# Station in Space

*James E. Gunn*

An [*e - reads* ] Book

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# Author Biography

James Gunn has worked as an editor of paperback reprints, as managing editor of K.U. alumni publications, as director of K.U. public relations, as a professor of English, and now is professor emeritus of English and director of the Center for the Study of Science Fiction. He won national awards for his work as an editor and a director of public relations. He was awarded the Byron Caldwell Smith Award in recognition of literary achievement and the Edward Grier Award for excellence in teaching, was president of the Science Fiction Writers of America for 1971-72 and president of the Science Fiction Research Association from 1980-82, was guest of honor at many regional SF conventions, including SFeracon in Zagreb, Yugoslavia, and Polcon, the Polish National SF convention, in Katowice; was presented the Pilgrim Award of SFRA in 1976, a special award from the 1976 World SF Convention for Alternate Worlds, a Science Fiction Achievement Award (Hugo) by the 1983 World SF Convention for Isaac Asimov: The Foundations of Science Fiction, and the Eaton Award in 1992 for lifetime achievement; was a K.U. Mellon Fellow in 1981 and 1984; and served from 1978-80 and 1985-present as chairman of the Campbell Award jury to select the best science-fiction novel of the year. He has lectured in Denmark, China, Iceland, Japan, Poland, Romania, Singapore, Sweden, Taiwan, Yugoslavia, and the Soviet Union for the U.S. Information Agency.

**Other works by James Gunn also available in e-reads editions**

*Crisis!*
*Future Imperfect*
*Kampus*
*The Listeners*
*The Magicians*
*This Fortress World*

# Preface

In 1954 I had written my first two science-fiction novels, *This Fortress World* and *Star Bridge* (in collaboration with Jack Williamson). I was writing full-time, living in a house rent-free and working in a

basement room I had converted into an office in the house my parents shared with my brother. My wife and son and I even had free medical care from my brother, and still it was difficult to buy groceries and pay our few other bills.

I spent eight hours a day in my basement office, turning out ten pages a day and rewriting it once. That meant I could write a short story in a week, a novelette in two weeks, a short novel in four weeks, and a novel in three months. I wrote *This Fortress World* and *Star Bridge* that way, and both got published by Gnome Press in 1955, but I got a total of $500 ($450 when my agent took his percentage) for *This Fortress World* and half that (Jack got half) for *Star Bridge* . Both novels were reprinted later and translated into a number of foreign languages, and provide a good return for my efforts, but I didn't know about those prospects then, and at the time $750 for six months' work seemed like a poor strategy for a struggling writer.

I made two decisions: I would place my stories in the near future, and I would write my novels in the form of short stories and novelettes that I could get published first in the magazines and later collect as books. When I became a teacher of fiction writing I passed it along to my students as "Gunn's Law" (*Sell it twice!).*

One of the ideas I was turning over in my head was the near future of space flight: how would the public's inertia ever be overcome? Willy Ley and Wernher von Braun had started the process by collaborating on an issue of *Collier's* dedicated to the construction of a space station, complete with evocative paintings by astronomical artist Chesley Bonestell. It was later reproduced in book form as *The Conquest of Space.* I sat down to write a story that might be published in the slick magazines (the ultimate aspiration of every pulp writer). I called it "The Cave of Night," and when it was done I asked my agent to send it to *Collier's* and, if *Collier's* rejected it, to the *Saturday Evening Post* . He sent it to *Collier's* , and when *Collier's* rejected it he shipped it over to Horace Gold at *Galaxy,* who paid me 3 ½ cents a word and published it in the February 1955 issue.

A couple of good things happened. "The Cave of Night" was dramatized on NBC's "X Minus One" radio program. I got $50 for that. A year or so later *Galaxy* told my agent it wanted to develop a television program that would broadcast dramatizations from the pages of *Galaxy* , as "X Minus One" had done on radio. *Galaxy* wanted "The Cave of Night" for its pilot program and bought the TV rights for $350. Not long afterwards, apparently, that project fell through and the rights were sold to Desilu, which broadcast a version in 1959 on "Desilu Playhouse" under the title of "Man in Orbit" (with Lee Marvin and H. G. Marshall). That was too late to save my full-time writing career (by then I was working in the Chancellor's office at the University of Kansas), but it was good to have something on television, even though somewhere along the line the point of the story had been changed (that would become a familiar feeling).

Back in 1954, however, I had gone on to write "Hoax." Horace Gold didn't like it ("Are you going to keep on writing stories about hoaxes?" he wrote), but James Quinn did and published it in *IF* in December of 1955. I wrote "The Big Wheel" in 1955, and it got published in *Fantastic Universe* in September 1956. By that time I was editing the alumni publications for the University of Kansas Alumni Association, under an agreement that I could take off one week a month and a month every summer to write. I also enrolled in a writers workshop course from mainstream author and editor Carolyn Gordon, who taught me (among other things) about Flaubert's invention of creating a sense of reality by describing places with appeals to at least three senses. I wrote "Powder Keg" in that class. I suspect that Ms. Gordon was a bit puzzled by it, but she didn't flinch. *If* published it in April of 1958.

Before that came out I had written in the summer of 1956 the short novel "Space Is a Lonely Place," and Bob Mills, who later would become my agent, published it in his innovative magazine *Venture* in May

1957. By that time Bantam Books had decided to start a science-fiction line, and my then agent, Harry Altshuler, submitted *Station in Space*. Bantam didn't reply for a several months (Harry would write that submitting a book to Bantam was like dropping it down a well, but eventually they always seemed to come through with an acceptance); then they sent us a contract for the unheard of advance of $2,500.

So it seemed that my strategy had worked. The book was published in 1958. Meanwhile, however, something else had happened. A man-made satellite had been placed in orbit on October 4, 1957. It was called Sputnik, and the Russians had done it. The U.S. didn't launch one until 1958, and it was the third. *Station in Space* was out of date before it was published! I discovered that stories could be placed too close to the present.

Science-fiction writers get reputations as prophets. They aren't really in that business. Their intention is to write plausible scenarios about possible futures. Sometimes, by chance, one of them coincides with reality. I wasn't too good in my foreshadowing of the future of spaceflight. But what about the first American in orbit, John Glenn, on Feb. 20, 1962? What do you call it when the town of Perth, Australia, turned its lights on and off as Glenn's flight passed overhead? Well, maybe somebody had read *Station on Space* or seen the television adaptation. Or maybe….

So *Station in Space* can be read today as historical science fiction like Jules Verne's *From the Earth to the Moon.* Or as alternate reality. Or as the way it should have been….

James Gunn

*It was twenty years of dreams, five*

*years of hell, and a thousand miles*

*straight up! It was a long hard*

*journey, so the crewmen had to be*

*perfect. The standards of physical*

*and intellectual perfection were*

*impossibly high—ten thousand were*

*rejected for each man chosen.*

*But there was still more—psychological*

*perfection. A man cannot take his*

*hatreds and prejudices with him to*

*space—they weigh too much.*

*TO SURVIVE THE SWIFT AND*

*MERCILESS JUDGMENT OF PURE*

*SPACE, ITS CONQUERORS MUST*

*BE SECOND ONLY TO THE GODS.*

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## *Station in Space*

# The Cave of Night

THE PHRASE WAS FIRST USED by a poet disguised in the cynical hide of a newspaper reporter. It appeared on the first day and was widely reprinted. He wrote:

*"At eight o'clock, after the Sun has set and the sky is darkening, look up! There's a man up there where no man has ever been.*

"He is lost in the cave of night. . . "

The headlines demanded something short, vigorous and descriptive. That was it. It was inaccurate, but it stuck.

If anybody was in a cave, it was the rest of humanity. Painfully, triumphantly, one man had climbed out. Now he couldn't find his way back into the cave with the rest of us.

What goes up doesn't always come back down.

That was the first day. After it came twenty-nine days of agonized suspense.

*The cave of night.* I wish the phrase had been mine.

That was it, the tag, the symbol. It was the first thing a man saw when he glanced at the newspaper. It was the way people talked about it: "What's the latest about the cave?" It summed it all up, the drama, the anxiety, the hope.

Maybe it was the Floyd Collins influence. The papers dug up their files on that old tragedy, reminiscing, comparing, and they remembered the little girl—Kathy Fiscus, wasn't it?—who was trapped in that abandoned, California drain pipe; and a number of others.

Periodically, it happens, a sequence of events so accidentally dramatic that men lose their hatreds, their terrors, their shynesses, their inadequacies, and the human race momentarily recognizes its kinship.

The essential ingredients are these: A person must be in unusual and desperate peril. The peril must have

duration. There must be proof that the person is still alive. Rescue attempts must be made. Publicity must be widespread.

One could probably be constructed artificially, but if the world ever discovered the fraud, it would never forgive.

Like many others, I have tried to analyze what makes a niggling, squabbling, callous race of beings suddenly share that most human emotion of sympathy, and, like them, I have not succeeded. Suddenly a distant stranger will mean more than their own comfort. Every waking moment, they pray: Live, Floyd! Live, Kathy! Live, Rev!

We pass on the street, we who would not have nodded, and ask, "Will they get there in time?"

Optimists and pessimists alike, we hope so. We all hope so.

In a sense, this one was different. This was purposeful.

Knowing the risk, accepting it because there was no other way to do what had to be done, Rev had gone into the cave of night. The accident was that he could not return.

The news came out of nowhere—literally—to an unsuspecting world. The earliest mention the historians have been able to locate was an item about a ham radio operator in Davenport, Iowa. He picked up a distress signal on a sticky-hot June evening.

The message, he said later, seemed to fade in, reach a peak, and fade out:

". . . and fuel tanks empty.—ceiver broke. . . transmitting in clear so someone can pick this up, and. . . no way to get back. . . stuck. . ."

A small enough beginning.

The next message was received by a military base radio watch near Fairbanks, Alaska. That was early in the morning. Half an hour later, a night-shift worker in Boston heard something on his short-wave set that sent him rushing to the telephone.

That morning, the whole world learned the story. It broke over them, a wave of excitement and concern. Orbiting 1,075 miles above their heads was a man, an officer of the United States Air Force, in a fuelless spaceship.

All by itself, the spaceship part would have captured the world's attention. It was achievement as monumental as anything Man has ever done and far more spectacular. It was liberation from the tyranny of Earth, this jealous mother who had bound her children tight with the apron strings of gravity.

Man was free. It was a symbol that nothing is completely and finally impossible if Man wants it hard enough and long enough.

There are regions that humanity finds peculiarly congenial. Like all Earth's creatures, Man is a product and a victim of environment. His triumph is that the slave became the master. Unlike more specialized animals, he distributed himself across the entire surface of the Earth, from the frozen Antarctic continent to the Arctic icecap.

Man became an equatorial animal, a temperate zone animal, an arctic animal. He became a plains dweller, a valley dweller, a mountain dweller. The swamp and the desert became equally his home.

Man made his own environment.

With his inventive mind and his dexterous hands, he fashioned it, conquered cold and heat, dampness, aridness, land, sea, air. Now, with his science, he had conquered everything. He had become independent of the world that bore him.

It was a birthday cake for all mankind, celebrating its coming of age.

Brutally, the disaster was icing on the cake.

But it was more, too. When everything is considered, perhaps it was the aspect that, for a few, brief days, united humanity and made possible what we did.

It was a sign: Man is never completely independent of Earth; he carries with him his environment; he is always and forever a part of humanity. It was a conquest mellowed by a confession of mortality and error.

It was a statement: Man has within him the qualities of greatness that will never accept the restraints of circumstance, and yet he carries, too, the seeds of fallibility that we all recognize in ourselves.

Rev was one of us. His triumph was our triumph; his peril—more fully and finely—was our peril.

Reverdy L. McMillen, III, first lieutenant, U.S.A.F. Pilot. Rocket jockey. Man. Rev. He was only a thousand miles away, calling for help, but those miles were straight up. We got to know him as well as any member of our own family.

The news came as a great personal shock to me. I knew Rev. We had become good friends in college, and fortune had thrown us together in the Air Force, a writer and a pilot. I had got out as soon as possible, but Rev had stayed in. I knew, vaguely, that he had been testing rocket-powered airplanes with Chuck Yeager. But I had no idea that the rocket program was that close to space.

Nobody did. It was a better-kept secret than the Manhattan Project.

I remember staring at Rev's picture in the evening newspaper—the straight black hair, the thin, rakish mustache, the Clark Gable ears, the reckless, rueful grin—and I felt again, like a physical thing, his great joy in living. It expressed itself in a hundred ways. He loved widely, but with discrimination. He ate well, drank heartily, reveled in expert jazz and artistic inventiveness, and talked incessantly.

Now he was alone and soon all that might be extinguished. I told myself that I would help.

That was a time of wild enthusiasm. Men mobbed the Air Force Proving Grounds at Cocoa, Florida, wildly volunteering their services. But I was no engineer. I wasn't even a welder or a riveter. At best, I was only a poor word mechanic.

But words, at least, I could contribute.

I made a hasty verbal agreement with a local paper and caught the first plane to Washington, D. C. For a long time, I liked to think that what I wrote during the next few days had something to do with subsequent events, for many of my articles were picked up for reprint by other newspapers.

The Washington fiasco was the responsibility of the Senate Investigating Committee. It subpoenaed everybody in sight—which effectively removed them from the vital work they were doing. But within a day, the Committee realized that it had bitten off a bite it could neither swallow nor spit out.

General Beauregard Finch, head of the research and development program, was the tough morsel the Committee gagged on. Coldly, accurately, he described the development of the project, the scientific and technical research, the tests, the building of the ship, the training of the prospective crewmen, and the winnowing of the volunteers down to one man.

In words more eloquent because of their clipped precision, he described the takeoff of the giant three-stage ship, shoved upward on a lengthening arm of combining hydrazine and nitric acid. Within fifty-six minutes, the remaining third stage had reached its orbital height of 1,075 miles.

It had coasted there. In order to maintain that orbit, the motors had to flicker on for fifteen seconds.

At that moment, disaster laughed at Man's careful calculations.

Before Rev could override the automatics, the motors had flamed for almost half a minute. The fuel he had depended upon to slow the ship so that it would drop, re-enter the atmosphere and be reclaimed by Earth was almost gone. His efforts to counteract the excess speed resulted only in an approximation of the original orbit.

The fact was this: Rev was up there. He would stay there until someone came and got him.

And there was no way to get there.

The Committee took that as an admission of guilt and incompetence; they tried to lever themselves free with it, but General Finch was not to be intimidated. A manned ship had been sent up because no mechanical or electronic computer could contain the vast possibilities for decision and action built into a human being.

The original computer was still the best all-purpose computer.

There had been only one ship built, true. But there was good reason for that, a completely practical reason—money.

Leaders are, by definition, ahead of the people. But this wasn't a field in which they could show the way and wait for the people to follow. This was no expedition in ancient ships, no light exploring party, no pilot-plant operation. Like a parachute jump, it had to be successful the first time.

This was an enterprise into new, expensive fields. It demanded money (billions of dollars), brains (the best available), and the hard, dedicated labor of men (thousands of them).

General Finch became a national hero that afternoon. He said, in bold words, "With the limited funds you gave us, we have done what we set out to do. We have demonstrated that space flight is possible, that a space platform is feasible.

"If there is any inefficiency, if there is any blame for what has happened, it lies at the door of those who lacked confidence in the courage and ability of their countrymen to fight free of Earth to the greatest glory. Senator, how did you vote on that?"

But I am not writing a history. The shelves are full of them. I will touch on the international repercussions only enough to show that the event had no more respect for national boundaries than Rev's orbiting ship.

The orbit was almost perpendicular to the equator. The ship traveled as far north as Nome, as far south as Little America on the Antarctic Continent. It completed one giant circle every two hours. Meanwhile, the Earth rotated beneath. If the ship had been equipped with adequate optical instruments, Rev could have observed every spot on Earth within twenty-four hours. He could have seen fleets and their

dispositions, aircraft carriers and the planes taking off their decks, troop maneuvers.

In the General Assembly of the United Nations, the Russian ambassador protested this unwarranted and illegal violation of its national boundaries. He hinted darkly that it would not be allowed to continue. The U.S.S.R. had not been caught unprepared, he said. If the violation went on—*"every few hours!"* —drastic steps would be taken.

World opinion reared up in indignation. The U.S.S.R. immediately retreated and pretended, as only it could, that its belligerence had been an unwarranted inference and that it had never said anything of the sort, anyway.

This was not a military observer above our heads. It was a man who would soon be dead unless help reached him.

A world offered what it had. Even the U.S.S.R. announced that it was outfitting a rescue ship, since its space program was already on the verge of success. And the American public responded with more than a billion dollars within a week. Congress appropriated another billion. Thousands of men and women volunteered.

The race began.

Would the rescue party reach the ship in time? The world prayed.

And it listened daily to the voice of a man it hoped to buy back from death.

The problem shaped up like this:

The trip had been planned to last for only a few days. By careful rationing, the food and water might be stretched out for more than a month, but the oxygen, by cutting down activity to conserve it, couldn't possibly last more than thirty days. That was the absolute outside limit.

I remember reading the carefully detailed calculations in the paper and studying them for some hopeful error. There was none.

Within a few hours, the discarded first stage of the ship had been located floating in the Atlantic Ocean. It was towed back to Cocoa, Florida. Almost a week was needed to find and return to the Proving Grounds the second stage, which had landed 906 miles away.

Both sections were practically undamaged; their fall had been cushioned by ribbon parachutes. They could be cleaned, repaired, and used again. The trouble was the vital third stage—the nose section. A new one had to be designed and built within a month.

Space-madness became a new form of hysteria. We read statistics, we memorized insignificant details, we studied diagrams, we learned the risks and the dangers and how they would be met and conquered. It all became part of us. We watched the slow progress of the second ship and silently, tautly, urged it upward.

The schedule overhead became part of everyone's daily life. Work stopped while people rushed to windows or outside or to their television sets, hoping for a glimpse, a glint from the high, swift ship, so near, so untouchably far.

And we listened to the voice from the cave of night:

"I've been staring out the portholes. I never tire of that. Through the one on the right, I see what looks

like a black velvet curtain with a strong light behind it. There are pinpoint holes in the curtain and the light shines through, not winking the way stars do, but steady. There's no air up here. That's the reason. The mind can understand and still misinterpret.

"My air is holding out better than I expected. By my figures, it should last twenty-seven days more. I shouldn't use so much of it talking all the time, but it's hard to stop. Talking, I feel as if I'm still in touch with Earth, still one of you, even if I am way up here.

"Through the left-hand window is San Francisco Bay, looking like a dark, wandering arm extended by the ocean octopus. The city itself looks like a heap of diamonds with trails scattered from it. It glitters up cheerfully, an old friend. It misses me, it says. Hurry home, it says. It's gone now, out of sight. Good-by, Frisco!

"Do you hear me down there? Sometimes I wonder. You can't see me now; I'm in the Earth's shadow. You'll have to wait hours for the dawn. I'll have mine in a few minutes.

"You're all busy down there. I know that. If I know you, you're all worrying about me, working to get me down, forgetting everything else. You don't know what a feeling that is. I hope to Heaven you never have to, wonderful though it is.

"Too bad the receiver was broken, but if it had to be one or the other, I'm glad it was the transmitter that came through. There's only one of me. There are billions of you to talk to.

"I wish there were some way I could be sure you were hearing me. Just that one thing might keep me from going crazy."

Rev, you were one in millions. We read all about your selection, your training. You were our representative, picked with our greatest skill.

Out of a thousand who passed the initial rigid requirements for education, physical and emotional condition and age, only five could qualify for space. They couldn't be too tall, too stout, too young, too old. Medical and psychiatric tests weeded them out.

One of the training machines—Lord, how we studied this—reproduces the acceleration strains of a blasting rocket. Another trains men for maneuvering in the weightlessness of space. A third duplicates the cramped, sealed conditions of a spaceship cabin. Out of the final five, you were the only one who qualified.

No, Rev, if any of us could stay sane, it was you.

There were thousands of suggestions, almost all of them useless. Psychologists suggested self-hypnotism; cultists suggested yoga. One man sent in a detailed sketch of a giant electromagnet with which Rev's ship could be drawn back to Earth.

General Finch had the only practical idea. He outlined a plan for letting Rev know that we were listening. He picked out Kansas City and set the time. "Midnight," he said. "On the dot. Not a minute earlier or later. At that moment, he'll be right overhead."

And at midnight, every light in the city went out and came back on and went out and came back on again.

For a few awful moments, we wondered if the man up there in the cave of night had seen. Then came the voice we knew now so well that it seemed it had always been with us, a part of us, our dreams and our waking.

The voice was husky with emotion:

"Thanks. . . Thanks for listening. Thanks, Kansas City. I saw you winking at me. I'm not alone. I know that now. I'll never forget. Thanks."

And silence then as the ship fell below the horizon. We pictured it to ourselves sometimes, continually circling the Earth, its trajectory exactly matching the curvature of the globe beneath it. We wondered if it would ever stop.

Like the Moon, would it be a satellite of the Earth forever?

We went through our daily chores like automatons while we watched the third stage of the rocket take shape. We raced against a dwindling air supply, and death raced to catch a ship moving at 15,800 miles per hour.

We watched the ship grow. On our television screens, we saw the construction of the cellular fuel tanks, the rocket motors, and the fantastic multitude of pumps, valves, gauges, switches, circuits, transistors, and tubes.

The personnel space was built to carry five men instead of one man. We watched it develop, a Spartan simplicity in the middle of the great complex, and it was as if we ourselves would live there, would watch those dials and instruments, would grip those chair-arm controls for the infinitesimal sign that the automatic pilot had faltered, would feel the soft flesh and the softer internal organs being wrenched away from the unyielding bone, and would hurtle upward into the cave of night.

We watched the plating wrap itself protectively around the vitals of the nose section. The wings were attached; they would make the ship a huge, metal glider in its unpowered descent to Earth after the job was done.

