old plane. His trembling hand touched the cold metal of her prop. His voice was quick and breathless.

"Why not, old lady?" he muttered again. "There's air all the way. And where there's air, you can fly with gasoline. It's thin and rough, maybe. But we've flown high before, and met our share of bumps."

He walked around the plane, inspected rudder and elevator.

"Quite a wind, I guess. But it will be behind us. And when you've got fifty million miles to make, you need the wind behind you!"

He peered in the darkness at the damaged aileron.

"The percentage may be a billion to one against us. But what's the difference? You're extinct as the dodo, old girl. And I am, too. And we're getting wise to the fact.

"After all, why not? She'll probably be flying to Mars with Cragin, if they get their rocket done. We might as well be there to meet 'em.

"Okay, duchess! Let's get going!"

He knew it wouldn't be easy to get the plane righted and repaired and in the air in the six hours that remained before the wind funnel returned. But he had been in spots almost as tight before. There was the time he came down on the arctic tundra with a broken prop, and whittled out one of his own. . . .

Lucky he had the supplies and equipment at the abandoned station. He walked back for ropes and tackle. In an hour the old ship was on her retractable wheels

again, with no more than incidental injury.

He started the motor, taxied the ship up beside the building where he could have electric light, and went to work on the twisted aileron. When that was crudely mended, he found half a dozen other necessary repairs—and still, for all he knew, there might be some hidden harm that he could not discover till the ship was in the air.

**F**OUR precious hours gone before the plane was ready to load. Two things he had to have—gasoline and oxygen. The air was already growing thin on Earth, but it would be thinner still in that tube of force.

Tumbling aside the drums of rocket fuel and cases of supplies, he began carrying crated tins of gasoline and pouring them into the empty tanks. Ten gallons at a trip. The empty tanks held three hundred, and he stacked tins behind the cockpit.

The Southern Cross tilted above the peak. Time fled away. He panted. Even in the chill of morning, he was drenched with sweat. Lucky the Foundation had been so generous with fuel for the motor-generator and the stoves. Lower octane rating than quite agreed with the ancient engine. But, if he started on the other, it would do.

The first ominous promise of dawn was in the east, before that task was done. Now the oxygen. He staggered under the weight of the long steel cylinders. Four of them. That was all he dared load.

Red tongues were leaping up in the east now; the vortex would soon be here. And he'd have to be high to meet it—as high as the Phoenix could climb. And even there, in the softer hands of the upper atmosphere, the odds would be overwhelmingly against him.

He made a last dash for an armload of food. He picked up a well-worn book of Keats, the name in it Elene Gayle. Who'd have thought that female astronomers read poetry? He climbed into the cockpit, and jammed his heel against the starter pedal.

While the starter motor wound up, he adjusted his helmet, tested oxygen tubes

and reduction valve. He set altimeter and clock, put rudder and elevator trim tabs in neutral. He engaged the clutch, and the ancient motor caught with a roar.

Fine drops of oil on the windshield reminded him that it was in need of an overhaul. If there had been time and tools. . . .

"Crazy," muttered Leigh. "Off to Mars!" Against the roar, he began to whistle *Barbara Allen*.

While the motor warmed, he pushed in the knob that flattened the pitch of the prop, and planned the take-off. The beach was now a ghostly strip of gray beneath that strange sunrise—too short for all the load the *Phoenix* carried.

He taxied to the east end of the beach, turned to face the uneasy west wind, plunged into it with a blast of the gun. The ship was far too heavy. Even with the stick forward all the way, the tail wheel still dragged. And the white spray, flying over black teeth of rock beyond the beach, was rushing at him.

But the tail came off the ground. The wheels tapped the sand, lifted, merely flicked the rocks beyond. Leigh caught a long gasping breath. He pushed the knob that started the wheel-retracting pump. The air-speed needle leapt ahead.

Over the dark unquiet sea north of Manumotu, he wheeled into the east. Moment by moment, the sky was flaming redder. He watched for the thread of silver in it, and trimmed the elevators to hold a steady climb.

He slid the cockpit cover forward. The air about him was suddenly calm. He felt a moment of relaxation before the crisis ahead. His eyes left the banks of instruments for a moment, found the worn little book beside him.

"Sentimental fool," he muttered. "Elene Gayle wouldn't carry dead weight to Mars."

He slid back the cockpit cover, hurled the volume into the shrieking wind. He was immediately sorry he had done so. He scanned the east again. Still no tornado. Would it fail him now?

The *Phoenix* was lifting twelve hundred feet a minute. The cockpit grew cold. He plugged in the heater units in his suit. His ears ached. His lungs began to labor in the thinning air. He adjusted the faceplate of his helmet, twisted the oxygen valve.

Then he saw the funnel. It came toward him like a swinging silver rope. Automatically, he banked the ship, flew straight toward it. He saw the dancing tip of it touch Manumotu, nearly six miles beneath. All the green vanished magically from its black cliffs, and a mountain of sea rose over them.

## V

THE first blast of wind overtook him so violent that the ship stalled in it. The dead stick was loose in his hands. He shoved it forward, gunned the motor till the ship lived again, pulled it back.

He was trying to climb beside the silver funnel, to edge into it. But the blast of it caught him with a savage and resistless acceleration. The blood was driven out of his head. Darkness pressed down on him. He fought grimly for consciousness and strength to keep the nose of the plane ahead.

For an endless time he was suspended in that battle. His flying of the ship, the swift and delicate reactions that kept it alive and headed up that twisting bore of silver, his skill was more than half conscious. And he had no awareness of anything but life.

That killing pressure slackened at last, however. His strained heart beat more easily. He was aware of the plane again, creaking, twisted, battered—but still miraculously intact.

He turned up the oxygen, adjusted the prop to increase its pitch to the utmost, opened the auxiliary supercharger. The cold gas filled his lungs again, and he found awareness for things outside the plane.

It was the strangest moment Leigh had known. The curve of the silver tube seemed quite close, on every side. He knew that

the air in it, and the plane, now had a velocity quite beyond conception. Yet it seemed that an odd calm surrounded him, and he held the plane, the motor at half-throttle, at its center without difficulty.

Though he knew the tube could be nothing material, nothing more than a vortex of etheric force, the walls of it looked curiously real. Almost glass-like.

Whatever they were, he soon knew that he had better not touch them. For a whirling stick in the air ahead had grown into a great black log—the stripped trunk of some mighty tree, snatched, he supposed, from Manumotu. He saw it spin into that glassy wall. Saw it instantly rebound in a thin dissolving puff of dust and splinters.

He twisted in the cockpit and saw the Earth behind him. Beyond the shimmering walls of the tube it was a mighty hemisphere, suspended in darkness. Gray and misty, patched with great circular areas of white cloud. The Americas were crowding near the rim of it—vast stretches white with unseasonable snow. Asia was invisible in darkness.

Perceptibly, the Earth diminished. It was odd, Leigh thought, that it looked smaller and nearer all the time, not more distant. The two Americas thinned and crept very gradually beyond the lighted curve of the world. The blur of Australia came slowly out of the night; the now invisible foot of the tube, he knew, sweeping destructively across it.

A steady pressure held him back against the seat. At first he had hardly noticed it. But it required effort, he realized, to thrust out his arms against it. The muscles of his neck were already aching.

It was that acceleration. Swiftly, ever more swiftly, that resistless suction was drawing him across toward Mars. So far, so good. He guided the plane around a good-sized granite boulder, drawn with him up the funnel.

The thing was incredible. Flying to Mars in the *Phoenix*—a secondhand crate that Tick Tinker had somehow wangled out of the city fathers of Phoenix, Arizona, six years ago. And the Gayle Foundation,



with all its millions, had failed to fly its rockets even to the Moon.

But, incredible or not, it was happening.

**A**FTER the tension and excitement of the last few hours, Leigh felt the pressure of a maddening monotony. He was already weary from loading the plane. And he found this flight the most exhausting he had made.