We met the men who would man the ship. We grew to know them as we watched them train; saw them fighting artificial gravities, testing spacesuits in simulated vacuums, practicing maneuvers in the weightless condition of free fall.

That was what we lived for.

And we listened to the voice that came to us out of the night:

Twenty-one days. Three weeks. Seems like more. Feel a little sluggish, but there's no room for exercise in a coffin. The concentrated foods I've been eating are fine, but not for a steady diet. Oh, what I'd give for a piece of home-baked apple pie!

"The weightlessness got me at first. Felt I was sitting on a ball that was spinning in all directions at once. Lost my breakfast a couple of times before I learned to stare at one thing. As long as you don't let your eyes roam, you're okay.

"There's Lake Michigan! My God, but it's blue today! Dazzles the eyes! There's Milwaukee, and how are the Braves doing? It must be a hot day in Chicago. It's a little muggy up here, too. The water absorbers must be overloaded. "The air smells funny, but I'm not surprised. I must smell funny, too, after twenty-one days without a bath. Wish I could have one. There are an awful lot of things I used to take for granted and suddenly want more than—

"Forget that, will you? Don't worry about me. I'm fine. I know you're working to get me down. If you don't succeed, that's okay with me. My life wouldn't just be wasted. I've done what I've always wanted to do. I'd do it again.

"Too bad, though, that we only had the money for one ship."

And again: "An hour ago, I saw the sun rise over Russia. It looks like any other land from here, green where it should be green, farther north a sort of mud color, and then white where the snow is still deep.

"Up here, you wonder why we're so different when the land is the same. You think: we're all children of the same mother planet. Who says we're different?

"Think I'm crazy? Maybe you're right. It doesn't matter much what I say as long as I say something. This is one time I won't be interrupted. Did any man ever have such an audience?"

No, Rev. Never.

The voice from above, historical now, preserved:

"I guess the gadgets are all right. You slide-rule mechanics! You test-tube artists! You finding what you want? Getting the dope on cosmic rays, meteoric dust, those islands you could never map, the cloud formations, wind movements, all the weather data? Hope the telemetering gauges are working. They're more important than my voice."

I don't think so, Rev. But we got the data. We built some of it into the new ships.*Ships,* not*ship,* for we didn't stop with one. Before we were finished, we had two complete three-stagers and a dozen nose sections.

The voice: "Air's bad tonight. Can't seem to get a full breath. Sticks in the lungs. Doesn't matter, though. I wish you could all see what I have seen, the vast-spreading universe around Earth, like a bride in a soft veil. You'd know then that we belong out here."

We know, Rev. You led us out. You showed us the way.

We listened and we watched. It seems to me now that we held our breath for thirty days.

At last we watched the fuel pumping into the ship—nitric acid and hydrazine. A month ago, we did not know their names; now we recognize them as the very substances of life itself. It flowed through the long special hoses, dangerous, cautiously grounded, over half a million dollars worth of rocket fuel.

Statisticians estimate that more than a hundred million Americans were watching their television sets that day. Watching and praying. . .

Suddenly the view switched to the ship fleeing south above us. The technicians were expert now. The telescopes picked it up instantly, the focus perfect the first time, and tracked it across the sky until it dropped beyond the horizon. It looked no different now than when we had seen it first.

But the voice that came from our speakers was different. It was weak. It coughed frequently and paused for breath.

"Air very bad. Better hurry. Can't last much longer. . . Silly!. . . Of course you'll hurry.

"Don't want anyone feeling sorry for me. . . I've been living fast. . . Thirty days? I've seen 360 sunrises, 360 sunsets. . . I've seen what no man has ever seen before. . . I was the first. That's something. . . worth dying for. . .

"I've seen the stars, clear and undiminished. They look cold but there's warmth to them and life. They have families of planets like our own sun, some of them. . . They must. God wouldn't put them there for

no purpose. . . They can be homes to our future generations. Or, if they have inhabitants, we can trade with them: goods, ideas, the love of creation. . .

"But—more than this—I have seen the Earth. I have seen it—as no man has ever seen it—turning below me like a fantastic ball, the seas like blue glass in the sun. . . or lashed into gray storm-peaks. . . and the land green with life. . . the cities of the world in the night, sparkling. . . and the people. . .

"I have seen the Earth—there where I have lived and loved. . . I have known it better than any man and loved it better and known its children better. . . It has been good. . .

"Good-by. . . I have a better tomb than the greatest conqueror Earth ever bore. . . Do not disturb. . ."

We wept. How could we help it?

Rescue was so close and we could not hurry it. We watched impotently. The crew were hoisted far up into the nose section of the three-stage rocket. It stood as tall as a 24-story building.*Hurry!* we urged. But they could not hurry. The interception of a swiftly moving target is precision business. The takeoff was all calculated and impressed on the metal and glass and free electrons of an electronic computer.

The ship was tightened down methodically. The spectators scurried back from the base of the ship. We waited. The ship waited. Tall and slim as it was, it seemed to crouch. Someone counted off the seconds to a breathless world: ten—nine—eight. . . five, four, three. . . one—*fire!*

There was no flame, and then we saw it spurting into the air from the exhaust tunnel several hundred feet away. The ship balanced, unmoving, on a squat column of incandescence; the column stretched itself, grew tall; the huge ship picked up speed and dwindled into a point of brightness.

The telescopic lenses found it, lost it, found it again. It arched over on its side and thrust itself seaward. At the end of 84 seconds, the rear jets faltered, and our hearts faltered with them. Then we saw that the first stage had been dropped. The rest of the ship moved off on a new fiery trail. A ring-shaped ribbon parachute blossomed out of the third stage and slowed it rapidly.

The second stage dropped away 124 seconds later. The nose section, with its human cargo, its rescue equipment, went on alone. At 63 miles altitude, the flaring exhaust cut out. The third stage would coast up the gravitational hill more than a thousand miles.

Our stomachs were knotted with dread as the rescue ship disappeared beyond the horizon of the farthest television camera. By this time, it was on the other side of the world, speeding toward a carefully planned rendezvous with its sister.

*Hang on, Rev! Don't give up!*

Fifty-six minutes. That was how long we had to wait. Fifty-six minutes from the takeoff until the ship was in its orbit. After that, the party would need time to match speeds, to send a space-suited crewman drifting across the emptiness between, over the vast, eerily turning sphere of the Earth beneath.

In imagination, we followed them.

Minutes would be lost while the rescuer clung to the ship, opened the airlock cautiously so that none of the precious remnants of air would be lost, and passed into the ship where one man had known utter loneliness.

We waited. We hoped.

Fifty-six minutes. They passed. An hour. Thirty minutes more. We reminded ourselves—and were reminded—that the first concern was Rev. It might be hours before we would get any real news.

The tension mounted unbearably. We waited—a nation, a world—for relief.

At eighteen minutes less than two hours—*too soon,* we told ourselves, lest we hope too much—we heard the voice of Captain Frank Pickrell, who was later to become the first commander of the *Doughnut.*

"I have just entered the ship," he said slowly. "The airlock was open." He paused. The implications stunned our emotions; we listened mutely. "Lieutenant McMillen is dead. He died heroically, waiting until all hope was gone, until every oxygen gauge stood at zero. And then—well, the airlock was open when we arrived.

"In accordance with his own wishes, his body will be left here in its eternal orbit. This ship will be his tomb for all men to see when they look up toward the stars. As long as there are men on Earth, it will circle above them, an everlasting reminder of what men have done and what men can do.

"That was Lieutenant McMillen's hope. This he did not only as an American, but as a man, dying for all humanity, and all humanity can glory for it.

"From this moment, let this be his shrine, sacred to all the generations of spacemen, inviolate. And let it be a symbol that Man's dreams can be realized, but sometimes the price is steep.

"I am going to leave now. My feet will be the last to touch this deck. The oxygen I released is almost used up. Lieutenant McMillen is in his control chair, staring out toward the stars. I will leave the airlock doors open behind me. Let the airless, frigid arms of space protect and preserve for all eternity the man they would not let go."

Good-by, Rev! Farewell! Good night!

Rev was not long alone. He was the first, but not the last to receive a space burial and a hero's farewell.

This, as I said, is no history of the conquest of space. Every child knows the story as well as I and can identify the make of a spaceship more swiftly.

The story of the combined efforts that built the orbital platform irreverently called the*Doughnut* has been told by others. We have learned at length the political triumph that placed it under United Nations control.

Its contribution to our daily lives has received the accolade of the commonplace. It is an observatory, a laboratory, and a guardian. Startling discoveries have come out of that weightless, airless, heatless place. It has learned how weather is made and predicted it with incredible accuracy. It has observed the stars clear of the veil of the atmosphere. And it has insured our peace. . .

It has paid its way. No one can question that. It and its smaller relay stations made possible today's worldwide television and radio network. There is no place on Earth where a free voice cannot be heard or the face of freedom be seen. Sometimes we find ourselves wondering how it would have been any other way.

And we have had adventure. We have traveled to the dead gypsum seas of the Moon with the first exploration party. This year, we will solve the mysteries of Mars. From our armchairs, we will thrill to the discoveries of our pioneers—our stand-ins, so to speak. It has given us a common heritage, a common goal, and for the first time we are united.

This I mention only for background; no one will argue that the conquest of space was not of incalculable benefit to all mankind.

The whole thing came back to me recently, an overpowering flood of memory. I was skirting Times Square, where every face is a stranger's, and suddenly I stopped, incredulous.

"Rev!" I shouted.

The man kept on walking. He passed me without a glance. I turned around and stared after him. I started to run. I grabbed him by the arm. "Rev!" I said huskily, swinging him around. "Is it really you?"

The man smiled politely. "You must have mistaken me for someone else." He unclamped my fingers easily and moved away. I realized then that there were two men with him, one on each side. I felt their eyes on my face, memorizing it.

Probably it didn't mean anything. We all have our doubles. I could have been mistaken.

But it started me remembering and thinking.

The first thing the rocket experts had to consider was expense. They didn't have the money. The second thing was weight—even a medium-sized man is heavy when rocket payloads are reckoned, and the stores and equipment essential to his survival are many times heavier.

If Rev had escaped alive, why had they announced that he was dead? But I knew the question was all wrong.

If my speculations were right, Rev had never been up there at all. The essential payload was only a thirty-day recording and a transmitter. Even if the major feat of sending up a manned rocket was beyond their means and their techniques, they could send up that much.

Then they got the money; they got the volunteers and the techniques.

I suppose the telemetered reports from the rocket helped. But what they accomplished in thirty days was an unparalleled miracle.

The timing of the recording must have taken months of work; but the vital part of the scheme was secrecy. General Finch had to know and Captain—now Colonel—Pickrell. A few others—workmen, administrators—and Rev. . .

What could they do with him? Disguise him? Yes. And then hide him in the biggest city in the world. They would have done it that way.

It gave me a funny, sick kind of feeling, thinking about it. Like everybody else, I don't like to be taken in by a phony plea. And this was a fraud perpetrated on all humanity.

Yet it had led us to the planets. Perhaps it would lead us beyond, even to the stars. I asked myself: could they have done it any other way?

I would like to think I was mistaken. This myth has become part of us. We lived through it ourselves, helped make it. Someday, I tell myself, a spaceman whose reverence is greater than his obedience will make a pilgrimage to that swift shrine and find only an empty shell.

I shudder then.

This pulled us together. In a sense, it keeps us together. Nothing is more important than that.

I try to convince myself that I was mistaken. The straight black hair was gray at the temples now and cut much shorter. The mustache was gone. The Clark Gable ears were flat to the head; that's a simple operation, I understand.

But grins are hard to change. And anyone who lived through those thirty days will never forget that voice.

I think about Rev and the life he must have now, the things he loved and can never enjoy again, and I realize perhaps he made the greater sacrifice.

I think sometimes he must wish he were really in the cave of night, seated in that icy control chair 1,075 miles above, staring out at the stars.

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# Hoax

BY DAYLIGHT THE ROOM was small and shabby. Amos had outgrown it, as he had outgrown the bed.

But at night it still had its magic.

When the venetian blinds were closed and the light was off, the stars still came out fluorescently, and the planets, spinning gently in the smallest breath of air, seemed real and close. And the moon—pocked and familiar—a boy could almost reach up and touch it.

Best of all was the S.1.2.—the Doughnut—glowing right above the bed, and the boy, lying there, was free-falling in space, one of the heroes, one of the spacemen.

The boy was grown now, and the sun bleached the stars into tiny spots of paint and exposed the black thread that held up the planets and the S.1.2. The time for dreams was over.

She bustled around the room. The models spun and swayed. "You'll want this," she said briskly, holding out the book.

He took it, the thumbed, battered *Conquest of Space* with the achingly beautiful Bonestells, and put it back on the shelf. "Gosh, Mom," he pleaded, trying to make her understand. "I don't need that. I'm through with all this. Give this junk to Tommy."

"The way you talk—a person would think you weren't coming back," she complained, her voice breaking in the middle.

"Now, Mom." He slipped an arm around her shoulder and squeezed. "We've talked this out. I'm grown up; I'm not a boy any more. All these things"—he dismissed them with a careless hand—"I've got to put away. But I'll be back on leaves and Earth-duty and things."

*She's faded,* he thought. Since he had been at the Academy. It had been a long time since he had thought she was the most beautiful woman in the world. His mother had grown old.

It had been a sad trip home. Maybe it had been a mistake, coming home. Maybe it would have been better to have refused the leave. He had wanted to. But that wouldn't have been fair, either.

He folded over the thin, blue nylon of the spacepack and zipped it shut on his few personal belongings. Her eyes misted. Irritation crossed his face. "Now what's the matter?"

"You're taking so little," she said and caught her lower lip between her teeth.

"You know the weight limit," he said sharply. Then his voice softened. "Ten pounds. To put that on the Doughnut takes sixteen hundred pounds of fuel. Whatever else I need will be there. The Air Force won't let me go naked."

"I know." She sighed. She brightened determinedly "If you're packed, come right downstairs. I saved a piece of pie."

He slung the spacepack over his arm the way spacemen did. As they went down the stairs, he put his left arm clumsily around her waist. "Now, Mom, I don't want anything to eat, honest. I couldn't eat a bite."

"You aren't going away from home empty, young man!"

"Sure, Mom. All right. Whatever you say." He dropped the bag on a chair in the hall and let himself be led into the kitchen.

She watched him eat, her eyes never leaving his face. He forced down the apple pie, not wanting it, fighting the eagerness to be gone, to be on his way.

The kitchen was a place peculiarly his mother's. There she was in command of things; there she had the courage to say what she had been wanting to say. "I just can't understand why anyone would want to go flying off into nothing. Seems like there's enough trouble right here on Earth without hunting up more. Every time I turn on the television"—her eyes moved to the repeater screen flat against the kitchen wall—"it seems there's some new crisis or the cold war is colder or hotter. . ."

"Oh, Mom! You know I've always wanted—ever since I was a little boy, dreaming, playing rockets. . ."

"Little boys I can understand. Grown men are something else again. Like you said upstairs, you expect them to put away childish things. Why?—that's all I want to know. . ."

"Because it's there," he said, knowing that to her this was no reason at all. But it was the reason men had always given their women for chasing a dream, not really able to explain.

"It's important," he went on evenly, "tackling something really worth the doing. It's the dream—like the one that led the settlers into the wilderness, that pulled the wagon trains across the prairies. It's where men are making the future, men who really count, men like Rev McMillen and Bo Finch and Frank Pickrell. It's putting something out there where nothing has ever been—the Doughnut. Courage built it out of dreams. Guts holds it up. And that's just the beginning. It's the future out there."

"It's death out there." Absently, she brushed a wisp of graying hair back into place. "Like McMillen in his tomb, frozen, going around and around the Earth forever. The first man out; the first man to die. That should have warned us. It used to be war that took our men from us; now it's that." She looked up at the ceiling as if she were staring through it, as if she could see the little plastic-and-nylon wheel spinning up there in the sun, where the sky is black and death is never far away.

"Good-by, Mom." He stood up abruptly, kissed her. Her lips were cold. "Don't worry. I'll be all right."

He walked quickly through the house, taking his cap from the closet shelf, picking up the spacepack from the chair. He stopped outside, hesitated and looked back.

Already the house seemed unreal, fading, like everything in it. Even his mother.

He looked up, not seeing the small, swift glint of the Doughnut, not expecting it. The satellite wasn't

visible here until 0319.

He walked a little, letting the Earth tug at him for the last time, thinking that this was fantasy now, soon it would be all as unreal as fiction.

Out there was his reality.

Within a few hours he would step out onto the vast concrete landing strip at Cocoa, Florida.

It was the beginning of the great adventure.

General Finch was shockingly old and ill. Amos compared the reality with the pictures at the Academy: the General shaking hands with Pickrell, facing the Senate subcommittee, giving a memorial wreath to an anonymous pilot to place in orbit for all those men who had given their lives. . .

But then General Beauregard Finch was an old man, four years past retirement age, almost seventy.

The six years since McMillen's fatal flight had aged the General, but with them he had built his own monument. Above him circled the Doughnut to which he had sacrificed his health, his life—as other men had sacrificed their health and their lives.

It was worth it. It was the dream.

In the little waiting room near the platform, the General stood, still straight, still wearing proudly the honorary Doughnut insignia on his shoulder. "You're going out there, Danton, taking with you all our honor, all our pride. We've never sent out a bad one, a coward or a fool. I don't think we've started now. Only a few men have preceded you. Only a few will follow. It will always be a hard, lonely business out there. But there's nothing more worth the doing."

The General had never been out there. By the time it was possible, he was, too old.

"What do they call you now—you cadet replacements?"

"Pick's pick, sir."

"Good enough. That's what you are—picked men, selected and sorted and pruned, over and over. The best of the best. You've had the finest training we could give you. Remember though: it's never enough—the picking or the training. The job is always bigger than the man. What you've gone through is nothing to what is waiting for you."

Amos smiled politely. The General could call it nothing, the Academy selection and training program: he had never been through it. Knowing it now, Amos could not have forced himself to go through it again: the unceasing torment of brain and body, the endless tests of physical and psychological endurance, the perpetual cramming of an infinite amount of information into a finite brain. . .

Call it nothing. Call it five years of hell.

Out of 50,000 applications, 1,000 had been accepted. After the intense physical and psychiatric tests, sixty were left.

They received their reward: five years of training. Five years fighting the books, of taking *g's* in the centrifuge while trying to function as a stage-three crew member, of working out in the "whirligig," of living in the "tank" with thirteen other men for weeks without end—knowing that the psychologists were watching. . .

And always the growing pressure of failure as classmates dropped out, were culled, disappeared, were mentioned no more.

Until there were five left to graduate.

Five out of 50,000. Those were odds you refused to face when you started. The only way to survive was not to think about it, to take each trial as it came, and when the *g's* built too high, to remember the dream and fight once more and once again.

There couldn't be anything tougher than that. The reality would be fulfillment.

"Go on!" the General growled. "Get out there! I talk too much. The ship won't wait, not even for a general."

He was coughing as Amos, in flight helmet and coveralls with the webbed harness over it, strode across the broad platform toward the tapering spire of the ferry. It was a typical three-stager, gleaming in its white, ceramic coating, its clean lines broken by stabilizer fins and the broad, ungainly wings on which the third stage would glide through the atmosphere to a powerless landing.

The elevator, part of the giant, hammerhead crane, lifted Amos smoothly up the side of the ship. Across the hull of the third-stage, beside the vast expanse of wing, were painted these black words: McMILLEN'S FOLLY.

Amos read them and frowned. Service irreverences were unavoidable, but they belonged within the service, not out where the public could share them. To call the S.1.2 the Doughnut was not too bad—he did it himself—but this name left a bad taste in the mouth. The hot hand of air friction could not erase it too soon.

The thick, square door stood open and empty. Amos shrugged and stooped through the air lock into the familiar cabin of the M-5 stage-three.

He climbed the rungs of the ladder toward the one unoccupied seat. On this trip he would be radio op.

The others were in their places—captain, co-pilot, navigator, engineer—their smoothly helmeted heads like bowling balls precariously balanced on seat backs. One of the bowling balls turned, became a face, hard, disinterested. The captain.

"Cadet-Trainee Danton, sir," Amos said, saluting crisply, "reporting for transportation."

"Oh, God!" the captain groaned at the co-pilot. His head twisted back toward Amos. "Where've you been? You think we've got nothing better to do than wait for a lousy cadet? Oh, never mind! Get strapped down! We know—old Bo was giving you speech 12B: 'Words of advice and encouragement for cadets making their maiden trips: We've never sent out a bad one, a coward or a fool. I don't think we've started now.'"

Flushing, Amos lifted himself into the vacant chair and clicked his harness straps into place. *They'd have been waiting anyway. Takeoff time wasn't for five minutes.*

"What's your specialty?" the captain asked.

"Pilot, sir."

"Watch, then. Maybe you'll learn something. Know any radio?"

"Yes, sir."

"Then this is an order: Keep your clammy hands off the instruments! Any communication that's necessary, I'll take care of. Understand?"

"Yes, sir."

"Plug in your earphones or not as you choose, but don't put on throat mikes. I don't want you fouling up the circuits."

Amos's face was burning, but he clenched his teeth and said, "Yes, sir."

The captain reached into an elasticized pocket beside his chair and pulled out a plastic bag. He dropped it to Amos. "Put it on."

"I've had free fall, sir," Amos protested. "I won't need, this."

"You have, eh? How much?"

"Almost seven minutes."

"Eighty seconds at a time in a Keplerian orbit! Nuts! This time you'll get four hours just as a starter. Put it on! That's an order."

Slowly Amos slipped the elastic behind his helmet and fitted the plastic ring over his mouth. It wasn't enough to come through the Academy. He had to prove himself all over again.

"Engineer?"

"Engineer check-off complete."

"Navigator?"

"Navigator check-off complete."

"Co-pilot?"

"Co-pilot check-off complete."

"Radio op and captain's check-off complete. Thirty seconds to blast-off."