The air was too thin—so thin the motor coughed and stuttered, even under both superchargers. Even with the oxygen hissing steadily, he felt faint and oppressed. And the cold was a savage thing. Even the heated suit failed to protect him.

Nothing changed. There was the ship and the silver tube. The Earth was soon a dimming point behind, beside the dimmer Moon, and Mars remained only a reddish point ahead. He ate a little, when the clock told him, from his scanty supplies.

Through the tube's pale walls space looked very dark. The stars were more brilliant, more colorful, than he had ever imagined them. But in their myriads he found it almost impossible to discover any familiar constellation. He felt lost amid their alien splendor.

He watched the clock. Its hands crept with deadly slowness. One day at last was gone. Another began. His body prickled painfully and then went numb with cold and fatigue. Sleep dragged at his brain.

But the shattering of the log had told him what would happen if his attention wavered.

"If nonstop fliers are extinct," he muttered once, "it's a good thing for them."

In his first wild resolve and in all the hazards he had met, he had not thought of what might happen next. But now, in this endless monotony, he had ample time to ponder the question: What will I do when I get to Mars?

He had a .45 autoloading pistol and half a dozen extra clips of ammunition with him in the cockpit—a relic as ancient as the *Phoenix*. How, with such a weapon,

was he to cope with the science that had made this interplanetary tube?

Presently his fatigue-drugged mind recoiled from the problem, baffled.

Every dragging revolution of the minute hand seemed an eternity. But Mars at last began to grow beside the endless argent coils of the tube. It became a swelling hypnotic eye.

He shook himself in the grasp of monotony and sleep. But Mars stared at him. It was the ocher-red eye of that sinister intelligence that was stripping the Earth of air. He tried not to look at it. For its red gaze was deadly.

He woke with a start. The old *Phoenix* creaked and shuddered. The right wing-tip had touched the silver wall, and it was shattered. Twisted metal caught the air, dragged. He set the rudder to compensate.

But the tube had begun to widen. The current of air was slowing. A resistless force pushed him forward in the cockpit. Wind screamed about the *Phoenix*. She was plunging down toward Mars.

He cut the throttle, pulled the old plane back into a spiral. Savage eddies hammered her. She groaned and strained. Bits of metal whipped away from the damaged wing. More and more, it dragged and fell.

But Mars was swiftly growing.

**H**E STUDIED the clock. Just fifty hours since he climbed off Manumotu beach. He must have come fifty million miles. A million miles an hour—let Laird Cragin beat that in a rocket!

The face of Mars grew broad beneath him. The orange-red of it was white-patched, more and more, with the stolen clouds of Earth. But he found the white ellipse of the shrinking polar cap the growing purple circle, above its retreating rim, where the Stellar Shell had landed.

Plunging down through widening funnel that cushioned the air-jet from the Earth, he held the steep spiral of the *Phoenix* toward that purple circle. He would land in the middle of it, he resolved. And try to deal at once, as best he could with

exhausted body and inadequate equipment, with the mysterious science of its creators.

A reckless determination rose in him. A wild elation filled him—the first man to cross space. He was the representative of all mankind, and he felt the strength of all men in him. He was invincible. If he must, he thought, he would make a bullet of the *Phoenix* and dive into whatever seemed the heart of the enemy's strength.

In his feverish excitement he wanted to push back the cockpit cover and yell. His lungs were burning. Then a glance at the barometric altimeter showed that it was registering. Air pressure was mounting again. He was suffering from oxygen intoxication. He partially closed the valve.

For a time a passing cloud hid the purple spot. With battered binoculars, he studied the surface of the planet beyond it. New lakes upon the reddish desert were black or mirror-like. The olive-green bands around them must be vegetation.

The cloud moved on, and he could see the purple spot again, perhaps only twenty miles below. A patch of dense purple jungle, the binoculars revealed it, far ranker than the olive-green beyond. Had the invaders brought alien seed to Mars?

A green line cut the purple wilderness, opposite the polar crown. And, in the center of the jungle, he saw curious glints and sparklings of green. The glasses picked out machines there. A colossal latticed tube thrust upward.