"You were a little rough on the kid, Skipper,"

"He can't learn any younger. Or much older, either. Twenty-five seconds."

Amos twisted his head and looked out the unshielded windows of the canopy. *Forget it,* he told himself. *There is always a Queeg. The services lured them, fed them, made them strong. Nowhere else could they achieve satisfaction so easily.*

"Fifteen seconds."

The horizon was a gently curving arc of purple-blue above the gray-black of the sea. Within minutes now, the liberated third-stage would fight its way out of the atmosphere that scattered the blue of the sunlight and gave it to the sky. Within less than an hour it would be in orbit, its velocity canceling Earth's gravity. Within a few hours he would be in the Doughnut. . .

"Five seconds."

Anticipation flooded Amos's throat, choking, unbearable. This was what it had been about, the relentless pressures, the endless torment. This was it about to happen. . .

"Three—two—one. . ."

The cabin began to rumble. Like a torch rising from the ground to light their way, flame shot into the night from the exhaust outlet. Amos could see it reflected from the astronomical dome and the radar saucers and the control tower, etching them into the blackness of the bay.

"Engineering check—all motors blasting."

On the captain's control panel, a red eye opened. "And away we go!" said the captain, exultation in his voice. "Up, beast!"

The cabin roared. The torch outside the window flamed intolerably. Amos squeezed his eyes shut, and the fine, strong net of acceleration pulled him into the seat cushions, fishhooking his cheeks down, tugging at his eyeballs. When he got his eyelids open again, orange-red dials were spinning in front of him, meaningless, the long hours in the centrifuge mock-up wasted. The net pulled, hard, inexorable.

Amos tried to breathe, but his chest couldn't lift against the intolerable weight that held it down. Panic surged, cold, in his stomach, up his throat. . .

A few seconds later, the net dissolved. The seat cushions, released, shoved Amos forward against the harness. His weight dropped from 1,350 pounds down to a little less than 300. He drew a deep, shuddering breath and another.

The first-stage had been dropped, its contribution made. Now the second booster was building its pressures, adding its acceleration to a speed that had already reached more than 5,000 miles per hour.

Slowly the net drew down again. Again Amos's breathing grew difficult. He struggled for one more breath and one more. Then the net was down hard, and there was no more breath.

Seconds passed. The pressure grew, never quite as hard as the first booster's nine *g's* but lasting longer. This time Amos went forty seconds without breathing. Then the second stage dropped away, and the pressure relented.

Amos gasped for breath.

The sky had turned velvet black. The stars were out: unwinking brilliants set in the velvet. The ship was forty miles high; it was traveling almost 15,000 miles per hour.

Third-stage pressures were almost unnoticeable. They never climbed above three *g's.*

They broke into sunlight. His dazzled eyes squeezed shut against the sudden pain, swifter than the metal covers that slid over the canopy to protect it from the massive, unfiltered irradiation of the sun's ultraviolet that otherwise would soon discolor and cloud it.

Afterimages danced in front of Amos's eyes, lasted for minutes. Before they faded, the motors cut out. The net released him completely, the seat cushion shoved, the harness caught him again. . .

But he was falling, hurtling downward from a tremendous cliff, tumbling helplessly and unchecked into infinite depths. . .

He clawed at the chair arms, gripped them until the veins stood out, ropy and blue, in the whiteness. His breath sucked in, rasping. He held it, every muscle braced for the impact. . .

That never came. The pit was bottomless.

It was illusion! The fall reflex. Babies have it; kittens, lowered suddenly, claw wildly for support.

He *was* falling, he told himself. He was falling away from the Earth, coasting upwards at more than 18,000 miles per hour, without that resistance to the pull of gravity which conveys a sensation of weight.

Slowly he let his breath sigh out. Slowly he relaxed stubbornly resisting muscles. He let himself fall.

He opened his eyes and looked up, seeing the seats and helmets above him. For a moment it helped, and then his gravi-receptors told him that this was illusion—there was no up, no down. He was falling in all directions at once.

The cabin was spinning around him. He fought the sensation, fought the feeling of nausea that gripped his throat and stomach. His face perspired, grew cold. A moment later he was violently sick in the plastic bag.

It was almost half an hour before the spasms ceased.

Dimly, through his agony, he heard voices:

"Fuel reserve. . ."

"Skin temperature one thousand. . ."

"Velocity eighteen thousand four. . ."

"Altitude. . ."

"Cocoa. Check flight path. . ."

"On the straight and narrow, Folly. . ."

"Check. Keep us posted will you? Let's make this a nice easy ride—papa's tired."

Heat was a problem. By the time the third-stage left the last thin traces of atmosphere behind, the temperature of the hull was 1,000°F.

The refrigeration equipment, massive enough to cool a ten-story office building, labored to keep the cabin livable. It took four hours for the ship to reach equilibrium temperature.

The crew couldn't sit back and sweat it out. They had jobs to do. In coasting to the 1,075-mile altitude, the ship had dropped below orbital speed. Between them, by star sights and computations, the navigator and co-pilot determined the ship's altitude. The captain pressed a button on the arm of his chair. Slowly the pattern of stars shifted over the canopy.

Once more the captain pressed the firing button. The ship gained a little more than 1,000 miles per hour.

They were in orbit.

The captain spoke to the Doughnut: "Ess one point two. Folly. In orbit but blind. Give us a hand."

The radio was silent.

"Doughnut!" the captain roared. "Get your finger out! Give us a bearing"

"Folly. Ess one point two. Thanks for the outburst. Gave us radio bearing. We now have visual. Following are corrections. . ."

Amos hugged to himself the meaning of S.1.2; it was a mark of belonging, and at the moment it was all he had. The "S" stood for satellite, the "1" for the orbit, the "2" for the second satellite in that orbit.

The S.1.1 was McMillen's tomb, leading the Doughnut by one hundred miles.

With the setting of the sun, the shades had been rolled back from the canopy. The ship was in the shadow of the Earth. Amos stared into the star-speckled sky for his first glimpse of the Doughnut, but the night draped it with invisibility.

It wasn't like the model that had hung above his bed; it didn't glow.

". . . and welcome back, Colonel," said the voice from the Doughnut.

The captain growled and gave the ship a gentle boost. Slowly it began to flip over.

Beneath them—above them—the night-dark Earth appeared and swept across the canopy and gave way again to the stars. In that glimpse Amos saw the reddish glow of a city and a star-brightness near it that swept away before he could identify it. He fought back nausea; terror whispered that he was one of those unfortunates who never got over their spacesickness.

The cruising motor turned on again briefly. Weight and fall again. The tumbling stopped. Amos took a deep, relieved breath. Framed in the canopy now, drawing the eyes like a vision of heaven, was the gently spinning wheel of the Doughnut, one great spoke connecting the rim of the wheel, bulging to a hub in the middle.

It was there at last, barely visible, gleaming dully in the starlight. Amos forgot his nausea.

It had been a long way to come: twenty years of dreams and five years of hell and a thousand miles—straight up.

"If you're going over," the captain said, close, sarcastic, "I'd advise you to slip into something a little warmer. Otherwise you might find the last few feet the hardest."

He floated past. Amos hated him. Hated his sarcasm.

Cautiously he released his harness straps, holding desperately to the chair arm to keep from falling. It was no use trying to fool his gravi-receptors and mechano-receptors; they*knew* he was failing.

Slowly, trying to control his nausea, he floated above the ladder, pulling himself along it until he reached the rack of pressure suits. Clinging to a stanchion and struggling to fit his legs into the proper places was a far different experience than when his 150 pounds had been solid and maneuverable at the Academy. Finally he slipped his legs in and wedged one arm far enough down a sleeve to grab the hand controls.

When he had the other arm in a sleeve, the captain was already dressed. He floated over impatiently to help with the fastenings and lower the helmet over Amos's head.

"Radio working?" The voice was loud and harsh inside the suit.

"Yes, sir."

"Good. Check your suit."

Amos stared at the face dimly visible through two faceplates of dark glass. The complete check took a good five minutes, and the suits were thoroughly inspected after and before every trip. "Yes, sir," he said grimly.

Step by step, joint by joint, gauge by gauge, control by control, attachment by attachment, he went through the suit-check manual. "Suit check complete, sir."

The captain turned curtly, swinging himself by a hook around a stanchion, and caught the air-lock controls. By the time the outer door opened in front of them, bulky stevedores were dumping boxes and crates and tubes out of the cargo compartment. The ship and the three taxis hitched to one broad wing were anchors for a vast spider web of cords and safety lines.

Amos looked up into infinity. Slowly the ship tilted; infinity was a dark mouth gaping; he was falling. . .

He grabbed for the edge of the doorway. Where his hands should have been, tools banged against the hull of the ship. The impact threw him forward, arms flailing helplessly.

As he cleared the side of the ship, Earth swung into view beneath. His orientation twisted. Panic was a live thing in his chest and throat, fluttering icy wings. He was really falling now, falling helplessly and endlessly toward death.

He fell through impalpable space unable to tear his fascinated eyes away from the dark Earth below. Something was clanging against his suit, but it was seconds before he could look to see what it was. The captain was clinging to the handle on the chest of his suit.

Something clicked against his waist. The captain released, him, swung around, began to recede.

"Wait—!" Amos began, fear distorting his voice, and then he saw that a nylon safety line trailed from him to the captain.

The ship was only a few yards away. The captain pulled himself to it by his own line and snapped Amos's cord onto a ring beside the air-lock door. Slowly he reeled Amos in like a clumsy metal fish.

"Elementary lesson number one," the captain said in a bored, unpleasant voice, "the moment you reach space: clip on."

"Sorry, sir," Amos said, his suit dripping inside with sweat.

"That's a word we don't have much use for out here. You seldom live to use it. There's your transportation." He pointed to one of the nearby sausages. "Jump!" Amos hesitated before the blank immensity that separated him from the taxi. Then he closed his eyes and jumped, his safety line unreeling behind. Twice he missed and had to haul himself ignominiously back. On the third try, he caught a hook in the handle on the nose of the little two-man ship and clung.

The captain released his safety line. It disappeared into the reel at Amos's waist.

A round door opened out for Amos. He slipped carefully into the taxi and crawled past the suited pilot to the seat behind.

As Amos buckled himself down, the pilot turned awkwardly in the starlight coming through the canopy and touched his helmet to Amos's. "If your radio's on, turn it off."

The words echoed hollowly. Amos pressed the button under his left index finger. "It's off," he said curiously.

"Good. Privacy's hard enough to come by up here. No use broadcasting everything, eh? My name's Kovac. Lieutenant Max Kovac. You're new, aren't you?"

"That's right. Cadet Amos Danton."

"Glad to meet you, Amos. You don't know how glad. One more like you, and I get rotated. Then watch out, fleshpots!"

"You been here long?"

"Twelve long months, brother. That's twelve years by any other calendar. Just let me get my feet back on the ground, and they couldn't drag me out again with a team of wild rockets. Excuse me, Amos. We're being paged."

From the Hub of the Doughnut came a brilliant spot of light. The taxi jockeyed sickeningly back and forth on its two jets until it was aimed at the station and then the rear jet came on full. The Doughnut swelled in front of them like a balloon, spinning. With a single correction, Kovac slipped the taxi into one of the motionless, cagelike landing berths at either side of the Hub, killing his forward speed with a brief flare of the nose motor. Amos followed Kovac into the turret, his heart beating swiftly, expectantly.

Beyond the air lock was the Hub. Suits hung in brackets around the curving wall like gleaming white monsters. He was inside the Doughnut, Amos thought, spinning with it, a part of it. He was here.

Amos released his helmet clamps and took a deep breath of the Doughnut's air. It smelled like a machine shop inside a bathhouse. It stank.

Kovac was already out of his suit. He helped Amos, saying easily, "Don't let it bother you, kid. It's tough your first time out. You can't coordinate because your muscles and senses are still adjusted to gravity. Everybody goes through it. You'll get the knack. Just don't let anybody kid you. At first we're all babies learning to walk."

He slipped the suit and helmet into an empty bracket. "Come on," he said, launching himself toward one tunnel like a champion diver. He caught the landing net that lined one curving wall and pulled his mouth close to a microphone. "Weight control. Kovac coming in on B with new arrival Cadet Amos Danton. One-fifty?" he asked, gauging Amos's size.

Amos nodded. After a moment a bored voice said, "Okay, you're balanced."

They pulled themselves along the net, their weight slowly increasing, their bodies swinging gradually down toward the rim until, when they reached the little weight-control office, they were hanging from the net.

Amos weighed forty pounds.

In front of a compact computer and a schematic of the Doughnut dotted with small, magnetic markers sat an officer in wrinkled, khaki coveralls. "Danton?" he said, raising an eyebrow in cursory acknowledgment. "Welcome aboard, sucker."

His face straightened as he stood up quickly, saluting. "Welcome back, Colonel."

Someone brushed past Amos and turned, stripping off his flight helmet. It was the captain of the *Folly,* his hair a grizzled spacecut. "Danton, eh?" he said sourly. "Let me know when you're ready to go back in."

He stooped through a doorway and was gone.

The weight given him by the Doughnut's spin had made Amos's empty, aching stomach feel better, but now it felt like it had a brick in it.

*How can a man dream so long,* he thought desperately, *and have the reality turn out so horribly?*

With his helmet off, the captain of the *Folly* was unmistakable. He was Colonel Frank Pickrell, commander of the Doughnut.

General Finch had been right: the selection and the training was never enough; the job was bigger than the man; what Amos had gone through was nothing to what was waiting for him.

To Amos it seemed that he had never been trained at all; he had to learn everything all over again. Nothing could have prepared him for no-weight. Nothing could have prepared him for the fierce, blazing reality of the sun, for the Earth like a giant, round picture framed in white haze and spanning half the field of vision, for the everyday discomforts of life aboard the Doughnut.

There were never enough men for the jobs that had to be done if they were to justify the expense and sacrifice of putting the Doughnut into space and maintaining it there. The work day was 14 to 16 hours long, back-breaking, physical labor done under the most uncomfortable, most dangerous conditions men could endure and still stay sane.

There was never enough space inside the Doughnut even for essentials. If it was a question of function or comfort, comfort lost. Amos's bunk was his for eight hours out of every twenty-four. The two other shifts were allowed to two other men.

He would crawl into the bunk and lie there, too weary to sleep, and wonder if he would survive. There were times he was so homesick for the feel and look and smell of Earth that he cried into the thin pillow, pressing his face deep to muffle the sobs. There were times he would have sold his chance of promotion for ten hours of uninterrupted sleep. There were moments he almost screamed for the lost privilege of a few minutes completely alone.

None of these were possible unless he gave up the dream. And that was the unthinkable. There were fleeting moments he would tell himself that this was fulfillment; he was out there at last—out there in the Doughnut—out with his dreams. So it meant privation and drudgery and psychological starvation—he was out there, and it was wonderful.

It wasn't often he could convince himself. Because this wasn't his dream.

He was given twenty-four hours to acclimate himself, but it was seven days before he could keep down solids. Specialized personnel performed an extra job in maintenance when their regular shift was over, but Amos's specialty was piloting, and he wasn't trusted with a ship. He also knew navigation, engineering, and communications, but these, too, were out of the question. He was assigned to the permanent labor force. He was a janitor, a stevedore, a handyman.

There was little dust. The air-conditioning plant extracted the dirt and lint men brought with them from Earth, but Amos emptied wastebaskets, washed fingerprints off dials, screens, and viewports, scrubbed washrooms, polished brass. . . He answered all calls for working parties; at least once a day he went out to unload a ferry and push the freight to the waiting taxis. In his spare time, he maintained the temperature regulators.

This was a perpetual chore that kept him clinging to the meteor-bumper of the Doughnut for a minimum

of six hours a day as he unscrewed the shutterlike regulators with the tools at the sleeve end of his suit and fastened a renovated regulator in its place.

A week in the S.1.2, and Amos began to forget that he had ever known another life. A week: 84 revolutions of the Earth around the Doughnut; 84 sunrises, 84 sunsets, 84 nights.

Food became less a task, more a gripe. Nausea came less frequently and almost never reached the active stage. Strength returned unnoticed. Life became less a torment, more a drudgery. By the same token, it became less a dream, more a cold reality.

Amos fought it.

There were men to envy in the Doughnut, the observers and the scientists: physicists, aerologists, astro-physicists, astronomer. . . They were doing what they wanted to do in the best possible place to do it.

Amos moved through the Doughnut, cleaning, watching, telling himself that this was the dream.

For the physicists, conditions were available that had been unattainable or attainable only with great effort: weightlessness, virtually perfect vacuums, temperatures approaching absolute zero. . . The physicists were in a state of perpetual excitation, like their cosmic ray counters and ionization chambers.

Underneath the radio ops were the aerologists and the slowly unraveling mystery of weather, seen now from above and outside. Weather had never been so predictable.

Next came the observers, pre-empting two decks for their maps and telescopic enlargements, staring at closely guarded items of military interest. They reminded Amos of pathologists staring through microscopes at viruses and germs and cancer cells—only the things under the lens knew they were being observed and acted accordingly.

Beyond the computer and the telescope control panel was Celestial Observation, two decks tall, where photographs of distant nebulae were projected for study. A few hundred feet from the Doughnut, a free-floating telescope was taking the finest celestial photographs man had ever seen, free from the distortions of a wavering blanket of air.

But, in a sense quite apart from their civilian status, the scientists were a class distinct from the Air Force officers and cadets who manned the Doughnut. The scientists had never left Earth.

For them the S.1.2 was an end in itself, created especially to serve their purposes. It existed as a platform on which to stand as they looked up or down or performed their specialized experiments.

But Amos knew it was only a means, the first of a series of steps that led up to the moon, the planets, and the stars.

The scientists had come out into space to look back at Earth. Amos had come out to reach the stars.

That was the dream.

The thirtieth day, one month: Amos was in the Hub, weightless, stealing moments from sleep to practice doggedly the esoteric techniques of movement without the aid of semicircular canals and otolith organs. He was climbing out of a suit when the loud-speaker said, "Cadet Danton. Report to Colonel Pickrell. Cadet. . ."

In the middle of the *A* spoke, Amos passed Kovac. The lieutenant gave him a wink and an encouraging

smile. "Don't let him make you mad, boy," he whispered. "The Fish is a cold and calculating man!"

Amos smiled briefly.

Across the airtight door was printed: commander. Amos pressed the buzzer. The door swung open toward him. Pickrell stood behind it, his face set and hard.

"Don't stand there like a fool," he said. "Come in."

"Yes, sir." Amos clenched his teeth and stooped through the doorway.

The cabin wasn't much bigger than a closet and not much better furnished. Like Pickrell, it was cold, gray, austere, built not for appearance or comfort but for efficiency. The only furniture was a bunk, a thin, one-legged table, and a chair; when folded flat against the wall, they left a walking space of almost six feet square.

The aluminum table was let down. Pickrell slid behind it into the chair. "It cost over one thousand dollars in propellants alone to get you out here," he said flatly. "I'm ready to write that off. I'm not even concerned about the five hundred dollars a day it takes to maintain you out here. But you're taking up space a good man might fill. I'm sending you back in the next empty seat."

"Why?" The word was expelled from Amos.

"Some men have the equipment for this kind of life. You aren't one of them. You've been sick, haven't you?"

"Once in a while," Amos admitted.

"There's no such thing as spacesickness. It's fear. We don't have room out here for cowards."

"What have you got against me, Colonel? You had it in for me the moment I stepped aboard the ferry. What is it: hate, fear, jealousy? I'm doing my work. If I had a chance I'd do more. Give me that chance, Colonel! Don't send me back before I—"His hands were wet. He looked down. Blood was trickling from the holes his fingernails had cut into his palms.

"I'll tell you what I've got against you, Danton: you've got stars in your eyes. This isn't a job to you; it's a game. I know your kind; I've seen too many of you. You want to go on out You gripe about the Air Force marking time on the moon project or the Mars ship or the Venus expedition. I'll tell you something, Danton: this is no glory road. This satellite is out here to look back on Earth, not out at the stars. But you'll never get that through your head. You're dangerous. You'll kill yourself. That I don't care about. But the chances are dangerously great that you'll take the rest of us with you. And that's my business.

"Get out your nice new spacepack, Danton. You're going in."

Amos stood stiffly in front of the desk, feeling unreal, looking down at the salt-and-pepper spacecut with the bald spot at the crown. But for Pickrell, Danton had ceased to exist.

Amos turned and pushed through the airtight door and let it pull shut behind him. This was the way it ended. This was the bursting of the dream. To destroy it took nothing as powerful or as dramatic as a meteor. A word pierced it, and it collapsed.

But worse than that was the change in Pickrell. This wasn't the man he had idolized. This wasn't the hero, the second man out. This wasn't the man who had stood in the cabin of Rev McMillen's ship and stared down at the frozen body of the man who had led the way out and got lost in the cave of night, his fuel

exhausted. This wasn't the man who had broadcast to the world from 1,000 miles up:

"In accordance with my instructions and his own wishes, his body will be left here in its eternal orbit. . .

"From this moment, let this be his shrine, sacred to all the generations of spacemen, inviolate. And let it be a symbol that Man's dreams can be realized, but sometimes the price is steep. . ."

Pickrell had changed, surely, not the dream. He had grown old and used up, and the dream was too much for him.

And in his hands was the future of space flight.

The dream was betrayed.

Tears stung Amos's eyes. He blinked rapidly, to keep them back. Tears weren't manly, but there are times when even a man must weep.

When his eyes cleared, he was inside the Hub, and the idea was complete.

Pickrell could send him home like a boy who has been naughty at school. Pickrell could break his heart. That was Pickrell's right; he was the Commander. But he couldn't send Amos home until Amos had one chance to do what he had been trained to do.

It took only seconds to get into a suit. Amos pulled up the zippers, pulled down the helmet, clamped it to the suit. He refilled the oxygen tanks at the petcock against the wall. He selected a hand rocket from the rack and slipped through the air lock and out the turret.

It was night; the Earth swam nearby, circling around him, giant and dark.

When he released the landing-berth cage, centrifugal force threw him gently away on a tangent. His stomach sank: he was completely on his own. There were no cords connected to anything: no umbilical cord, no apron string, no safety line.

He spun slowly. The Doughnut swung into view; the sausage-shaped taxis were hitched along the inner edge of the wheel. He could have reached them by the spoke, but that took time. Time was all he had, and there was little left. . .

He was going to miss the rim. He swiveled the hand rocket to one side and gave it a cautious, one-second burst. It shoved him toward the rim, but it made him spin more rapidly.

Quickly he turned the rocket in the opposite direction and let it push until his spin had stopped. Then he was spinning the other way, faster now. Panic gripped his throat; he couldn't swallow.

How long did a hand rocket last? He couldn't remember, but once the fuel was exhausted, he had lost all chance of helping himself.

He closed his eyes to shut out the vast, pancake disk of the Earth flipping crazily over and over; he tried to think. All he could remember was his Academy instructor saying, "Keep it against your belly button! Belly button, I said"

That was it. All force had to be exerted through his center of gravity—roughly the navel—or it created spin.

He opened his eyes, swung the rocket to the right, and gave it a flicker of a burst. His spin slowed. Another flicker. His spin almost stopped. That was good enough, because the rim of the giant wheel was

only two arm-lengths away. When he was faced away from the Doughnut, he pressed the rocket to his navel and fired briefly.

As he passed the rim, he caught the line of a taxi with one hook and let himself slide along it until the taxi stopped him. Its hydrazine and nitric acid gauges stood at only half full.

He took a deep breath and launched himself toward the next taxi in line. This time his reaction flight was perfect. One burst turned him to face the taxi, a second, in the opposite direction, stopped his rotation, a third killed his forward speed.

This one had just been refueled.

Amos unsnapped the hitching line and let the taxi drift tangentially away from the Doughnut. He was weightless, but he had a ship under him. He had power. He had a goal.

Before the chance was gone, he was going to pay a final tribute to a dream. He was going to visit the icy tomb of Rev McMillen.

The tomb was in the same orbit as the Doughnut, but one hundred miles ahead.

He had to head in the right direction, where there was no simple method of determining direction. He had to compute distance traveled, where even fully equipped ships found that difficult. He had to increase speed, when every increase in speed meant an increase in altitude.

And if he strayed off course by just a few minutes of a degree at the start, he would be miles from his goal at the end.

There were no instruments in the taxi, no built-in octants, no patent logs, no computers. . .Taxis were built for short hauls when both ends of the journey were always in view. Two gunsight telescopes were fixed immovably at eye level, one pointing straight forward, the other straight back. The controls were crude: two sticks, one at each side of the pilot's chair, firing the front and the rear rockets, which swiveled within a limited arc in response to the movement of the sticks. The throttles were buttons on top of the sticks.

The taxi was roughly horizontal and spinning gently. The Earth tipped lazily around the canopy, chased by the flat, black-velvet curtain of the night hung with its small, unblinking lanterns. The stars were alien. Where was he?

The Earth rolled around him, the continents and oceans sliding down across the disk: the dark, familiar shapes of Cuba and Florida sliding south. That meant the Doughnut was on its northern leg of the orbit that reached as far north as Nome, as far south as Little America on the Antarctic continent.

The stars snapped into place. There was the Big Dipper. And there—indicated most beautifully by the Pointers—was Polaris.

He drew dividends on his long labor of memorizing the Doughnut's timetable: in five minutes, by the taxi's chronometer, the Pole Star would make an angle with the orbit of—he figured quickly—43° .

Amos killed the taxi's spin and placed his horizontal axis parallel with the Doughnut's orbital plane as near as he could estimate the angle. He could think of only one way to check altitude; he dropped the taxi's nose until the forward sight nicked the Earth's horizon.

Instead of a pilot's suit with its specialized manipulators, he had a handyman's sleeve-end tools. He held the right-hand control stick firmly in a pair of pliers and poised a screwdriver above the throttle

button—and hesitated.

Rocketing one-hundred miles by the seat of his suit was a desperate gamble: there are no railroad tracks in space. There was sacrilege in it, too, but Amos shrugged that away. No shrine has ever been profaned by an honest worshipper.

His jaw tightened. The danger didn't matter. The dream was dying; there would be no other chance.

He pressed the throttle button. The accelerometer climbed quickly to one *g;* he held it there for ten seconds. When he released the throttle, he had added roughly four miles a minute to his velocity. He had used up—he checked the instrument panel quickly—two-tenths of his fuel supply. The nose of the taxi was still pointed at the horizon.

At 2103 the sun rose, flashing blindingly on the nose of the taxi.

At 2116 Amos passed over Nome, his first check point.

At 2119 Amos checked to see that the forward sight was still bisecting the horizon and pressed the left throttle button for ten seconds after the accelerometer reached one *g*.

Given well-matched motors, his increase in speed and altitude were canceled. He should be back in orbit within sight of McMillen's tomb.

He turned slowly to scan the entire field of vision, ignoring the glare of the sun, fierce against his eyes as he looked back.

There was no stage-three in view.

He had failed. There was no use searching a cubic area of space that might be hundreds of miles in volume. *Head back, fool!* he thought. *If you can get back—and I wouldn't bet a used sick-bag on it.*

Cubic, he thought. *Cubic.*

Recklessly, he tumbled the taxi over on its back. For a moment the glare from the polar ice cap blinded him, then he saw it.

To the right, three or four miles away, it gleamed in the sun; highlights ran along one wing and down the cone-shaped hull.

Expertly, Amos killed the tumbling and centered the stage-three in his front sights; he poured on the fuel. The ship swelled but not as quickly as the exultation that filled his throat, hard, choking. He blasted to a stop, careless of fuel.

McMillen's tomb hung a few feet away, its air-lock door gaping open to invite him in.

He didn't move for a moment. He sat quite still for a few seconds, trying to savor the moment, trying to analyze his emotions. They were too complex; he gave it up.

As he crawled out the port, he snapped his safety line onto the taxi. For an instant, holding himself to the taxi, he studied the opening opposite him. Then he dived for it, kicking the taxi back.

He hit glancingly against the open door, caught the jamb with one hook, and pulled himself in. As the taxi reached the end of the safety line, it tried to tug him away, but he had a good hold. Bracing his feet on each side of the doorway, he reeled in the taxi until it was tight against the ship. He turned. The inner air-lock door was open.

He hesitated, thinking about what he would find inside, and reality began to edit his dreams.

He had thought of McMillen sitting in the captain's chair, staring out through the canopy toward the stars he had brought within man's reach, a rueful smile frozen upon his face, his body perfectly preserved by the chill airlessness of space.

It wouldn't be like that at all.

If the ship had ever had a ceramic coating, micro-meteorites had scoured the metal clean years ago. The hull temperature was more than 800°F. That was no deep freeze.

Amos had seen pictures of explosive decompression. If these air-lock doors had been opened quickly, McMillen wouldn't be in one piece. If, on the other hand, the air had leaked out slowly, his body fluids would have started boiling when the air pressure reached six percent of sea level, the blood in the lungs evaporating, blood ballooning under the skin. . .

It was no picture for a dreamer. Amos straightened his shoulders inside his suit, feeling older, as if he had lost something and would lose more. He drifted through the inner doorway and hooked a girder to pull himself toward the nose of the ship.

Under the canopy, he caught himself by another exposed girder, his eyes puzzled, his face wrinkled in an effort to understand.

The interior of the ship was only a shell. There were no seats, no instruments, no inside sheathing. There had been no shutters for the canopy; ultraviolet had turned it almost completely opaque; micro-meteorites had etched it.

There was no pilot, no hero named McMillen. There never had been. No one had ever planned for any.

The only useful object in the shell was a compact radio transmitter bolted to a girder. Attached to it was a tape recorder with an oversized reel. The tape had run out.

It had been a hoax. The great epic of man's first flight into space, the magnificence of Earth's response to his plea for help—it had all been false. The contributions that had made the Doughnut possible had been tricked from a credulous American people.

Amos clung to the girder and grew old. The orange protective coating had never even been painted over. Amos scratched at it until the steel gleamed through: dreams end here.

Coldly he pushed away. He swung back through the airlock door and crawled into the taxi. His movements sent it floating away from the ship.

Icily he computed his return. He had spent more than half of his fuel and almost half of his oxygen.

Ten minutes later Polaris became visible. A ten-second blast from the forward motor slowed the taxi. He waited for the Doughnut to catch up.

A little over twenty-five minutes later, he speeded up again, and the needle of the fuel gauge tapped against the zero peg. He released the throttle button and looked up.

The Doughnut hung above him.

For the first time, he turned on his radio receiver. Immediately, it burst into speech: "Danton! Give us some indication of your position. If your radio is working, answer so that we can get a bearing. We can't

send out searching patties until. . ."

Amos flipped it off, aimed the taxi at the Doughnut, and touched the throttle of the right-hand stick. The motor coughed; just once. It was enough. The ship floated gently toward the ring. Amos crawled out, caught a line as he passed, and snapped the taxi to it.

He hit the landing berth with his first try.

When he came into the Hub, Kovac was climbing into a suit. He stopped, one leg drifting sideways, and stared incredulously at Amos. "Where in the—? My God, man, you've got the whole Doughnut in a—!"

"Took a joy ride," Amos said, releasing his helmet and stripping off the suit. He gave a short, mirthless laugh. "Joy ride! The Colonel is sending me in."

"Sending you in my chilblained foot! You gave him cause!" We drifted closer, glancing at the nearby microphones. "Didn't you understand me? As long as a man obeys instructions and does the work assigned him with any degree of competence, the Fish can't send him in. They took away that power; he was sending in too many men. You had to let him ride you into making a break!"

"I was a sucker," Amos agreed flatly. "I guess I always have been."

He dived for spoke B and pulled himself quickly along the landing net. "I'm back," he threw at the weight-control officer as he passed. Wide-eyed, the lieutenant spun quickly to his phone.

Amos made his way, unhurried, to the cramped communal sleeping quarters for rim B personnel and slipped into his bunk and lay there, his hands under his head, staring at the smooth bulge of the bunk above.

Two minutes later Colonel Pickrell arrived.

The low overhead forced him to bend his neck. He glowered at Amos. "Danton--" he began.

"Excuse my not getting up, Colonel," Amos said, "but there isn't room for two of us between the bunks. If I'd known you wanted to see me, I'd have come to your room."

Pickrell tried to straighten up, couldn't. "All right—everybody but Danton, out of here!"

The bunks emptied swiftly. Men grabbed their clothes and squeezed past Pickrell, glancing backwards curiously. When they were alone, Pickrell sat stiffly on the edge of the bunk across the narrow aisle. Amos didn't look at him.

"All right, Danton, let's have it."

"Have what, Colonel?"

Pickrell stared at him icily. "The explanation for stealing a taxi. For absenting yourself from your post."

"I borrowed the taxi. It's been returned. You can deduct the cost of the fuel from my pay."

"Thanks," Pickrell said sarcastically. "But maybe we should let the courtmartial decide that."

"As for absenting myself—I was on my off-shift, just as I am now. What I choose to do with my off-time is my own affair."

"Ridiculous! There are specific instructions against the unauthorized use of equipment for personal

reasons. Where did you go?"

Amos turned his head and met Pickrell's eyes squarely. "I took a little trip," he said gently. "I visited McMillen's tomb!"

"You're mad!"

Amos looked back at the bunk above him.

"You couldn't possibly get there in a taxi," Pickrell continued sharply. "Without instruments, without radio bearings! And if you got there, you couldn't possibly get back."

Amos lay motionless, his hands under his head, uncaring.

"You're lying," Pickrell said.

Amos looked at him again, at the blue-agate eyes in the hard, weathered face. The lenses had several tiny cataracts. "Why did you do it?" he asked. "Why did you do it that way?"

Pickrell's eyebrows almost met. "You *were* there," he muttered, disbelief lingering in his voice. "Fantastic! I wouldn't trust myself to come back from a trip like that."

"Hoax!" Amos said.

Pickrell took a deep breath and let it sigh out. "Yes," he said, "the ship was empty. McMillen wasn't in it. He wasn't the first man into space. He didn't die there. The messages back—all planned, all taped. Why did it happen that way? To understand you'd have to be one of us, back in 1957."

Amos didn't look at him. What Pickrell said didn't matter. There were no reasons good enough.

"We couldn't get the money," Pickrell said. His eyes seemed to be seeing something a long way off. "That was the only thing we needed—the money. We used all we had—government money, our own; it wasn't enough. We built a ship. We slaved on it. But we couldn't finish it. By stripping the third stage to a shell, we could put a payload of only one hundred pounds into an orbit.

"I don't remember now who suggested the idea—maybe it was McMillen himself. But it was the answer. We all knew it We couldn't really put McMillen up here because we were the only ones with the imagination to see what space flight could mean. So we pretended." He made a sweeping gesture that included the satellite and everything it entailed and meant. "None of us has ever regretted it"

Amos looked at him silently.

"But we didn't want it that way. We could have put a man out here, you see—except for the money. So we got the money the only way we knew how. And we put men out here. That's what counts. That's our justification. We didn't want it this way, but we've never been sorry we did it."

"I'm so glad," Amos said softly.

Pickrell turned fierce eyes on him. "None of us is happy about it—understand that! Bo isn't. He was the last one we convinced; he was the one who really put it over, and it's killing him. McMillen isn't. Who wants to be a hero when you're only a fake hero and you're alive to know it. Do you know who was the first man into space? Me."

Amos chuckled. "And the honor belongs to a living ghost!"

"Who wants it?" Pickrell asked violently. Then, reflectively, "We did what we had to do, to do what had to be done. The other way was too risky. We couldn't leave it to time and chance."

"Where's McMillen?"

"Alive. In New York probably. He's had plastic surgery, and he's under twenty-four hour guard. Not because we don't trust him; we just can't take chances. He gets whatever he wants, within reason."

"Except the privilege of coming out," Amos said. "He can't come out. Ever. He'll die there, the fake hero."

"Yes." Pickrell's eyes snapped back to Amos. His face smoothed. "And you, poor dreamer," he said sardonically, "you see now why I can't keep you here. Only fabulous luck kept you from killing yourself. You might have cost the Air Force a fantastic sum in futile search and lost time."

"But I didn't"

"Give you time," Pickrell said confidently, "—you would. I told you to get packed." He glanced at his wristwatch. "The ferry is due in thirteen minutes."

Amos turned his head curiously. "Why are you so determined to get rid of me, Colonel?"

"Out here dreamers die young," Pickrell said flatly. "We should weed them out early—before we spend millions training them—but they won't listen to me at the Academy. To stay alive out here you have to be ruthless. We got out here by a hoax, but we can't live on illusions. I don't want to die because some fool burns a hole in the Doughnut while he's gazing at the stars. Out here is reality. You can't dream your way around it."

The Colonel's face was no colder than Amos's.

"We're out here on sufferance," Pickrell continued. "We have to bring our environment with us wherever we go, and it isn't enough. The air stinks. The food is awful. The water tastes of human waste. There's no privacy. Try as we can, we never really become completely adjusted to no-weight. We live with death at our elbow: too much heat, too much cold, too much acceleration, too much ultraviolet, too little air, too thin a barrier against the night and the invisible bullets that speed through space, too many unfiltered rays and particles. . .

"I've got five blind spots from heavy primaries plowing through the center of my retina. If an accident doesn't take me first, I'll die before I'm sixty."

"Or if someone doesn't kill you," Amos murmured.

A tight grin slipped across the Colonel's face. "Could a dreamer take that?" he asked. "He'd crack up—if he lived that long. We need men out here, not boys. That's why you're going back."

He stood up as straight as the overhead would allow and started for the doorway as if everything had been said.

"Colonel," Amos said, lifting his voice a little. "How do you get a man to go through five years of hell at the Academy and then come out here to live with discomfort and death—if you take away the dream?"

Pickrell swung back, frowning.

"I thought I'd tell you, Colonel: I'm not going back."

"What did you say?" Pickrell asked slowly.

"Send me back," Amos said clearly, "and I'll expose the hoax."

Pickrell grinned. "Blackmail?"

"Call it that."

Pickrell studied Amos as if the cadet had suddenly changed faces. "I've got a hunch I've been wrong about you. I've decided to let you stay."

Amos accepted it as if he had expected nothing else.

"I'll tell you the real reason," Pickrell went on. "Not because of what you might say—who'd believe a courtmartialed officer, disgruntled, out for revenge? Or maybe a little accident—they're easy to come by out here and they're usually fatal. No—you did make that trip; there must be something of a pilot in you. And I see now that you can be ruthless, too."

Pickrell chuckled. "Blackmail! Danton, I think I like you after all. Now that you've got this foolishness about heroes and the great adventure knocked out of you, maybe you'll be a spaceman yet. You're right—it's the best solution. We can't let you go back. Not ever. You'll be McMillen's counterpart, out here. Next shift you take over a taxi. Good night, *Lieutenant.* Sweet dreams."

He stooped through the doorway: a hard, unhappy man—a dreamer who had sold his dreams for the means to make them real. When his dreams came back to haunt him, they must be bitter.

Amos grimaced as a tiny spot of pain burned briefly in his chest. A heavy primary had passed through a pain receptor.

He touched the button beside the viewport, and the outside cover lifted away. Out there was Mars. Somewhere was Venus and the rest. Nearer, almost within reach, was the moon.

They weren't the same, he and the Colonel, Amos thought.

The dreams a man absorbs from his society, as naturally as the air he breathes, aren't important. Soon or late—they die. Call it growing up.

And when a man grows up he has to make his own dreams. His were still out there.

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# The Big Wheel

NAKED AND ANONYMOUS, I shivered in the cold, barren corridor, my arms folded across my chest, a waiting human cipher in a line of men equally naked, equally anonymous.

*Clothes make the man,* I thought. But that wasn't quite it. *Clothes give us the courage to be men.* Yes, that was a little better.

There was this to be said for nudism: without their clothes all men are brothers. *Rich man, poor man, beggarman, Red. . .*

It was appropriate that we should be standing there naked. Through some unknown sin, through some unsuspected crime against society, we had lost the right to be men. We had been stripped of our jobs, of

our rightful places in society. We had been stripped of our pride and our manhood. No indignity was too great an expiation.

Insecurity does that to a man.

This was no different from any other government project: make haste to get here, hurry to get undressed, hurry to wait. I hoped it was inefficiency. I didn't like to think that it was policy—an indignity intended to render us properly malleable.

But these days there were many things I didn't like to think.

The line stirred restlessly. Someone coughed. I looked at my watch. It had been only half an hour. I shivered again.

The man in front of me turned, grinning. He was big and blond and pot-bellied. "Cold?" he asked.

"Cold enough."

"You should have some insulation like me," he said. He patted his belly. "But if you think you're cold, look at the guy behind you."

I turned, In back of me was a thin, dark-haired boy. I stared rudely, but I couldn't help it. I'd always thought the phrase "blue with cold" was hyperbole.

"I—I w-wish they'd h-hurry up-p!" the boy said between chattering teeth.

Behind him was a lean, saturnine man with mobile, black eyebrows over deep-set eyes. "The mills of our economic gods grind slowly," he said in a resonant, public-speaker's voice, "but they will grind us exceeding fine."

I grinned. "My name's Bruce Patterson," I said to the three of them.

"Jock Eckert," said the pot-bellied blond, sticking out a meaty hand at the end of a massive forearm.

"George Kendrix," said the man behind the boy.

"Clary Calhoun," said the boy.

"You're kidding!" Eckert protested.

The boy looked sheepish. "No—that's my name."

"Cheer up," I said. "Maybe you'll outgrow it."

We laughed together. It was an alchemy that made us men again.

At the head of the line, a door opened. A crisp, authoritative voice said, "The first ten, file in." The speaker counted them off. "That's all. We'll get to the rest of you as soon as possible."

The line shuffled forward. I counted the heads in front of us: thirteen. "What's the job?" I asked. "Anybody know?"

Eckert shrugged. "Who cares? It's a government job, it's a construction job, and it pays triple time for hazard. Any construction job they got, I can handle."

"Not government exactly," Kendrix corrected. "C.I.C. There's a difference."

"Not in my book," Eckert growled. "It's a boondoggle like the Hell River Job, but when they're passing it out little Jock is going to be in line. Triple time goes a long way these days."

"That's right," I agreed, hearing a hungriness in my voice and hating it.

The door opened again. "Ten more. One at a time. Don't push. You'll all get in."

The door closed. We moved up. *Next time,* I thought. "You didn't help us build the field?"

"I was a foreman at Hell River," Eckert said. "This job sounded better, so I quit and came down."

"You aren't married then."

"These times? Hell, no!"

"You're lucky," I said.

Eckert turned on Clary. "What are you grinning at? You know something?"

"Maybe." Clary's grin broadened. "You'll know soon enough."

"Listen to the kid!" Eckert shook his head. "He thinks he's grown up because he's here with the men. Bet this is his first job. How about you, Patterson? What did you do before the Crash?"

"I was an inspector for an automated production line." I laughed bitterly. "And then they got a hunk of metal, wire, and transistors to take *my* place."

"Kendrix?"

"Believe it or not," Kendrix said, "I was an economics professor in a Midwestern college. I got fired for calling a spade a spade. Specifically, I said we were in the middle of the biggest depression economic man had ever known."

"What is it when twenty million men are out of work," Eckert asked, "if it ain't a depression?"

Clary looked puzzled.

Kendrix laughed and seemed genuinely amused. "Why, it's a rolling recession, a technological readjustment, a correction, a mild dip, a downswing, a return to normalcy—anything but the bogey-word. I was called to testify before a congressional committee. For the sake of my convictions, I joined the unemployables."

The door opened. "Ten more," said the voice of authority.