That mighty metal finger pointed toward the silver funnel, toward the far-off Earth. It was the finger of doom. It, Leigh knew, was the thing he must destroy. He tipped the shuddering old *Phoenix* into a steeper dive.

A long, long flight, his dulled brain thought, just to bring a man to suicide. But for all mankind, for Elene Gayle and her science, even Laird Cragin and his rockets, it was the thing he had to do.

Or so he had resolved. But the gesture was denied him.

That long green finger moved abruptly

in the purple jungle. It swung down from the Earth, to point at the diving plane. The *Phoenix* was struck a staggering blow. If the power of that needle was the focused gravity of Mars, then a good deal of it, reversed, reacted on the ship. The impact battered Leigh into oblivion.

## VI

WHEN Carter Leigh came back to consciousness, the plane was spinning down in a power dive. Her ancient frame quivered; scraps of metal were vanishing from her injured wing. The damaged aileron was jammed again.

He yanked at the stick, fought to bring her out of the dive. He stopped her spinning, and her nose came slowly up. Then he looked below for a landing place. Shallow lakes of yellow rain water patched the red desert. He found a level ridge that looked firm and dry enough, extended the landing gear.

But the air even here at the surface was still very thin. Lesser gravity made a partial compensation, but the landing speed must still be dangerously high. Still he came down.

The red ridge flashed up at him, and he tried to level off. For all his efforts, the dragging right wheel touched first, too hard. The plane bounced, veered dangerously. The bounce carried him abnormally high. He had time to get the plane half straight again. Another bounce, to which the whole plane shook and groaned. Next time, in spite of him, the injured wing grazed and crumpled. He fought to right the ship; but the good wing dipped, plowed into red mud, and was shattered to kindling. The fuselage rebounded; skimmed along on its side for a hundred yards in a spray of crimson mud; at last was still.

Leigh clambered painfully out of the wreckage. He felt his bruised limbs. Despite the stunning finality of the crackup, he found no bones broken. His helmet had been knocked off. His lungs had to labor, but they found oxygen enough.

Pale yellow-green shoots, pulpy and fragile, were pushing up through the wet red soil at his feet. He had come to rest at the margin of a wide shallow lake, that mirrored the drizzling sky. Far beyond, above the gentle red hills patched with fresh olive-green, he could see a long low line of purple darkness. And his ears, after they had become accustomed to the silence, heard a continual distant roaring in the sky.

That roar was the wind of stolen air from Earth. That line was the purple jungle. Beyond it was the great machine of the stellar invaders, that had to be destroyed. Leigh, as wearily confident as if nothing were now impossible, set about that distant project.

He snapped the action of the old automatic, slipped it in his pocket. Two five-gallon tins of gasoline and the remaining cylinders of oxygen he made into a bale, padded with his thick flying suit.

On Earth, he could not have moved them. Even here, their weight was eighty pounds, and his own sixty more. The burden simplified the matter of walking. But the effort of breathing taxed his lungs.

The horizon was closer than it looked. He dwelt upon that fact for encouragement, and walked toward the barrier of the unknown jungle. The roaring grew louder in the sky. He reeled with fatigue. The slow drizzle of stolen moisture continued, interrupted with flurries of sleet. Cold sank into his bones.

He came at last to the jungle and supercactus. Jagged purple spines grew with a visible motion; they stabbed into the red mud, sprouted, lifted new barbed lances. It was a barrier too thick and dense to hope to cross.

Utterly disheartened, he flung down his burden. Mechanically, he ate a can of beans he had slipped into the pack. Then quite suddenly he slipped into sleep.

**T**HE slow thrust of a living bayonet wakened him, drenched and stiff with cold. His chest felt congested and breathing took a painful effort. He picked up

his burden and slogged off westward through the red mud, skirting the advancing jungle.

It was in that direction that he thought he had seen the green slash. An exhausting hour brought him to it—a broad level pavement of some glistening, bright-green stuff. The surface was perfect, but the bank beneath it had a surprising look of antiquity.