It came from a man no older than I, but he wore the soft, gray semi-uniform of C.I.C. *Take away his clothes,* I thought, *and where would his authority be?*

Meekly we filed into the antiseptic whiteness of a hospital ward. It had been stripped of everything except a few desks, a few chairs, and an examination table. Behind the desks and on the chairs sat doctors in their white jackets, their stethoscopes hung around their necks like identifying medallions.

Eckert moved into the production line, responding to questions and directions with no more free will than the lowliest servomechanism.

"Ever had any serious illnesses? Mumps? Insanity in your family? Ever been seasick? Airsick? Bend

over. Spread your cheeks. Ever have a hernia. . .?"

Farther down the line, men were stepping onto boxes, and down again, over and over, trying to balance themselves on one foot with their eyes closed, doing deep knee bends, adjusting cords attached to distant pegs, reading eye charts.

I closed my eyes.*Let me get the job,* I thought prayerfully.*Please let me get the job!*

"I'll tell you what it is," Clary whispered in my ear.

I turned. Clary's face was eagerly alive, his eyes bright with a secret vision.

"We're going to build a satellite," he whispered.

**II**

The makeshift hall was stuffy and hot with the animal heat and exhalations of five hundred men. There were at least five hundred of us sitting on the hard, folding chairs, wondering what was coming next. I started counting heads and got to 373 before I lost track and gave up.

We sat at the back, the four of us: Eckert, Clary Calhoun, Kendrix, and me. We had all passed the physical. It was good to be dressed again, but it was even better to be that much closer to the job.*Three hundred dollars a week,* I thought greedily, and felt ashamed.

"What makes you think it's a satellite?" I asked Clary.

"If it weren't, I wouldn't be here," Clary said confidently. "I couldn't get an appointment to the Academy, you see. I went to college, studied rocket engineering and things like that. But by the time I was graduated the Depression was in full swing and nobody was building rockets. Then I heard about this."

I imagined myself drifting up there in the sky, in the frigid void, in the eternal night, building a satellite, and I shivered in spite of the heat.

"Why build another satellite?" I demanded querulously.

Hendrix arched his knowing eyebrows. "The C.I.C. has reasons—public reasons and private reasons."

"Am I the only one who didn't get the word?"

"I'm another," Eckert said, and chuckled. "But I don't give a damn. If they've got a job, I'll do it for them. They pay me enough, I'll build them a satellite around Jupiter."

"The modern Hercules—and his motive," said Hendrix.

"Doesn't it make your heart beat faster?" Clary asked eagerly. "To be part of the great adventure of our time?"

"I haven't lost anything up there," I said curtly.

Beside the platform at the front of the hall, a door opened. Four men trouped through and up onto the rough stage: one in C.I.C. gray, one in Air Force blue, the other two in dark business suits. They sat down on four folding chairs at the back of the crude stage and talked among themselves, ignoring us.

After I'd grown tired of looking at them, I studied the platform. It had been hastily decorated with bunting and a couple of American flags in standards at either end of the stage. A banner hung above: capital

investment corporation. Two signs were tacked to the back wall: "Buy a share in the future" and "Invest in America."

*Sure,* I thought. *Only what will I use for money?*

But then the man in C.I.C. gray was moving to the lectern at the front of the stage. "Everybody hear me all right?" he said into the mike.

"Hell, yes!" Eckert boomed out beside me.

"Then let's get started. I'm John Bradley, C.I.C. project manager." He half-turned toward the back of the platform. "The tall, distinguished man in the brown suit is Sam Franklin, representative of the U. S. Treasury. We call him Uncle Sam."

We chuckled appreciatively.

"The man built like a wrestler is Carmen Vecchio, general contractor. The Air Force officer is Captain Max Kovac, on loan to us as technical training supervisor and construction manager. You'll hear from the others later—Captain Kovac in particular. But right now it's my turn. I want to tell you something about yourselves. You're one in a hundred."

We listened attentively, caught already in Bradley's swift, sure flow of words.

"Fifty thousand of you filled out applications. One thousand were invited to take physical Five hundred of you were accepted. There will be more exams, psychological as well as physical, and the training will be the toughest thing you've ever done. When it's all over, less than half of you will remain."

He paused to let it sink in and then gave us the clincher. "But starting now you are all on salary. Not triple time, understand. That doesn't start until later. But you're on salary until separated."

We gasped and applauded. Me, too. I was up there on my feet, beating my hands together with the rest.

"This is a C.I.C. project," Bradley said seriously, "and from this moment you are C.I.C. employees. We like to think of every C.I.C. man as an ambassador to the public. As such it will be your duty to correct some of the strange ideas about C.I.C. that have achieved common circulation.

"One"—he held up a finger—"C.I.C. is not a relief organization. Two. It is not a government bureau, although the Federal Government is a participant. Three—" He paused and then slammed his hand down on the lectern. "No! I'll tell you, instead, what C.I.C. is. C.I.C. is a profit-making organization set up to invest capital in long-term projects too big to be handled by a single company."

We clapped. We were in a mood to applaud anything.

"Almost every corporation in the country owns stock in C.I.C. Most of them contribute men and facilities upon request. But they don't control C.I.C. Like every other corporation, C.I.C. is controlled by its stockholders. C.I.C.'s motive is the only motive you can trust—the profit motive. We want to make money. And C.I.C. is the best long-term investment in the world—outside of the U.S. government, of course."

Over the applause, somebody cheered. Franklin smiled.

"Why is C.I.C. such a good investment?" Bradley seemed to pick out each one of us, asking the question. "Because we invest in brainpower and the facilities for supplying it with the data it needs to work on. We invest in basic science and the technology for applying it. We invest in the future.

"If atomic power had not been discovered, we would be discovering it. Instead, we are adapting it to a multitude of uses, from small power plants to rocket motors. We are tapping the Earth's internal heat, building tidal hydroelectric systems, working on vast reclamation plans like the Sahara Project, and financing a hundred different scientific explorations into the unknown.

"One of the inescapable facts of this half of the Twentieth Century is that scientific research has grown beyond the resources of the individual scientist, even, sometimes, the individual corporation. Research must be supported by the economy as a whole if we are to provide the essential experimental verification for the insights of our brilliant scientists or new facts about the universe for them to build their theories upon. To supply the means for that research and the climate for that scientific speculation is our job."

I happened to glance at Kendrix. He was grinning sardonically.

"Okay," somebody yelled, "but what are we gonna do?"

"We're going to build an artificial satellite of a thousand uses. For immediate profit: television relay and weather observation. For future profit: zero-atmosphere, zero-gravity, and zero-temperature laboratories for astronomy, physics, chemistry, biology—"

"What's the matter with the Doughnut?" somebody shouted.

The voice was close to me. I looked. It was Kendrix. That surprised me; he had changed his voice.

Bradley tried to locate the man who had shouted and failed. But he smiled easily. "There's nothing the matter with the Doughnut except that it belongs to the Air Force, and it's too small. Its primary function is military, and the other functions have been crowded out. The satellite we're going to build will have ten times the space and one hundred times the convenience.

"There was the S.1.1.—the first manned ship into space; it's still there, and Rev McMillen's still there, staring out blindly at the stars for all eternity. In the same orbit is the S.1.2.—the Air Force's Doughnut. I'm going to make a prediction. Inside a year, everybody will be calling it the Little Wheel."

Bradley let us seize the meaning and make it our own. "Because we're going to build the Big Wheel, the S.2.1.—and the television relay stations, S.2.2. and S.2.3, as well. We're going to build the Big Wheel twenty-two thousand miles high where it will race with the turning of the Earth and hang forever above the center of the United States, a new fixed star. Men will guide their airplanes by it, and their ships and their dreams. And we're going to build it—you and I."

We stood, cheering, pounding each other on the back.

Kendrix put his lips close to my ear. "Never trust an economist," he said softly. "Bradley's an economist. The C.I.C. is riddled with them."

*What was Kendrix trying to do?* I wondered. *Oh, maybe he was right. The C.I.C. wasn't building a satellite just for profits; profits can be picked up quicker and easier. There was some other motive, and I was afraid of hidden motives. That's why I was afraid of Kendrix. What was he getting out of it?*

I distrusted C.I.C. I distrusted Kendrix, too—not because, like Bradley, he said what he didn't believe, but because he didn't believe in anything.

Bradley had introduced Captain Kovac, and Kovac was talking about the training ahead, but I wasn't listening.

I was wondering how Gloria would take it.

### III

I turned the key in the lock and pushed, but the door stuck. Things warped here in the dry, desert wind: wood and people. The door had been built of cheap green wood.

It was distinguished from its neighbors in the long row only by the faded numbers painted on it long ago: 313. I put my shoulder against it. It yielded, complaining querulously.

"Is that you, Bruce?" Gloria called from the kitchen.

"Who were you expecting?"

Gloria came toward me, wiping her soapy hands on the apron that draped her abdomen. "The iceman, silly" She kissed me firmly and then leaned back to study my face. "Did you get the job?"

Her cheeks were flushed from the heat of the kitchen, and she was still pretty to me after five years of marriage. But the desert and pregnancy hadn't been kind to her. Her skin was dry, and her face was still puffy around the eyes. But I loved her because of or in spite of these things. I didn't know, myself, why I loved her.

"Well?" she asked sharply.

"Yes," I said. "I got it. I'm drawing salary again."

"What is the job?"

"Building a satellite."

But it was no surprise to her. Some feminine grapevine or some intuition of tragedy had already warned her.

"No," she said flatly. "I won't let you go. You'll have to find something else."

"Don't be silly." My voice, as I heard it, was harsh and unpleasant. "There's no choice."

"Bruce, you can't!" She took a sudden, painful breath. "It would kill me. Stay on here. We don't care about the money—"

I moved my hands impatiently. "Sit down. Try to understand."

She sank down slowly onto the shabby davenport and sat stiffly on the edge, her face obstinate and unhearing with the look I knew too well. I had to make her understand.

"Don't make it any harder for me. It's not the money; it's the job. I can't stay on here." I sat down in the plastic rocker. "The field is finished. They don't need us here any more."

"Then you can get a job somewhere else. I hate the desert."

"Don't make up your mind, Gloria," I pleaded. I looked down at my hands, clenching and unclenching futilely on my knees. "I can't take the chance. This is three hundred a week. Six months of that is almost eight thousand dollars. With eight thousand dollars we could last out the Depression. We wouldn't have to worry."

"Worry!" she said as if the word belonged to her. "What do you know about worry? What makes you think you'll come back alive? Lots of you won't. Space will take them."

"It's dangerous," I admitted. "That's what they're paying for."

"How much is a man's life worth?"

"Not much," I said bitterly. "Not any more."

She put her hand to her breast as if it hurt. "Please don't do this to me. Try to find a job somewhere, anywhere. I'll never ask another thing from you, not for the rest of my life."

"There aren't any jobs. There haven't been any jobs for two years, not since the Crash of Sixty-six. For every job there's a man clinging to it with fear in his eyes. You don't know what insecurity does to a man, how it eats away his courage and dissolves his guts with terror that he'll lose this job, too, that he won't have a roof for his family or food. I've felt the solid ground dissolve beneath me once. I can't ever trust it again." I stared silently at my white knuckles.

"We'll get by somehow."

"Somehow isn't good enough," I said fiercely. "It's got to be certain. I've got responsibilities. I've got to have security. Don't you understand?" Suddenly she was a stranger. "No, you don't understand." My voice dwindled thinly. "If you just hadn't got pregnant—"

"Don't act as if it were all my fault!" she flared.

"Well? If you hadn't forgotten to take the pill—"

"I didn't forget," she shouted, "How many times do I have to tell you? It just didn't work. Accidents happen, still." Angry tears rolled down her cheeks.

"If anything should happen to me," I said softly, "there's a ten thousand dollar company policy. That'll take care of you and the baby."

"Money!" she said coldly, staring at me. "Is that all you can think about? You think I want money? And what if you did come back? Crippled, blind, and the constant fear that if we had more children they'd be monsters—"

"No chance of that," I said grimly. "There's a compulsory sterilization provision in the contract."

"If you do this to me," she said in a voice that was starkly quiet, "if you leave me to go out on this job, I won't be here when you come back."

"It's no use," I said, standing up tall. "It's too late. I've already signed the contract."

She leaned back slowly, staring blindly at my face, tears welling in her eyes and trickling silently down her cheeks.

For a moment I stared down at her and then I turned and slammed angrily out of the house.

## IV

Somehow life continued, as it has a habit of doing. Neither of us admitted we were wrong; neither of us changed our minds. We didn't refer to the matter again, but there was a quietness in Gloria that made me uneasy.

I carried it with me through the examinations that followed: the insidious probings of psychologists, the mauling of the centrifuge and the decompression chamber, and a hundred other torments of mind and body. I gritted my teeth and endured stoically, thinking of the unbearable alternative, and somehow I got through.

Jock Eckert made it, too, chuckling, laughing, with Gargantuan enjoyment. George Kendrix—the Professor—made it, smiling sardonically, superior to everything they could do to him, a surprising, wiry endurance in his lean body. And Clary Calhoun made it, letting his soft, thin body be twisted and torn beyond endurance while he lived inside his dream.

But half of us were gone when the real training began.

It was only distinguishable from the testing by being tougher. Kovac's lean, hard, leathery spaceman's face sneered at us by day, and I carried it into my dreams with me, the eyes speckled with tiny cataracts squinting balefully, the mouth snarling, "This is nothing, you lousy Earthlubbers, nothing to what it's like out there. A cadet has four years to learn this; you've got to have it letter-perfect in three months. You've got to go through these things sailing or space will kill you! Understand? You'll die out there like poor, gasping fish out of water!"

We sat hour after hour in the giant planetarium and watched the panoramic space films: the unwinking stare of stars, the blazing fierceness of the sun, impossible to look at, the lesser brilliance of the moon, the vast span of Earth, a giant picture framed in a white haze, sunlight glaring from the polar ice or the sea, and everywhere else the deadness of space, a black beyond blackness. It was a place of harsh contrasts and savage glares, and sometimes, when the camera twisted or spun, a place of dizzy discomfort.

Afterwards I would have a blinding headache.

"That's nothing!" Kovac shouted. "These films resemble space as a pin-up picture resembles a woman. Space is uglier and deadlier and realer, and the moment you think you know it—you're lost!"

We floated in a pool whose water was heated to undetectable blood temperature. With the lights out, it was like being disembodied. Once, when they anesthesized our inner ears, it was worse. Many of us almost drowned, and a fifth of the men got nauseated. We didn't see them any more.

I came upon Clary, white-faced, huddled over a drain in a hidden corner. "You won't tell on me, will you, Bruce?" he whispered fiercely. "They'll kick me out if they learn. Next time I'll know better; I'll take dramamine."

Slowly I shook my head, recognizing the fear in him that was even greater than my fear of being jobless.

"Wait until you get out there in zero gravity," Kovac raged at us, his face dark with an unreadable passion. "Your senses won't be deadened then. They'll be viciously alive—and the information they give you will be all wrong. Your otolith organs will scream that you're falling and if you shake your head, your semi-circular canals will shout that you're spinning madly. . ."

He paused. "There's no way of describing it. To describe something you need a comparable experience, and there's nothing like it on Earth. Anybody who's afraid, who has any qualms, any doubts—quit now! Get out! Or you'll get out the hard way!" He turned and strode viciously away.

*Why is he so angry?* I wondered.

The original 512 dwindled to 250, to 200, and dipped below. I endured as I had earlier—because there was no other choice. Jock Eckert went through, flying. Nothing could wipe off George Kendrix's

sardonic smile. Clary stuck with grim determination.

There was too much to learn, too much to experience, too much to remember, but I tried, knowing that my life might depend on it. Those of us who remained were divided into crews: basic construction; electrical, steamfitting, and plumbing, rigging, welding, and shipfitting. Jock Eckert became a foreman; I was a member of his basic construction crew

We worked in the suits we would need out there. They were complex, jointed metal monsters whose sleeves were equipped with tools instead of gloves. Inside there were fingertip controls to twist the magnetic screwdriver, to tighten and release the pliers and make them turn,, to adjust the wrench ends and rotate them.

Day after day we hauled the massive suits around and practiced assembling the innumerable plastic-and-nylon sections. When they were assembled, we inflated them and attached the metal skin Kovac called a meteor shield. We installed the shutterlike temperature regulators, the plumbing, the wiring, the solar power plant, and all the compact, ingenious machinery, instruments, furnishings, and fittings.

We sweated at it until we knew every part by sight and touch, until we had memorized the name and number and location of the smallest section of skin, the most insignificant pipe or wire.

We tested it at five atmospheres pressure, took it apart a final time, packed it away in labeled crates, and stowed the ones marked first week in the freight compartments of ten third-stage rockets. The remainder we stacked in the warehouse, carefully; our lives depended on their reaching us as we needed them, at the right time, in the right order.

Three months—that was our training. Three months to become spacemen. Three months to learn how to build the Big Wheel. And then the practice was over.

One hundred and seventy-eight men waited in the vast gloom of a giant workshed. Here other men had built the ships that would carry us 22,000 miles above the surface of the Earth. The dawn was cold and gray. The men shivered in their thin, one-piece coveralls, tense, quiet, scared and trying not to show it.

I walked toward them across the broad emptiness, dwarfed by the building above me but not thinking about that, intent upon an agony within. I walked into the drifting clot of men unseeing, uncaring, and then there were 179.

Clary caught my arm. My eyes focused on him. "Did you get her?" he asked.

I shook my head slowly. "I can't understand it. She didn't speak to me this morning. She didn't even look at me. It was like I was already gone."

"You know how women are," Jock said reassuringly. "They get crazy ideas. Leave them alone and they snap out of it. Gloria'll be all right."

I went on unheeding. "It didn't worry me at first. I knew it was rough on her. I figured she wanted to make it easier, she wanted to skip the good-bys. But—why doesn't she answer the telephone?"

"Maybe she went back to bed," Clary suggested, but his mind wasn't really on it. He was thinking about what would happen to him soon, and his voice broke.

"Not Gloria," I said dully. "After she wakes up in the morning, she can't go back to sleep. The kid kicks her, she says. No, she's gone—or she's sitting there in the apartment listening to the phone ring."

"ZERO MINUS THIRTY MINUTES," said a great, metallic voice in the dim heights of the shed. "PASSENGERS READY YOURSELVES FOR LOADING."

"I'm going to try again," I said suddenly.

Clary grabbed my arm again. "You can't. You haven't got time. Here come the trucks now."

Silently they pulled into the shed in single file, drivers black figures of mystery behind the blaze of headlights. The men around me scrambled into the open backs. Slowly I followed, ignoring the hands held down to me.

"ZERO MINUS TWENTY-FIVE MINUTES," blasted the loudspeaker. "CREW MEMBERS TAKE YOUR POSITIONS. PASSENGERS PREPARE TO BOARD SHIP. ALL COUPLINGS WILL BE DISCONNECTED. WORKING PARTIES WITHDRAW FROM THE FIRING AREA."

"Maybe she's having the baby," I said.

Jock clapped me on the shoulder. "Let the doctors worry. They get paid for it."

"Why doesn't she answer the phone?" I muttered.

The trucks rolled out of the shed, one by one, and streamed across the field toward the waiting ships. They stood tall against the sullen, morning sky.

## V

The third-stages of five of those ships were home to us for two months while the other five shuttled back and forth with supplies. Two months. It seemed like two years. Two years of hell.

The cramped cabins had been built as control rooms, not living quarters. They had been designed to seat five men and keep them in physical shape to work the ship while it was in flight. They had never been meant to orbit indefinitely in the full blaze of the unveiled sun as a barracks for thirty-seven men.

We stripped the cabin and hung tiers of aluminum-and-canvas bunks on the walls. We ate our condensed, bulkless rations cold and sipped tepid water and took pills; we had digestive troubles and skin troubles and orientation troubles. The only semblance of gravity was when a man pushed away from one wall or caught himself against another.

But the worst was the heat and the humidity. The air conditioning system of the ship could have cooled an eight-story building, but it couldn't keep up with the animal heat of thirty-seven men or the radiant heat of the Sun and Earth. The water absorption system was perpetually overloaded; the humidity never dropped much below 100%. The fans worked constantly, but they succeeded in keeping us from stifling in our own exhalations. The air we breathed was hot air, wet air, and foul air, thick with the stench of machinery and thirty-seven unwashed men.

And then there was the work, hard, painful, dangerous labor outside in the burning night. We built the Big Wheel in an environment as new and deadly as that suffered by the first sea-creatures left stranded on a primeval shore. There was no venturesomeness about it, no planned assault, no purposeful conquest.

But we were selected by our environment, and we adjusted to it—most of us. Perhaps that is our basic talent: we adjust, and what we can't adjust to, we change.

One of those who did not adjust was Clary Calhoun.

Day after endless day he lay in his bunk, his eyes fixed unmoving on the canvas of the bunk above, his fingers, like white spiders, picking at the webbed belts that kept him from drifting away on the jet propulsion of his uneven breathing. He looked pale and shrunken as I came to him, pulling myself wearily along the metal ladder, and clung to the tubular aluminum framework of his bunk.

"Hello, kid," I said cheerily. "We finished section eighteen today. Only eighty-two more to go."

Clary turned his head toward me, his eyes brightening. "Really?" But as he said it, his mouth tightened, his eyes glazed sickly, his hands clutched at the bunk's frame.

"No better?"

Clary held his head rigid. "No." Slowly he unlocked the prison of his muscles; it was a conquest of will that deserved a greater reward. "Every time I move my head, my semicircular canals scream that I'm spinning madly. It's the Weber-Fechner law, I guess. The less my sense organs are stimulated, the more sensitive they become to changes of stimulation. But the worst part is when I fall asleep—the nightmares, the long, screaming falls through the night—" He stopped and smiled determinedly. "I kept down some soup today."

"That's wonderful, kid," I said proudly. "In a few days you'll be out there with us."

Clary's face quivered before he got it back under control. "No. No. There's no use kidding myself. I've got chronic spacesickness. Kovac is sending me in on the next ship."

"Maybe if I talked to him—"

"What's the use? He's right. I'm just occupying the space an able-bodied man should have, breathing his air, eating his food."

"It's a lousy break. I know what it meant to you."

He stared at my face, seeing it not sunburnt and weary and familiar but eternally alien. "No, you don't You can't. No one can. To the rest of you this is just a job, a hard, unpleasant, dangerous job. To me it's the only thing in life worth doing. And I'm the one who's the Earthlubber, who can never be a spaceman. Isn't that a laugh?"

"Nobody's laughing," I said gently. "Wait till you've been down a while. Things will look different. Maybe later, when they get spin on the Wheel, you can come back out."

"I'll never come back." For a moment, he had the eyes of a prophet. "This is all of it, all I'll ever have." He tried to smile. "Section eighteen all done, eh? And it hasn't been quite a week. You'll have the Wheel finished inside three months." He laughed weakly. "Don't work too fast or you'll be out of a job again."

"It can't be too fast."

"You haven't heard from Gloria?" he asked quickly.

"Not a line. Not a word. Nothing."

"No news is good news," Clary said, reassuringly banal. "Anything happened to her, they'd have told you."

"Yeah." I stared past Clary into one of the darker corners, unseeing. I could feel the sweat oozing through my pores and standing out on my face in perfect little spheres. When I shook my head, they

would fly away in meteor-straight paths until they hit something and shattered or spread into a thin film on wetable surfaces. Most things in the ship were clammy.

"Any casualties today?" Clary asked.

"Only two—neither of them fatal. One guy was working at the dark side and glanced toward the sun. He's still blind, but the medic thinks it's only temporary. The other moron forgot to rotate out of the sunlight, and his suit couldn't handle the heat. He passed out. The medic called it heat exhaustion." I shook my head; the sweat droplets flew. "They won't learn. This guy, he roasted out there for ten minutes or so before anybody noticed him."

"That's bad. They ought to do something."

"They've got us organized on the buddy principle now. Then every five minutes they call the roll over the ship-to-suit circuit. But no matter what they do, it's a miserable, lousy business. What do they want another satellite for? They got the Doughnut. This thing's a death trap. There's nine men dead already. Twice that many injured."

"The Doughnut isn't enough," Clary said softly. "Not just because it's too small. The Doughnut is Air Force; and the Air Force has got what it wants: command of the Earth. What good to the Air Force are the Moon, Mars, Venus. . .?"

"What good to anybody?" I said violently.

"The human spirit—that's what they're good for. Through all the ages-of-human awareness, they have been there, waiting, an eternal challenge: riddle my meaning, come to me, seize me if you can! Now we have the power and we must accept the challenge—if only because a challenge refused is the beginning of decay. But the challenge accepted is life renewed, life reaffirmed, and the obstacle conquered strengthens Man for the next one, the bigger one.

"But there are more important reasons," Clary went on, his voice scarcely above a whisper. "Man needs a broader viewpoint, a wider horizon. Let him go to meet the universe, and he will find himself reflected in it—not an Earthman with all the narrowness and prejudice of the village mentality, but a Spaceman, a citizen of the universe.

"Wherever Man goes, he meets himself. Out here he will meet a better man, because he can't bring his hatreds and prejudices out with him. They weigh too much. All he can bring is his dreams, the ones that soar. And out here he may find the answers he has sought too long and in vain below."

Clary's voice had faded away to a voiceless whisper. It stopped, and the vision in his eyes died like the glow of sunset before the coming of night. His eyes closed like purple shades.

"Go away, Bruce," he whispered. "I want to dream."

*Dream, Spaceman! Your dreams are better than my reality. Farewell.*

## VI

First we built the Hub, with its landing-berth turrets at either end to receive the sausage-shaped space taxis, and then we built the four spokes out from the Hub. They would provide the only convenient means of moving from one arc of the wheel to another. At the end of each spoke, the plastic-and-nylon sections of the rim began to grow.

The available working area was multiplied by eight Where at first we could only work a few at a time,

there was soon room for everyone, and we could have used more. After the first month replacements began flowing up for the sick, the injured, and the dead. Our construction pace swiftened.

Oddly enough, it was the replacements who complained about the crowded cabins, the monotonous, unpalatable food, the eternal discomfort. They reinfected us, we who had been selected by our environment, who had grown hard and unfeeling to match it.

Kovac had driven us hard. He had driven himself twice as hard, but few of us considered that. He sensed our unrest and called suddenly for a change in the schedule. Whether there was disagreement below I never knew, but the shipments began arriving in a different order.

The plumbers, the electricians, and the steamfitters turned to their trade. The riggers, the welders, and the shipfitters began sheathing the plastic-and-nylon in thin aluminum plate with a ceramic coating and installing the temperature regulators.

The rest of us worked inside, fixing temporary bunks to the walls and installing the permanent air-conditioning and water-recovery system, although the algae, oxygen-producing, sewage-disposal complex would have to wait until later. Then we put up what we could of the solar power plant.

Two months after we reached space, we moved into the relative comfort of the partially completed Wheel. At this stage it looked more like a pinwheel waiting to be touched off. In a sense, that was what it was. A big glorified pinwheel.

Such is the nature of men that we looked on our new quarters as very near to heaven. We spread out luxuriously in our assigned eight feet by four feet by four feet—to be shared, of course, with two other men when they were off duty. We crowed, "This is living! Soft, man, mighty soft!"

Expertly, Jock Eckert flipped himself over in the air and growled, "The guys who'll live here when we get it built—they'll have it foamy!"

It wasn't just the extra space, either. The air was better, fresher, less poisonous, most of the water wrung out of it. The heat-control problem was almost licked and there was even a stall, later to be used as a shower, in which we could take sponge baths.

But such is the nature of men that we soon began to complain again. We had reasons. Beside Earth, the Wheel was only a slightly more comfortable circle of Hell.

"Tomorrow," Kovac announced over the makeshift public-address system, and he paused as if he were weighing the consequences, "tomorrow we will apply spin. Foremen will report to my office for instructions."

It was a ticklish job. We all knew it, but we cheered anyway. Spin would mean a return of weight, a simulation of gravity.

But the Wheel hadn't been designed to spin until the rim was completed. The spokes would have to take stresses they were never meant to endure, stresses no designer could have dreamed of.

The plan was to anchor a space taxi at each of the four rim segments. In each taxi an experienced Air Force pilot would apply power slowly, simultaneously, until the rim was rotating once every thirty-two seconds. That would simulate a gravity of one-third Earth-normal at the outermost level of the rim.

Everyone except the coordinators was ordered out of the Wheel during the operation. Unassigned workers hung in space at the end of safety lines snapped to nearby third-stages, watching, At five minute intervals, with unthinking habit, they hauled themselves into the radiant heat of the flaming circle of the Sun

or into the absorptive blackness of shade to help their suits equalize the temperature.

I drifted at the end of a line attached to the Hub. On one side was the Earth a giant, rounded picture framed in white haze, colorful, dotted with fleecy clouds. On the other, if I shaded my eyes from the Sun and the dazzle along the Wheel, I could make the stars come out of the wavering, black swells of afterimage, unwinking, many colored. But my gaze was on Jock Eckert.

Clinging to a hook-on ring, Jock was tying down a taxi. He tested each of the three lines individually and then the snap catches, yanking the taxi around unmercifully.

"Come on, Jock!" the pilot complained over the ship-to-suit circuit. "Have a heart!"

"If something goes wrong," Eckert growled, "it ain't gonna be in my sector."

But soon there was nothing left to test. The hooks were snapped to the rings, which were integral parts of the aluminum meteor shield, and Eckert let go. He drifted gently toward me, his safety line curving.

Out of the background mumble of the roll call, a name came clear. "Eckert?"

"Here," Jock said carelessly and flipped on the weak suit-to-suit walkie-talkie circuit. "I hear the mail came while I was in with Kovac."

"Yeah," I said. "Nothing for you."

"Can you beat those skirts!" Jock said in amazement. "Couldn't be faithful if their lives depended on it. When I get back I'll teach 'em a thing or two." He chuckled. "A thing, anyway. Say! Did you hear from Gloria?"

"No, but I submitted my resignation yesterday."

"What did Kovac say?"

"He said C.I.C. had spent twenty thousand dollars on me, and he was holding me to my contract."

"The ugly son!"

"Patterson?" It was the roll call again. "Yeah."

"Can the chatter out there. Roll call suspended. This will go out on ship-to-suit, too, but that circuit won't be guarded. Everybody ready? Let's go. Taxis will assume the attitude."

A wisp of vapor steamed from our taxi's rear jet. The lines, coiled snakily, straightened behind. On thin, brief jets, the taxi maneuvered into position.

Jock tugged at his safety line easily, turning his suit around so that he could scan the other sectors, guarding his eyes. As he completed the circle, he stopped his spin and muttered. "Okay, okay!"

"At the count, now," said the coordinator, "one-two-three—" The taxi was at the end of three taut lines. Vapor streamed from its rear jet, became tinged with flame. It strained at the weightless but still massive structure. I looked at Jock. Through the dark glass of his faceplate, I could see his eyes intent upon the taxi some thirty long feet away.

Slowly the distance lengthened. The Wheel began to move—

"That lead line," Jock said suddenly. "It's too short. It's putting too much strain on that front plate."

The flame ate deeper into the vapor at the taxi's stern.

"The plate's loosening!" Jock said urgently, "If it goes, the others will go, too. God knows what that would do to the Wheel! Hold everything!" he shouted. "Cut off power"

"It's no use," I said quickly. "Everybody's on the TBS circuit. They can't hear you."

"They ain't gonna foul up on my sector," Jock growled. He yanked viciously at his safety line and dived toward the incomplete section of rim.

I watched one corner of the plate pull free of its rivets. "Jock!" I yelled. "Don't! You can't do anything!"

"If I can get my line around that hook-on ring, I can lash it to the next one and equalize the strain."

It happened with appalling suddenness. The plate jerked free, snapping malignantly at the end of the line.

It cut into Jock's suit like a hot knife through butter.

## VII

Captain Max Kovac stood just inside the narrow doorway to our compartment, his legs spread against the unaccustomed sensation of weight, his dark face and speckled eyes unreadable. He said without inflection, "Eckert himself was untouched, but he was minutes dead before help could reach him."

"What killed him?" someone asked sullenly.

"No air. His brain cells starved for oxygen," Kovac said explicitly, as if there were a kind of expiation in stressing the details. "His body fluids evaporated in the near vacuum."

I lay in my bunk, feeling weight like an ache in my bones, and the funny part was that the canvas and aluminum below seemed to be pushing me upward.

"He's dead," I said wearily. "What's the use of talking about it?"

Kovac looked at me coldly. "Luckily the Wheel took little damage. We can get back to work on the next shift."

"This satellite of yours has killed twenty-three of us already," I said. "Aren't you satisfied?"

His eyes burned at me. "You think I haven't died with each one of them? I tried to make you understand—" He broke off. "It's not my satellite. It's yours. My job is to help you build it, and I'll never be satisfied until it's built."

"This damn killer ain't worth the life of one man like Jock Eckert!" someone shouted behind me.

There was a low grumble of agreement.

"Suppose we should decide we don't want to finish this contraption?" a sly voice chimed in.

"You signed up to do a job." Kovac's voice was harsh and metallic. "You're going to do it!"

"Make us!" someone yelled. "We got a right to quit if we want to. That's in the Constitution!"

"It isn't. And if it were—the Constitution ends with the atmosphere. Up here you'll work or else!"

"Or else what, Captain?" asked the sly voice.

"Or else you won't eat"

"That's silly, Captain. There's only five of you rocket boys. You can't make us work or keep us from eating, not two hundred of us."

"Don't talk like a fool!" Kovac said contemptuously. "You aren't on Earth, and you can't get back in without a perfectly functioning piece of machinery under you. You're here until your job is finished or I send you in."

"Now, Captain," the sly voice continued, "who's talking like a fool? If we should take over and radio in for help, how long could C.I.C. hold out?"

"You've got contracts. Break them and you'll be sued."

"All of us? Nuts! How far would C.I.C. get when a jury heard what we went through?"

Kovac looked at us as if he had turned over a rock and we had crawled out. "If you'd read those contracts," he said softly, "you'd realize that any organized disobedience above the one hundred twenty mile limit is mutiny. It will be treated as such. You said that there were only five of us. Right. But we're armed, and we'll shoot.

"I want you to think what a few bullets would do to this glorified balloon. And you might consider this: you've lost twenty-three men, but the worst is behind you and the casualties will be light from here in. Mutiny and there'll be more than twenty-three of you dead before it's over."

He faced us barehanded, as if it was beneath him to draw a gun, and stared us down. We moved restlessly under that unrelenting pressure. And then he turned quickly, stepped through the doorway, and slammed the airtight door.

No one moved for a moment, and then a big steamfitter rushed to the door. He jerked at the handle. He spun, rage and fear struggling for the battlefield of his face.

"It's locked," he said hoarsely.

"He can't do that!" someone shouted.

"We might get holed by a meteor!" another voice suggested. "We'd die in here, trapped!"

"Let's break through!"

A clot of them surged toward the bulkhead. I sat up.

"Wait a minute!" George Kendrix said. Everyone heard his low, trained voice. They stopped, not because they liked him, not because they respected him, but caught by his voice and the warning implicit in it. "You'll die quicker if you break that bulkhead. By now Kovac has evacuated the air from the next compartment."

They stared at Kendrix's lean, sardonic face and slowly drifted back. "What are we gonna do?" one of them asked helplessly.

"He can't starve us," Kendrix said carelessly. "And to feed us, he'll have to open that door again."

"He can pipe in anesthetic gas through the air-conditioning system," I suggested.

Kendrix shrugged. "What good will that do? He can't make us work, not if we don't want to. He talks

about mutiny, but he can't shoot us or kill us, not if we don't attempt violence. Passive resistance, my friends, is the answer to Captain Kovac's ultimatum."

I lay back in my bunk. "Fine," I said. "That's just fine. What use is the Wheel, anyway?"

Kendrix rose lightly to his feet and let his malicious eyes rest on me. "What use? All the use in the world, Patterson. C.I.C. is fulfilling its function."

"What do you mean by that?"

"This is the greatest relief project of all time. I thought everybody knew that. We're out here to revive the economy. W.P.A. in the sky!"

The implications of Kendrix's statements were too much for us. If he was right, all the casualties, all the torment, all the sacrifices had been in vain. It had been nothing but a make-work project!

"Shut up, Professor!" someone yelled.

"You're crazy" shouted another one.

"If I thought that was the truth," I said slowly, "if I thought everything we'd given up, everything we'd suffered was for nothing but a—"

"What would you do?" Kendrix asked eagerly, bouncing on the balls of his feet, studying me. Then his lip curled and his face darkened with disappointment. "Nothing. That's what you'd do. What could you do? This is a legitimate enterprise. You knew what you were getting into when you signed your contract, the discomforts, the danger. Eckert knew, too."

A blond boy with a violent case of sunburn leaned over a top bunk. "You don't know what you're talking about, Professor. There's less than two hundred of us out here. What kind of relief project is that?"

Kendrix grinned at this new target. "You feel lonely, do you? Why, boy, for every man up here there are fifty thousand men at work below, making the rocketships that carry him, the fuel that powers them, the oxygen he breathes, growing and processing the food he eats, building his suits and his satellite, and all the countless, expensive things necessary to create an Earth-type environment in the hot-and-cold vacuum of space. You're sitting up here on top of a pyramid of human effort. You're the excuse for it all."

"You got it wrong, Professor," the boy said quickly. "The Big Wheel—it's the excuse for it all."

"Of course," Kendrix agreed readily. "The essential Grail The philosopher's stone. No one found either one of them, but the search was invaluable. The experiments of the alchemists, for instance, led directly to all the miracles of modern chemistry. And now the Big Wheel, the biggest and brightest Grail of all. Grails aren't ends but goals. Men can't be pushed; they must be led. And they must have a real moral excuse for even the most obvious necessity."

"Aw, shut up!" said a brawny riveter on the edge of his bunk. "Let us get some sleep. There might be action tomorrow."

"There speaks humanity" Kendrix cried, pointing. "Listen to it snore! Don't disturb it with truths. Like an angry bear, it will smash the man who wakes it. Sleep, my friend. Sleep on. When the world collapses around you, sleep, sleep. . ."

"Who said the world was collapsing?" I demanded.

"I said." Kendrix turned his dark eyes back to me. "What would you call the Depression of sixty-six, my friend? Human society is unable to harness its own energies, unable to consume its own abundance. It must divert the flood lest it drown in it. And the great tragedy is that the waters always return multiplied. Our fertility has caught up with us. Not the fertility of the neo-Malthusians but the infinitely more dangerous fertility of the human mind."

I stared at him, not understanding half of what he said. "If they were picking relief projects, they could pick better ones than this," I said defiantly.

"Could they? For how many highways can we find the smallest excuse? How many dams can we build before we run out of worth-while rivers and a market for the power? How many schools can we construct, even as far behind as we were? A lot, I grant you. But not enough. What's more, these are construction jobs, and they employ only skilled labor. What about the rest of us? More important: highways pay for themselves, dams return the investment many times, and schools—why, schools are the biggest moneymakers of all"

"Well, why shouldn't they make money?" I demanded.

The men who were on their feet had drifted into a ring about Kendrix, their faces intent and serious. The men who had lain down were sitting up again.

"Isn't that what C.I.C. is for," I asked, "to invest capital in promising projects, to make profits out of them?"

"C.I.C., Patterson," Kendrix said gravely, "is democracy's answer to an uncontrollable economy. When automation caught up with us, when the Doughnut made weather ninety-nine percent predictable and increased farm production by half, when the Doughnut's orbital missiles with their atomic warheads made aggressive war an impossibility, suddenly we were buried in our wealth. C.I.C.? I'll tell you what C.I.C. is. C.I.C. is a shovel for tossing our surpluses out into space."

From a distant bunk someone shouted, "What are you, mister, a Communist?"

Kendrix turned and found the man. "The ultimate refutation of the unanswerable! No, my friend, I'm no Communist. As bad as our economy is, it is still far better than the over-controlled economies; they can only produce shortages. If I must choose, I'd rather die from gluttony than from starvation. To produce, man needs an incentive; but give him one, and he will overproduce. The only middle ground is when the economy is passing from one state to the other.

"Is there an answer?" Kendrix seemed to be asking the question of himself. "Surely there is an answer, some meeting place for control and enterprise—"

He broke off and looked at us again, sneering. "Technological knowledge has increased at a fantastic geometrical progression during the last sixty years, multiplying productive power ten times every generation. We didn't even recognize the problem. The surpluses flowed down the sewers of two world wars and preparations for a third.

"The Doughnut closed those sewers, and our surpluses had nowhere to go. We weren't prepared for the flood, and we almost drowned before we could reach air. Now comes C.I.C. with an investment it hopes will dispose of a major part of our surpluses for decades to come: the conquest of space!"

My hands tightened on the bunk's aluminum frame. "It doesn't add up. If that's C.I.C.'s only purpose, it would be easier and simpler to throw the stuff away, burn it up, plow it under. . ."

"Never!" Kendrix said sardonically. "Or, rather, not again. We tried that in the last great depression, and the psychological reaction was disastrous. You heard the gentleman back there! Let him sleep, he said. Don't make him face the fact that he can conquer space but not his own economic system. Don't make him puzzle over the paradox of starving people and burning potatoes. If mankind is to rid itself of its surpluses, it must be for a worthy cause. This time it is a crusade against space itself.

"The eternal tragedy, as C.I.C. will discover, is that these facilities we are building, even the effort of building the Wheel itself, will lead to new discoveries and better ways of doing things that will intensify the problem. There will be no breathing space in which man can discover the inner workings of his own economy rather than the secrets of space flight or of the universe itself."

Kendrix turned on us a look of magnificent triumph. "And we poor suckers—why, we're the crusaders, the shock troops of this mighty human army launched against the heavens. We're expected to take a few losses. That's our function. That's why we're paid triple-time."

"We don't have to stop here," the boy in the top bunk said stubbornly. "We can keep on going out—to the planets and the stars beyond. That way we'd stay ahead of our surpluses."

I recognized that the boy had accepted Kendrix's argument as the truth.

"Somehow," Kendrix said ironically, "man will find a profit even in that."

Somebody laughed sheepishly.

Then there was silence, and I realized, suddenly, that the mutiny was over. Kendrix had done it. Why he had done it, I did not know, but I knew that he had done it consciously and that it hurt. He had sacrificed his cherished concept of economic man upon the altar of man's necessity. From this moment forward, he would have to think of whole man, not some easy, fractionated stereotype.

He had held a mirror up in front of us, he had showed us ourselves as we really were, and the self-righteous foundation of our anger had crumbled away.

We were going to finish the Big Wheel.

## VIII

I limped up to the door in the row of plasterboard-and-tarpaper apartments and read the faded number on the door: 313. Walking was a weary thing. I leaned against the door jamb for a moment, gathering strength, and then I knocked.

The door still stuck. It squealed open after a minute, and a man stood in the doorway, an undershirt sticking sweatily to his chest. He stared at me without friendliness. "Yeah?"

I winced.

I knew what he was seeing. A man who limped. A man with a face deeply tanned but with an unhealthy look to it. A man with oddly speckled eyes.

"A Mrs. Gloria Patterson lived here six months ago," I said. "Do you know where she is now?"

"We moved in six months ago," the man said curtly. "Nobody here then. We never heard of her."

"She had a baby," I said. "A boy. She didn't leave a forwarding address?"

"If she lived here before we did, she didn't even leave a coat hanger." He started to turn away and

hesitated as if humanity still had a claim on him. "Why don't you ask at the business office?"

"I did."

"If she had a baby, how about the hospital?"

"I just came from there."

He pulled the door toward him. "Well, I guess there ain't anything I can do."

I turned away. "No, I guess not."