This road came straight out of the north. It cut into the jungle, the walls of purple thorns arching over it. After brief hesitation—lest he meet its masters unawares—Leigh trudged in upon it.

The purple shadow of the jungle fell upon him. The roaring continued in the sky; cold rain and sleet fell endlessly. Leigh plodded endlessly on, ignoring fatigue and cold and hunger. Once he stopped to drink from a puddle on the road. A lancing pain stabbed through his chest.

A humming clatter startled him. He stepped off the road, thrust himself into the purple spines. A huge three-wheeled conveyance came swiftly along the pavement. The bed of it was piled with something pale-green and crystalline—something mined, perhaps, in the equatorial regions.

Straining his eyes in the purple dusk to see the driver. Leigh glimpsed only a gelatinous arm. That arm and a yellow eye and another translucent waving limb were all he ever saw of the actual invaders. Their nature, the motives and the course of their flight, the mysteries of their science, the extent of their designs upon the solar system—all these remain defined only by conjecture and dread. The invaders remain but a dark-limned shadow of the unknown.

The brief polar night was already falling when the truck passed. It was bitterly cold. The rain turned again to driving pellets of sleet, and heavy frost crackled over the roadway and the jungle spines.

The roaring overhead was louder now. A greenish glow filtered down the tunnel of the road. And at last, dead with fatigue,

Leigh dragged himself to the edge of the central clearing in the jungle.

He perceived no source of light. But the surrounding wall of thorns and the fantastic structures before him were visible in a dull green radiance. He saw what must have been the remains of the Stellar Shell—a huge projectile, whose nose had plowed deep into the planet. Half its upper parts had been cut away; it must have served as a mine of the green metal.

Beyond it, swung between three massive piers, was the latticed tube, now horizontal, pointing across the pole toward the unseen Earth. Leigh caught his breath. Nerved with a last spurt of unsuspected strength, he staggered forward in the green shadow of the Stellar Shell.

Nothing stopped him. He swayed across a little open space beyond, dropped with his burden in the darkness between the three piers. His hands began shaping a basin in the half-frozen mud.

A hoarse coughing hoot from some half-seen structure beyond, spurred him to desperate haste. He ripped open his bale, began pouring his ten gallons of gasoline into the basin. An unaccountable rasping rattle lifted the hair at the back of his neck. He heard a metal clatter, nearer.

Fumbling desperately, he opened the cocks of the oxygen cylinders. The compressed stuff came out with a hissing roar, half liquid, half gas. It evaporated and enveloped him in a cloud of frost.

He turned the blue jets into the gasoline. Ticklish work. Before the invention of the cathion blast, gasoline and oxygen had been the favorite fuel of rocket experimenters. An efficient mixture of them, as makers of aerial bombs had sometimes demonstrated, had five times the explosive energy of nitroglycerine.

This wouldn't be a very efficient mixture. The gasoline froze into brittle blue chunks, and the oxygen was swiftly boiling away. The results were unpredictable.

Above the dying hiss of the jets, Leigh heard that rattle and the rasping hoot, very close to him now. He straightened in the thick white fog, and saw the yellow

eye. A huge luminescent yellow pupil, fringed with a ragged membrane.

A pointed metal rod, glowing with strange green, appeared beneath the eye. It thrust toward him through the fog. Leigh stumbled backward; his numbed fingers found the automatic, fired into the yellow eye. It blinked and vanished, and the rod clattered in the fog.

Leigh staggered back to the end of the Stellar Shell and began shooting into his mud basin between the three great piers. At his third shot, the world turned to blue flame, and went out utterly.

**T**HE massive green wall of the cosmic projectile shielded him from the blast. And it sheltered him somewhat from the tempest that followed.

He came to, lying in the freezing mud, nostrils bleeding, head ringing. Dragging himself up behind the shielding barrier, he saw that all the great structures of the invaders had been leveled. The green glow had gone from them.

He started at some motion in the gray twilight; it was a gelatinous arm, waving slowly above a pool of mud. He emptied the automatic at it—and it sank.

Then the wind came. The interplanetary air-jet, now that the cushioning forces by which the invaders had sheltered themselves had been removed, came down in a shrieking blast. The mighty walls of the Stellar Shell were all that stood before it.

For half an hour, battered and half suffocated, Leigh clung to a metal bar in its shelter. The wind blew itself out abruptly, the last of the ravished air. The small sun rose warmingly in a sky suddenly serene, and Leigh slept half the day in its heat.

In the afternoon, still aching with weariness, he found the roadway again, and plodded back through the flattened jungle toward the wreck of the *Phoenix*. Hungry, bitter with loneliness, he began to regret that he had survived.

Some swift decay had attacked the fallen purple thorns, but the native life of Mars was thriving exceedingly. In the changing

landscape, it was difficult to find the plane. When at last he reached it, he ate the solitary can of corned beef that remained of his supplies and then rigged up a directional antenna for the transmitter.

For several reasons, this last hopeless message was important. He wanted to end the fears of the Earth; wanted to help Tick Tinker; and he wanted Dr. Elene Kathrine Gayle to know that he had flown nonstop to Mars, usefully, with gasoline.

"Mars, calling Earth," he repeated. "Carter Leigh, on Mars, calling C Q, Earth. Landed here yesterday. Destroyed invaders last night with gasoline bomb. Anticipate no danger further loss of air. Inform Tick Tinker, New York, nonstop flight to Mars made with Zerolube oil. Now marooned on Mars. Goodbye, Earth."

He repeated that message, between intervals of sleep, until the little battery was exhausted. Then he set himself, wearily and without hope, to begin the life of the first Robinson Crusoe of space.

In a pot cut from the end of a gasoline tank, he made stews, queer-flavored but edible, from the fruits and seed of some of the native plants. Hoping to reach a less severe climate in the equatorial regions and driven by a desire to learn more of whatever lost people had built the road, he stowed all the useful articles he could salvage upon a sledge made from the elevator of the *Phoenix*, and set off northward along the straight green pave.

The Earth, now drawing away from Mars, was a splendid golden morning star. Sight of it, in the frosty dawns when he could not keep warm enough to sleep, filled him with tragic loneliness.

One day he threw away the gun, to end his desire to use it on himself. The next he turned back along the road, and spent all the day to find it and clean it again. But when it was ready he put it on the sledge and plodded on down the glassy pavement.

He had counted thirty Martian days. With the slow advance of spring, and his weary progress northward, the climate had

become a little more endurable. He was cheered sometimes by the sight of young, familiar-looking shoots—grown from seed borne upon that interplanetary wind.

But his body was gaunt with privation. He had a recurrent painful cough. Sometimes his meals from the Martian plants brought violent indigestion. The end, he clearly saw, would be the same, whether he used the gun or not.

Then the night, the incredible night, when he woke in his chill bed beside a smouldering fire to hear the familiar rhythmic drum of cathion rockets. He saw a blue star following down the roadway from the south. Breathless and quivering, he sprang up to feed his fire.

**M**ANTLED in the blue flame of its forward jets, the rocket came down upon the road. His firelight showed the legend on its side: *Gayle Foundation*. It would be Laird Cragin, he supposed, another exile—

But the bare grimy yellow head that appeared, when its thick door swung open, was the head of Elene Gayle.

"Greetings, Mr. Lucky Leigh," her brisk voice said. "And congratulations on the aptness of your nickname. . . . You are all right?"

"Right as rain," he croaked hoarsely. "Only—surprised!"

"We finished the rocket." She was oddly breathless. "When the guns and explosives were no longer necessary, we loaded it with return fuel and supplies for a few weeks of exploration."

"Cragin?" demanded Leigh.

"There were two places," said the girl. "After we took off, I made him drop back by parachute." Her voice was suddenly very crisp. "I have the honor to bring you, Leigh, in token of the gratitude of Earth for your recent remarkable nonstop flight, the medals and awards—"

Her voice broke abruptly. She stumbled out of the rocket, and came running across the strange pavement to meet him. In his arms, trembling, she clung to him.