I limped down the graveled walk. Behind me the man called out, "If you want to leave your name in case we should hear anything—"

But I didn't turn back. I walked heavily toward the little, covered shack where the bus stopped.

The ticket seller in the dusty bus station frowned at me impatiently. "A blond-haired woman with a baby? Mister, I get four or five like that every week. How do you expect me to remember a particular one over six months ago? For all you know she may have taken a plane."

I leaned wearily against the counter ledge and shook my head. "She was always afraid to fly. She'd take the bus. She didn't have a car, and the bus is the only other way."

The ticket seller grinned suddenly. "Unless you go straight up. They do that from around here, you know."

"I know."

"Look, buddy," the ticket seller said kindly, "take it from me, you'll never get anywhere asking people what happened six months ago. This woman—she must have come from some other town; there's no natives here. She must have folks somewhere or friends. Why don't you try there? A woman with a little baby has it tough. She can't work and care for the baby both."

"Maybe you're right. When's the next bus out?"

"Where to?

I hesitated. "East."

"An hour and a half. There's a bar across the way, you want to wait."

"Thanks." I turned and limped toward the door.

"And mister," the ticket seller said, "I hope you find her and she takes you back."

I didn't answer. Gloria hadn't gone back to her home town, not unless her sister had lied to me. But I'd try it. Maybe her sister had lied. I hobbled slowly into the bar.

The bartender slid the schooner of beer across the bar. "Here, fellow," he said sympathetically. "You look like you could use it."

"Thanks," I said. The air-conditioned bar was cool and dark after the desert heat. Sweat welled out on my face as I lifted the glass.

"You look like you been out in the sun lately," the bartender said idly, making conversation.

"Yeah." I took a sip and shuddered. The flavor was too sharp. I set the glass down and made rings in the condensed moisture on the bar. They looked like wheels.

"As I was saying, thank God for the boys who built the Big Wheel!" It came in a loud, brash salesman's voice on my left.

I swung around viciously, and the man, in the act of tucking in his zipper, jumped back, surprised.

"Wh-what's the matter?" he stammered.

"Sorry," I muttered. "You came up on my blind side." He'd been in the men's room.

"Say! You gave me a start, there. Thought you were going to jump me." He looked at me, bloodshot eyes half hostile.

He picked up his highball glass and wandered over to the garish jukebox in the corner. He dropped in a coin and selected a record. As he came back, he said to the bartender, "I guess business has been good around here, what with construction and everything. Well, it's picked up all over. By God, things are almost as good as they ever were."

The record started playing. The melody was familiar, somehow, but I couldn't quite identify it.

"It's confidence," the salesman was saying. "That's what it is. It's faith in the economy. Women are getting pregnant again. I'll tell you frankly, Mac, I was scared there for a while. I sell baby food, see? I was getting afraid I'd have to eat it myself. That's why I say, 'Thank God for the boys who built the Big Wheel!' They're the boys who showed this country that there's nothing to be afraid of."

The song was full of sound effects, swishings and zoomings, but suddenly they faded and a chorus of voices rode clear and strong:

". . . *the Big Wheel run by faith*
*The Little Wheel run by the grace of God,*
*Brave men built the Wheel,*
*Wheel in the middle of the air . . .* "

I hear it wasn't all beer and skittles out there," the bartender said.

"It's always tough out in front," the salesman said briskly. "But they got paid good. And they got something better than that. They can tell their kids and their kids' kids that they helped build the Big Wheel. If I'd been a few years younger, I'd have been up there myself, I can tell you. Think of being able to say that: I helped build the Big Wheel!'"

"It took a lot of hard work," the bartender offered.

"You bet it did," the salesman agreed warmly. "Hard work and plenty of it, that's what it takes to do anything worth doing. Yes, sir! My hat's off to those men who had the guts to go out there and make their dreams a reality."

He leaned confidentially over the bar. "Frankly, though, I think things are slowing down a bit now. The big construction's over, you know. Well, they're talking about trips to Mars and Venus. They can't start too soon. That's how I feel about it."

I got up and limped toward the door.

"Hey, mister," said the bartender, "you didn't finish your beer."

But I didn't look back. I went through the revolving door into the desert, hearing the juke box singing about inspiration, courage, purpose, and fortitude. When you're discouraged, it said, when the job seems too much for you—

"*Look up and see the Wheel*
*Way up in the middle of the air . . .* "

But that wasn't the way it was. And the funny part was that if someone asked me I couldn't tell them the way it was.

There were no words for it. If I had to say something about the way we built the Big Wheel, I would say:

*There were four men. One was a dreamer, and he found that dreams weren't enough. One was a construction man; to him it was just another job, but it was his last one. One was an educated man, and he learned that people are more important than theories. And one was afraid, and he discovered that there is no security, no way to be free of fear, nothing worth doing if there isn't love.*

*And there are no reasons for loving.*

*We went out to build the Big Wheel for all the wrong reasons and we found there all the wrong things. But perhaps it didn't matter. I would think about that, and someday I might be able to believe that it didn't matter, that the only thing that mattered was being men.*

*On that day, perhaps, I would be glad that I had helped, that I had been a part of it, that I had built the Big Wheel.*

*But now I was a man alone, and it hurt.*

The bus was already in front of the station, its paint blistered and sandblasted. People were getting out of it, out of the coolness into the desert heat.

I hurried, swinging my stiff leg. Suddenly I stopped.

A woman had climbed down, a baby clutched in her arms. No, not a baby. A boy, his head held up, his eyes curious, less than a year old—six months, perhaps—but a boy still, unmistakably.

The woman was blonde, and I knew her face. I knew it very well.

It figured, I guess. She had read about our return, those of us who were left, or she had counted the days, six months of them.

She had learned something, too, those six months, and she had come back to meet me. This time we would be smarter, I thought, knowing that we would not be, that we would be human and erring and bitter, but knowing, too, that what we had was more important than injured feelings and the things that a man must do and those a woman must do.

"Gloria!" I yelled.

She looked up, and I started to run, forgetting my leg, forgetting everything but the need to be with her, to hold her close once more.

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# Powder Keg

PHILLIPS DID NOT LIKE THIS room. Another man would have shrugged and let it pass, but Phillips, entirely aside from his profession, could not rest until the intuitive response had been isolated and analyzed.

Besides, he had been neutral, at least, when he had been here once before, when another man sat behind the broad, polished walnut desk.

It was a big room, even in comparison with rooms above. Here in the sub-Pentagon, it was gigantic, fully thirty feet long and twenty feet wide.

The three doors, one leading to the anterooms through which he had been ushered quickly, the others in the side walls to Communications and to Plot, were imitation walnut—a good imitation which could be detected only by looking at the deep glow of the polished desk. Phillips had the feeling that if he touched it his fingers would sink in up to the first joint. The doors were two-inch armor plate.

The floor was covered from wall to wall by a deep-pile seamless gray carpet. Phillips' shoes had made no sound as he walked across it and stood at attention in front of the desk. The only noise in the room was the muffled whisper of the air-conditioning as it blew fresh, chilled air through ceiling ducts.

Phillips wondered if the General had forgotten he was here. Haven Ashley was sitting with his back to the desk—and to Phillips who was sitting beside it. He seemed to be studying the mosaic on the rear wall of his office, the only decorative touch in the room. The other walls were plain battleship gray.

The mosaic was an authentic art piece. It had been constructed from minute slivers of colored glass, each glued painstakingly into position to form a faithful reproduction of the appearance of Earth from 1,000 miles up. The continents were dull browns and yellows and greens overcast by a faint blue; the oceans were grayish-blue, almost black.

The mosaic was flat, but it gave the illusion of being a perfect half-sphere. Down here it was always night, but when the sun sank beyond the Potomac for the surface dwellers above, the disk darkened in Ashley's office and became spotted with the reddish patches that were cities and the single stars that were brighter concentrations of light. And in the velvet dark around the planet real stars came out, unwinking brilliants obscured until then by the glow of the day-lit Earth.

There were no satellites in the sky. The scale was too small for the 24-hour orbit of the Big Wheel and too large for the Little Wheel to be more than a speck. In any case, the Little Wheel would not have appeared; that was where the artist had stood.

The mosaic was strategically placed. To Phillips, as he had entered through the front wall door, it had looked like a halo around the head of General Haven Ashley. Ashley made the most of it. He was no angel.

Phillips studied the back of the General's head for the third time. Ashley was not a tall man, but he was big. He filled out the padded desk chair from armrest to armrest, his massive thighs bulging the trouser legs of the Air Force gray uniform, his barrel chest straining the gilt buttons of the jacket.

But these were things that Phillips had observed as he entered. All he could see now was the stiff, stubborn set of the shoulders, the red neck creased with a roll of fat, the gray hair brushed firmly into place against its natural tendency to bristle, and he thought: *What's wrong with the room? It's identical with the room when Pickrell was here, even to the stainless steel model of a three-stage shuttle*

*that stood on the desk as a paperweight. A little neater, perhaps, but I have no fetish for that.*

He had an incipient tendency toward claustrophobia.

Perhaps it was that. He could feel the weight of five hundred feet of reinforced concrete pressing down upon his shoulders and his chest. Even the air seemed stale, although he knew it was purer than he could breathe on the streets of Washington.

Perhaps it was the uncertainty of why Ashley had called him here. This was no courtesy call, as the other had been. This was business, and, for some reason, Ashley couldn't talk about it.

The General hadn't called to his office an obscure Air Force psychologist to discuss the psychologist's opinion of the Air Force. Nor had he summoned help for his neuroses; for Ashley that was impossible.

It had to be the job.

Ashley had inherited it six months ago, and it was the most terrible responsibility upon the face of the Earth. On his shoulders, like a modern Atlas, rested the sky. If he weakened, if he stumbled, the sky would fall, and humanity would be obliterated.

Or perhaps, Phillips thought, it was the uncertainty of the world situation itself, which had worsened, certainly, in recent months.

As Phillips leaned over the desk to stab out his cigarette in the spotless ash tray, Ashley swiveled in his chair, smacked the desk with the fiat of his hand, and said violently, "Intolerable!"

Phillips froze, his hand poised above the tray, the cigarette burning close to his fingers."

"Not you, Captain," Ashley growled. "Put that thing out. You'll have to give up smoking anyway."

Phillips stabbed twice and leaned back tensely. "Yes, sir?" *What did he mean by that?*

Ashley scowled at the shiny paperweight. "What do you know about the world situation? Never mind; I'll tell you in one word: desperate. It's been desperate for forty years, but now it's worse. Every puny little nation has a stockpile of atomic and hydrogen weapons; every last one of them is ready to blow your head off if you speak to them without the respect they think is their due."

"We're sitting on a powder keg," Phillips said boldly, "and everybody has a fuse in one hand and a piece of smoldering punk in the other. If one of us goes, we all go. You'd think they'd decide, eventually, to stamp out the punk and tear out the fuses."

Ashley's bushy red eyebrows drew closer together, deepening the creases between them, and he asked sourly, "And how can you be sure everyone does it at the same time? Idealist! The last nation with a lighted match is the master of the world."

Phillips said slowly, "I thought that was the function of the Little Wheel—to keep everyone honest."

Ashley said gloomily, "It's an edge. But what good is an edge in a situation like this. It's like having a machine-gun when the other guy's got a .45. If the shooting starts, you're just as dead."

"What about the satellite's inspection facilities? Each two hours every spot on Earth comes within view."

"That! How do you see under the ground? You don't. And that's where the factories and IBM pits are now."

"Then there's espionage—"

"And we're right back where we started twenty-five years ago." Ashley was solid and impassive in his chair, but his eyes brooded over the rocket-shaped ornament. "Have you ever been up there? Or*out there,* as the space nuts say."

"Yes, sir. Training cruises, and a weekend on the Big Wheel"

"The Little Wheel?"

"No, sir."

"No. They won't let you up there. They won't let any psychologist up there." Ashley's voice dropped to a monotone, and he stared at the front door blindly. "When I took over command of the Air Force, I inherited a standing order that no psychologist would be allowed inside the Little Wheel. Why, Captain?" His voice grew stronger as he went on without waiting for an answer. "They were afraid of what a psychologist would find. They're afraid he'd break up their playhouse.

"Pickrell tried to get me to go along with his little game. 'The witch doctors had their shot at my men in the Acadeny,' he would say. 'I won't have them messing around with my men on the job.' Well, I'm in command now, and I'm running things my way."

Phillips said reassuringly, "There's no doubt that the men out there are stable."

"Stable*how?"* Ashley demanded fiercely. "As spaceman, maybe. But are they stable as executioners? They've got their finger on the trigger up there, man, and there's no one to tell them when to shoot except a lunatic. Don't interrupt me! We're in communication, sure—for twenty minutes every two hours. And radio can be jammed. If that's too obvious, any enemy can wait for sunspots. That fouls everything up but good! And astronomers have no nationality.

"Men have been up there for twenty years with their trigger fingers crooked. Not sensible men, Captain, not men trained in responsibility and careful decisions, but men who must be more than a little cracked in the first place to go up there and stay." There was an indefinable note of horror in Ashley's deep voice. "Why there's a man up there who hasn't been back for twelve years—who hasn't set foot on Earth since he went up! And he's in command up there!

"How stable is a man, Captain, who replies to an order from his superior officer:*In my opinion this is impractical* or*We respectfully suggest that you consider possible alternatives?*

"That's all, Captain. Pick up your orders as you go out. You will make a thorough survey of the psychological situation in the Little Wheel and report back when it is completed. When you come back, you will have an answer to this question:*Is every man up there competent to exercise mature, unerring judgment in cases involving the welfare of the entire Earth; is every man up there incapable of cracking under the constant strain of sitting on a powder keg?*

"Oh, yes. Another thing. They're building something up there behind the Wheel where we can't see it. I want to know what it is."

Phillips looked at the General's hands. The rocket model was between them, and beneath the red hairs the hands were white with strain. The paperweight snapped. The sound was startling in the silence. Ashley looked down at his hands, surprised, and then contemptuously tossed the pieces away.

"Yes, sir," Phillips said, thinking about the question he would have to answer when his job was done. There was only one possible answer:*no.* There was no group of men anywhere uniformly competent to

exercise mature, unerring judgment, no man who would not crack under the stress of responsibility, if the responsibility were great enough.

He could give Ashley his answer now, but that wasn't what the General wanted. He wanted the odor of legality; he wanted evidence to present to the Secretary of Defense or the President or Congress.

He was determined to break the Little Wheel just as he had broken the rocket model on his desk.

"What kind of a man is the commander of the Little Wheel?" Phillips asked curiously.

Ashley stared at him, his eyes large and angry. "I told you. He's a madman. He's utterly insane."

Phillips took his courage in his hands and said, "Why don't you order him in?"

Ashley hesitated for a moment and then said in a voice that was almost inaudible, "What if he refused to come?"

Captain Lloyd Phillips, M.D., U.S.A.F., sat in the leather-and-tile waiting room of the vast concrete spaceport at Cocoa, Florida, and watched *Swan Lake* on the wide, flat television screen against the far wall. The performance was impossibly graceful, unimaginably beautiful; never had human dancers looked so much like swans as they made long, flowing swoops through air that seemed as buoyant as a crystalline pool.

The program was coming from the Big Wheel, poised eternally in its 22,000 mile orbit above the United States. The performance was taking place in a low-gravity studio of the fabulous Telecity not far from the commercial satellite, and reception was flawless.

This was something Phillips could appreciate, something that the conquest of space had given him that repaid, in part, the sacrifices of human life and labor and agony and Earth's resources that could have been expended more profitably and more realistically.

Phillips had nothing against spaceflight or the Big Wheel or the Little Wheel, either. He was intensely interested in them—as psychological phenomena. They had brought him into the Air Force, and they had kept him there.

He wanted an answer to his own question: *why?*

Why did men join the Air Force's Space Corps? What drove them into a brutal, alien environment where the best they could expect was hardship and a sterile life shortened by the physical damage of bad food, poisoned air, and the destruction of heavy primaries, the cumulative toll of acceleration pressures, and a fifty percent certainty of insanity or violent death?

And why did a race expend its substance on a grand but futile gesture?

Spaceflight was impractical; that was certain. It would never return half the investment of thought, sweat, blood, and money put into it.

One day there would be a thick, scholarly book with Phillips' name on it. Perhaps he would call it: *Those Who Went Out,* subtitled, "The Psychological Factors Involved in the Career Decisions of Space Corps Volunteers, with case histories."

Or maybe: *The Influence of the Broken Home on Twenty Space Corps Volunteers. . .*

Or, more simply: *Spaceman—A Study of the Space Corps. . .*

After that would come the sociological treatise: *Why Space?—A Consideration of the Sociological Necessities Behind the Development of Spaceflight.*

Phillips looked around the big waiting room. It was bare and almost antiseptically clean. He was alone except for a second lieutenant asleep in a far corner, his space helmet tilted forward to shade his eyes.

Phillips looked back at the human swans on the screen, but there were more urgent and immediate demands on his thoughts—for instance General Haven Ashley.

His orders had included only twenty-four hours delay, but he had put them to good use. There was no one to say good-by to: his mother had died many years ago, his father wouldn't give a damn, and he had played the field too carefully for any girl to wonder why he didn't call. In a locked compartment of Phillips' blue, nylon spacepack were the results of his 24-hours' work: microfilms of the service and medical records of the Little Wheel's entire personnel, from a newcomer of five months to an incredible veteran of twelve years, a Colonel Danton whom General Ashley had insisted was "utterly insane."

Phillips had gone over them several times during the continually delayed take-off of the shuttle, but a thorough analysis would have to wait until he had met each man individually and could correlate his observations with the impersonal details recorded in the emulsions. He did not want to prejudge anyone.

It was a trait of conscientiousness that was a little annoying under the circumstances. The situation had been prejudged for him. But it was the way he worked, and he would have to endure it again, as he had suffered with it before.

Phillips had used his orders as authority to dig into a more private file, that of Ashley himself. He knew more about Ashley now than Ashley knew about himself. He would have liked confirmation, absolute certainty; a Rorschach blob test would have provided that. But he was as likely to get that from Ashley as Danton was to get a promotion, and he had enough. He knew why Ashley wanted to destroy the Little Wheel, had to destroy it. He had the key, a small notation on Ashley's service record: *Disqualified for space duty, spacesickness.*

Ashley was one of that small minority of men who can not go weightless without complete sensory disorientation and a violent, unrelenting nausea.

A lesser man would not have cared; a greater man would have forgiven himself. But Ashley could do neither. He had sublimated it, and the defeat had become a driving ambition that had carried him to the top of the Air Force through an incommensurable amount of unrelenting labor, constant politicking, and plain backstabbing.

He had seen space heroes promoted over his head, and he had waited and worked and plotted through the commands of such space pioneers as Beauregard Finch and the recently invalided Frank Pickrell, through an era when spacemen could do no wrong.

And he had clawed his way to the top.

There were published articles in Ashley's file subtly emphasizing the necessity of civilian control and of a balanced attack upon the military problem of defense against aggression.

Phillips could hear Ashley's voice growling through such phrases as "The tail wagging the dog" and "promotion policies should be influenced by considerations of all-around executive ability rather than spectacular and essentially meaningless feats of personal courage or mere physical agility. The balanced man with his feet planted firmly on the ground and his primary concern for the welfare of all the people must take precedence over visionaries and impractical idealists."

Ashley would be the first to deny that he harbored any hatred for the Space Corps of his command, and he would be telling the truth. But his subconscious mind had decided long ago that spaceflight was worthless. It was equated with a terrible experience of physical and psychic distress; imprinted on an inaccessible area of Ashley's mind was the article of faith:*Men are Earth creatures.*

The combination of genes that had determined Ashley's inability to tolerate no-gravity had doomed the Little Wheel, and perhaps the whole future of spaceflight, almost fifty years ago. Chance. Just as it had been chance that the first man into space had been unable to return, and his plight, capturing the world's sympathy, had fueled the great psychological surge that had put the Little Wheel into space.

To recognize the subconscious factors behind Ashley's decision, however, was not to invalidate the decision itself. Ashley might be correct in spite of his prejudice. Phillips thought it very probably that Ashley*was* right.

But it rankled a little that he was going on a fool's errand. No answer he brought back—except an outright and unacceptable lie—could save the Little Wheel. Still, to Ashley and the world the trip was essential.

The Little Wheel was going to die and spaceflight was going to die, but they had to die for a very good reason and with all due rites and ceremonies or they wouldn't stay dead.

"I beg your pardon, sir," the voice repeated.

Phillips looked up, his thoughts shattered into shards that could never be quite pieced together again. A second lieutenant in the Space Corps stood respectfully in front of him, his blue space helmet dangling from one hand. Phillips glanced quickly at the far corner of the room, but it was empty, and looked back at the lieutenant.

"I beg your pardon, sir," said the lieutenant for the third time, "but I was wondering—you don't seem to be watching the screen"—he motioned boyishly toward the far wall—"if you'd mind if I switched channels."

He was a young man—slim, tall, broad-shouldered, and blond, his hair trimmed almost scalp short in the latest spacecut—and he wore the most delightfully engaging grin. The kind of young man, in fact, for whom a uniform did the most and who did the most for a uniform. His face had sunburned and peeled and sunburned and peeled again until it was a light tan, but he would never develop any real immunity to ultraviolet. His blue eyes looked directly at Philips without wavering. He was a completely normal young man, a Space Corps recruiting poster come to life, and Phillips' irritation collapsed.

"Go right ahead," Phillips said. In a moment the swans gave way to an amazing exhibition of acrobatics in zero gravity, but the young lieutenant, after he had returned and taken a pneumatic, leather chair next to Phillips, gave the performance none of his attention. He turned immediately to the psychologist and said eagerly, "Are you going out, sir?"

"Yes."

"Your first?"

Phillips smiled involuntarily. "To the Little Wheel."

"Then you have an experience in store."

"I expect you're right." Phillips' smile broadened.

"We'll be going out together," the boy said with great enthusiasm.

"Fine." Phillips grinned.

The lieutenant looked sheepish. "I beg your pardon, sir. I talk too much, don't I? It's just that I'm returning from a short leave, and I can't wait to get back. My name is Grant. Jack Grant."

*Grant,* Phillips thought. *Both parents living, happily married. Normally affectionate family relationship. Older brother a solar power engineer. Younger sister in high school. Normal adolescent sexual experiences. Six months service outside. Well-adjusted personality for his age when he left the Academy.*

Phillips frowned. He didn't fit into the pattern at all. *Why had he gone out?* "Lloyd Phillips," he said.

Grant went on chattering unabashed, telling Phillips about the Academy, about the Wheel, about his recent leave and the girl he had met and what they had done—stopping just short of the fine line between gentleman and jerk. His appetite for experience and his unquenchable good humor were infectious. He reminded Phillips of a playful puppy, bounding violently, his stub of a tail shaking his body all over with its gyrations. Phillips thawed once more in spite of himself and gave the boy a verbal pat on the head occasionally.

"What kind of man is Colonel Danton?" Phillips asked casually.

Grant's smile faded. He looked serious for a moment and said, "A very good officer, sir. A brilliant commander, completely loyal to his men and gets their loyalty in return. Dedicated, sir. Works harder than anyone."

Phillips smiled encouragingly. "You can speak frankly, Jack. I'll tell you something. Can you keep it under your hat?" He went on in a confidential murmur without waiting for an answer. "I'm a psychologist assigned to the Little Wheel. One of my jobs is to determine whether Danton is emotionally qualified for a position whose responsibility is almost beyond comprehension." That was true, certainly, although not in the sense that Grant would take it. "You can help me."

"You put me in a difficult position, sir. I'd like to help you, but I just can't."

*Then there was something to tell.* "This isn't tattling, Jack. It's much more important than that."

Grant shook his head grimly. "I'm sorry, sir. You'll have to find out for yourself."

Phillips nodded approvingly, discovering that his opinion of the boy was rising steadily. "That's all right. I understand how you feel."

Grant could not stay withdrawn for more than a few moments. Soon he was baring his normal young soul as freely as ever.

Fifteen minutes later Lieutenant Kars came through the broad, glass-doored entrance. He wore blue coveralls, a webbed flight belt across his chest, and a somber expression on his dark face.

*Joseph Kars, 23, only child of a widowed mother—*Phillips had time to think before Kars said curtly, "Let's go, Captain. We can't wait all night."

"About time," Phillips said gently. "I've been waiting for two days."

Kars looked at him out of cold, black eyes. "It's never about time, Captain. It's time or it isn't. Pick up

the Captain's spacepack, Grant," he snapped. He turned on his heel.

Phillips turned quickly to pick up his own luggage, but Grant already had it in his hand. He grinned at the psychologist.

Phillips looked at him helplessly and back at Kars as if comparing the two and then followed the unrelenting back into the night.

They walked across the pitted, concrete landing field toward the skyscraper-tall three-stage rocket, broad-finned at the bottom, its wings even broader at the top. Grant was some twenty yards behind. Phillips didn't look at the shuttle. He was looking at Kars.

*There is a sameness to them,* he thought. *A dedication, a mania that molds their features, a look to the eyes as if they were fashioned for seeing more distant vistas than other men. There were all shapes and colors and faces, but the differences only emphasized their kinship. They came from identical molds labeled: "Experiment—Homo Spatium."*

They were marked men. Marked not just by the deep tan of unfiltered ultraviolet or the cataracts of heavy primaries but by a common experience and a dream shared, marked so that all men might know them and say, "There goes a spaceman."

All except Grant. He was too normal. He didn't belong. Phillips felt a surge of affection for Grant, as if they were brothers who had just recognized that they were among aliens.

"What held us up, Joe?" Phillips asked casually.

"If you don't mind, Captain, call me Kars or Lieutenant"

"All right, Lieutenant. What was the trouble?"

"No trouble, Captain."

"Two days' delay, and you call it no trouble?"

Kars glanced at him silently as if weighing Phillips' powers of understanding. Then he pointed at the shuttle, standing tall and partially illuminated on the otherwise dark field. But there was life around. Somewhere animals roared in their testing frames, spitting flame and power, shaking the ground. It was like walking through a zoo at night, wondering if the bars are strong enough.

"That's a beast there, Captain," Kars said flatly, "a savage, viciously unpredictable beast straining at a leash, waiting to kill me if I overlook one small item in an endless list of precautions.

"I'm in command of that thing. It doesn't move until I'm satisfied that it's ready. Every relay, every pump, every gauge must be working perfectly; every connection must be solid; every line must be clean. Or blam! No more crew, no more Joseph Kars, no more Captain Lloyd Phillips. And no cargo for the Wheel.

"We inspect every part personally, Captain. Does that I surprise you?"

"No. Something was wrong then?"

"We weren't sure everything was right"

"I'm glad you told me. I would hate to be forced to report that there was deliberate delay in the execution of my orders. General Ashley wanted me on the Little Wheel yesterday."

Kars told Phillips what he could do with General Ashley. "Besides," he concluded mildly, "there's always the possibility of sabotage. One of the crew must stand guard over the shuttle at all times."

"Enemy sabotage?" Phillips said, surprised.

Kars' unreadable black eyes looked at him. "After the red tape you went through, you think an enemy agent could get in here?"

"Did Colonel Danton tell you that? What's wrong with him?"

"Captain," Kars said icily, "we didn't have to be told. As for the Colonel—he's the greatest man who ever lived!"

As they climbed up concrete steps onto the takeoff platform, the ship had grown so tall that it seemed about to topple over on them. They approached the giant hammerhead crane beside the shuttle. Grant's footsteps clicked behind them.

There was a smell of old fire to the platform mingled with the sharp odor of acid and the mingled stench of old chemicals and oil. "You don't like me, Lieutenant," Phillips said bluntly. "Why?"

"I don't dislike you, Captain," Kars said without expression. "I don't feel anything about you at all except for a general distaste for all witch doctors. I had enough of them at the Academy. They ask the wrong questions, Captain.

"If I resent you, it's because you're taking up space that might be occupied by someone useful. If we didn't have to lift you, we could lift another bottle of oxygen. We can breathe oxygen, Captain."

"And I'm dead weight," Phillips said cheerfully. "Okay, Lieutenant. Man proposes, but the Air Force disposes. I've got my orders, too, and I can stand it if you can."

Grant joined them in the elevator that was part of the crane's framework. It lifted them up the side of the ship, and they climbed through the thick, square doorway. Kars followed more slowly. Grant stowed away Phillips' spacepack and swarmed up a ladder toward four helmeted heads.

Kars motioned Phillips into a gimbaled chair. "That's yours," he said, and went on to the pilot's chair above.

With quick, sure competence, Phillips buckled himself in, chuckling softly. So this was the way it was going to be: a test for the psychologist.

*Let them have their fun,* he thought. *They'll need it.*

After the interminable drone of the check-off, the lifting of the shuttle took him by surprise. Kars gave no warning on the intercom; there was suddenly more than half a ton of lead sitting on his chest, squeezing the breath out of his body, refusing to let him draw in more.

His head was turned slightly to the side, forced deep into the cushions, and he could not move it. Outside the night flamed red and yellow and white, until he had to shut his eyes against the brilliance. The ship trembled and shuddered and shook, and the roaring of the rocket motors was everywhere, pervading every tortured cell of his body.

After a brief surcease, in which Phillips noticed that the light outside had disappeared and his blinded eyes could see only a sooty blackness, the weight descended again. This time, as the second stage took up the job of acceleration, the pressure lasted for almost a minute.

As the second stage cut off and dropped away, Phillips took a deep, rasping breath. By comparison, the third-stage acceleration was almost unnoticeable.

Suddenly, then, the all-pervading vibration was gone. The motors were silent, and Phillips was falling.

He gripped the chair arms with clawing hands. *This is illusion,* he told himself desperately. What sent his senses reeling into the eternal night was the absence of acceleration pressure, was the release of the ear's otolith organs from the tug of gravity. . .

His stomach rebelled. Bitter acids spurted into his mouth, and he swallowed hard. . .

*Free fall,* he told himself. *In that sense I am falling, as all men fall when there is no resistance to the pull of gravity. But in actuality I am coasting upward into the abyss of night, protected from its hungry vacuum, from its extremes of heat and cold, by sturdy metal walls and the flower of man's engineering and craftsmanship.*

Falling, true, but falling—up!

Phillips took a few deep breaths and a sensation of unusual well-being spread through his body. He was one of the lucky ones. After a few uncomfortable moments of transition, zero gravity was a delight to him.

Phillips looked around. Grant was beside him, on the other side of the ladder, but the boy was having more difficulties. His face was white, and his jaw was set grimly.

The earphones popped, and Kars' sardonic voice came to Phillips clearly. "Okay, Captain?"

"Very nice, Lieutenant," Phillips said cheerfully. "Best lift I can remember." *And that,* he thought, *should end the hazing from that quarter.*

Then there was no time for talk: the crew was too busy with problems of navigation and determining the final burst of acceleration that would stabilize the ship's orbit at 1,075 miles out where they would intercept the orbit of the Little Wheel.

For Phillips the time passed swiftly. Grant was still in no mood for conversation, but the psychologist watched the stars through the clear, plastic canopy. They had always fascinated him; they were so different from the twinkling, filtered, untouchable fireflies of Earth's night. Out here—Phillips recognized the transition in his vocabulary—they were clear, steady, many colored, and almost within reach.

That, too, was illusion. As a psychologist he knew that Ashley's article of faith was fact: Men are Earth creatures. Nowhere else could Man exist in more than a marginal, half-starved sense. No other soil would nourish him; no other world would ever be home.

And even if somewhere in the infinite universe there were a world which would not be poison to his respiration or alimentation or the delicate balance of his metabolism, even if the fantastic problems of reaching the nearer stars—even the nearer planets of the solar system—were solved, were capable of solution, there must still be men to go on the long, long voyage out. Within the thin walls of a weightless metal prison, there must be men, and within the men there must be minds to know the ultimate fears and go mad.

The two artificial satellites were special cases. They were Earth environment canned and transported at incredible expense into orbits around the home world, and whenever the psychological pressures grew unbearable, a man could look out and see the warm, nourishing bosom of his mother only hours away.

A new voice broke into Phillips' reverie. It wasn't one of the crew members; he had become attuned to

them. This voice was carefree, almost chuckling.

"Okay, Joe," it said. "You've got your bearings; don't spare the hydrazine. And be careful with the supercargo." It laughed. "We wouldn't want anything to happen to the General's errand boy."

The freed third stage had slid into sunlight. The glare was dazzling, blotting out the stars. The Earth—below? above?—spanned half the sky. It recalled to Phillips the mosaic in General Ashley's office. The difference was that this was real, and he was Outside, floating 1,075 miles above the world beneath with its blue-black oceans, its thin-cotton clouds covering almost half the planet, its dull, brownish-yellowish-greenish continents distorted almost beyond recognizability at the edges of the hemisphere, all framed by a whitish haze. This was real, and it was majestic and frightening.

On the other side, the gleaming-white, two-spoked Wheel, spinning slowly, was a triumphant thing, dazzling the eyes where the sun burned back from its rim. It was a silver ring for a giant's finger waiting on the black-velvet cushion of the night.

Phillips waited in his spacesuit for the sausage-shaped taxi that would take him to it. Not far from the Wheel was a vast circle of coated metal, shining mirrorlike in the sunlight. But it could not be a mirror—not a weapon for concentrating the sun's rays on an enemy city like a burning glass on an ant hill nor a reflector for lighting the friendly night or warming the polar ice. It was pointed at right angles to Earth.

Beyond the Wheel was another structure. Phillips couldn't make out what it was supposed to be; the Wheel concealed much of it. But it was an ungainly contraption of rocket motors and spherical tanks bolted flimsily together.

A man was waiting in the zero-gravity Hub to help Phillips out of his cumbersome suit, a man with a hard, deeply tanned face and snow-white hair—cosmic ray damage to follicles did that. He wore the loose-fitting coveralls of an ordinary spaceman. They were ragged at cuff and neck, and there was no insignia.

*Non-reg uniform,* Phillips noted. *Sloppy at that.*

The man was slim and a little over medium height as near as Phillips could judge without his accustomed yardsticks of perspective and familiar surroundings. The contrast of his colorless hair and eyebrows with the dark face was dramatic. In fact, the man looked surprisingly like ailing General Pickrell, even to the cataract-flecked eyes, but then he grinned and the resemblance vanished.

"Captain Phillips?" he said easily, floating without a handhold in mid-air. "Colonel Amos Danton at your service."

Phillips gave a start of surprise and tried to cover it by shooting out a hand to meet Danton's. But it overshot its mark and had to fumble its way back with an air of embarrassment. Muscles don't learn quickly, Phillips noted.

"Glad to meet you, Colonel Danton," he said, "but I want to correct one misapprehension. I'm a little too old to be an errand boy."

"I hadn't thought there was any age limit on it." Danton grinned. "But seeing you now, I'm inclined to agree. Don't mind me. I'm frank to the point of brutality."

"Then I hope you'll continue to be frank with me, Colonel. I have a difficult job to do, and I'll need all the help I can get."

"I know."

"You know what my job is?" Phillips asked sharply.

"Shall I quote your orders?"

"Spies?"

"Call them spies if you like." Danton's face hardened. "There are spies around me now. Saboteurs. Enemies." He took a deep breath and brought his voice back to its original lightness. He shrugged. The gesture spun him gently, but he stopped it almost without effort. "We think of them as grounded spacemen. Once a spaceman always a spaceman."

"What would you call me?"

"Neither fish nor fowl, Captain. You're an ocean dweller with air sacs capable of absorbing oxygen from the atmosphere, but you haven't made up your mind whether it wouldn't be better, after all, to crawl back into the secure, buoyant womb of the sea."

"I disagree with your analysis and your analogy, Colonel."

"That's your privilege. But all this formality makes me nervous." Almost as he spoke, his eyelid jerked. "We don't worry much out here about spit and polish. My name is Amos. I'll call you Lloyd. Okay?"

Phillips nodded agreeably and began a series of lazy somersaults that he didn't try to stop because he didn't know how. Perhaps it would not be as difficult as he had imagined, he thought. Danton might be as cracked a pot as Ashley believed him or as great a man as Kars had called him or as tainted as Grant had suggested, but he had no obvious chip on his shoulder. Phillips had a shrewd idea how to turn him into an active ally. Feeling a little silly about the somersaults, he said, "If you know my job, then I hope you'll see that I get the cooperation it demands."

"Sure," Danton said. "You came out to tear down the Wheel. Go to it. If you can do it, the Wheel doesn't deserve to be out here. You'll get cooperation. And if any of the boys give you trouble, come to me. They don't like you, you know. Not only are they rather attached to this old Wheel, but you're going to slow down a job they know is important, and you're going to occupy premium space and consume valuable oxygen and food." His eyelid jerked. "But they'll cooperate—or else."

As if he had suddenly tired of the conversation, he caught Phillips' hand as it came around and gave it a quick pull which stopped the somersaults and shot Phillips into one of the pipelike spokes. Phillips reached out just in time to catch a rung of the rope ladder that lined the side of the tunnel. Danton, rebounding from the other side of the Hub with bent knees thrusting, was beside him immediately.

"Danton coming through on B with one hundred sixty pounds of witch doctor," he said into a microphone. To Phillips he added, "Let's get you settled. I'm giving you the cabin next to mine. It's small and uncomfortable, but it's the best we have. And you'll want the privacy, I imagine. Out here that's our scarcest commodity."

"Not too much privacy," Phillips said quickly as they pulled themselves along the ladder, their weight increasing as they approached the rim. "I'll want free access to every part of the Wheel. I'll set up a schedule of private interviews for everyone out here, but I want to eat with the men."

"They've endured a lot of things. I guess they can survive that, too. You're free to go wherever you wish, but the weight control officer has orders to search you if you leave your room. Saboteurs, you know."

The cabin was small beyond belief. Beside it the third-class quarters of the Big Wheel were models of luxury. Here there was space for a bunk, a table, and a chair; when the bunk was folded against the wall, the table and the chair could be let down. When all of them were out of the way, a man could take two paces if he didn't step too freely.

If the legend on the door were to be believed, it had housed the missile-control officer.

For all its privations, it was a room with a view. When an outside viewport cover was lifted, the universe was Phillips' neighbor, a dark infinity scattered lavishly with friendly, many colored lanterns to light the way, or alternately, as the Wheel turned, the great, beautiful disk of the Earth was before him, close enough to grasp in a man's two hands if there were not thick glass in the way.

Occasionally, beyond a thin, metal partition, Phillips heard Danton moving softly in what must have been a twin cabin to his.*Privacy!* Phillips thought wryly and was glad he had an ear mike for his recorder.

If his cabin was tiny, the crew's quarters were impossible. Like flop-house patrons that rented louse-ridden beds by the hour, the crew slept in "hot" bunks, and when they slid into them their faces were no more than six inches from the bulging canvas of the bunk above.

There were, at least, no lice.

The food, chiefly frozen meals to save shipping space, the services of a cook, and the room necessary for a kitchen, was surprisingly good, but even eating in shifts couldn't prevent continual overcrowding of the minute dining hall. It was almost necessary to eat in unison to avoid an inextricable tangling of arms.

An eternal line waited for a chance at the shower or the sanitary facilities, and recreational opportunities were practically non-existent. Occasionally there were swift games of no-gravity handball in the Hub—against all regulations, but even Danton joined in—and riskier games outside in spacesuits or the two-jet taxis. Inevitably, there were card games, checkers, and chess in the bunks, and probably bull sessions.

The last was surmise. The men didn't talk when Phillips was around. They glanced at him coldly or ignored him.

Even when he called them to his carefully prepared cabin—the Rorschach clay on the table, the recorder fastened underneath—they were sullen and monosyllabic. They knew what he was there for, and they resented him violently. Only Danton's explicit orders made them report at all.

Phillips got it all down on tape. Ashley would love it, he thought. They all sounded like depressives on the verge of becoming manic. None of them realized that the clay they were working in their fingers—since they were all compulsives they picked up whatever was available to keep their hands occupied—revealed them more surely than anything they could have said.

Alumbaugh, Baker, Chapman, Dean—straight down the roster, Phillips diagnosed them by the blobs they left behind. Psychology had taken giant strides in the last quarter century; Rorschach blots interpreted by the patient had become Rorschach blobs manipulated unconsciously by the patient, and Phillips could classify the crew members with certainty: schizoids, cycloids, paranoids, homosexuals, sadists, incipient homicides psychopaths. . . all.

In a sense, part of it was unfair. Morale was better than it should have been among men working, many of them at manual labor, for twelve to sixteen hours a day and living under conditions that would have been considered cruel and unusual punishment for the most hopeless criminal. On the other hand, it was not as good as it could have been under the guidance of an experienced psychologist.

Even then Phillips would not have trusted them with decisions involving the safety of a small city. There was no longer any doubt in his mind: they were unstable personalities in an artificial and unnatural environment.

It was a dilemma: only men with character defects would run away from the daily stresses and decisions of life on Earth, only such men could conquer space because only they would want to, and such men could not be trusted with responsibility for the future of the Earth.

If there was any powder keg, this was it—waiting for a spark to set it off and blow up the world it was supposed to protect.

There was only one way out: the conquest of space would have to be sacrificed to the security of the race of man.

It was Ashley's decision, but Phillips had confirmed it. The problem was how to make it stick.

The taped interviews, his own notes and observations, the holographic photographs of the blobs—kept under tamperproof lock when he was out of the cabin—were perhaps enough to satisfy the jury that would decide the Wheel's fate, although laymen looked on the blobs with the suspicion illiterates had once had for books.

Phillips wanted more—the casual conversations of the crew when they thought they were alone, for instance, but he wasn't electrician enough to rig bugs in the sleeping quarters and the mess hall. In any case, they were never clear.

With Danton's help he could manage it, but before that he had to be sure that his evidence was sufficient to justify the necessary decision. Only then could he take the risk that his analysis of Danton might be incorrect.

Phillips prowled the Rim with his problem, looking for something overt, for something he could point to and say, "See? Here a man has cracked under the pressure. Here he has done this or forgotten to do that in an unconscious dramatization of his paranoid aggression wish or his suicidal impulse. Here, but for chance, might be the act that destroyed every living thing on Earth."

But there was nothing to point to.

As neurotic as the crew members certainly were, as psychopathic as many of them seemed to be, on the job they did only those things they were supposed to do and forgot nothing. The areas of the Little Wheel vital to the welfare of the men within—and what wasn't?—were kept in showroom condition, more immaculate and in better repair than the men who tended them.

The power room, supplied by solar radiation focused on a mercury boiler by a troughlike solar mirror, was spotless. The air-conditioning system, which extracted moisture and carbon dioxide from the air, fed in fresh oxygen, and maintained pressure throughout the satellite, was tended as solicitously as a baby. The pump room gleamed, and the water recovery plant gurgled contentedly at its job of making wastes potable.

Then Phillips reached Earth-observation.

The screens were alive, but the telescope had been allowed to drift off-center. The view of the area beneath the Wheel was blurred and meaningless.

There was only one crewman on duty, and he was asleep in a chair near the bulkhead that separated Earth-observation from what had once been the weather room and was now sleeping quarters for

thirty-two men.

Phillips grasped the man roughly by one shoulder and shook him awake. As soon as the man's eyes fluttered, Phillips snapped, "Name and rank!"

Dazedly the man sprang to his feet. "Spaceman First Class Miguel Delgado, s-sir!" he stammered. Then he recognized Phillips. He jerked his shoulder free and settled back into his chair. "Oh, it's the witch doctor," he said insolently.

"Are you on duty here?"

"Yes, Captain."

"Just you?"

"You don't see nobody else, do you?"

"Do you know the penalty for falling asleep on watch?"

"Whatever the Colonel says."

"The Colonel has nothing to do with this. The penalty is automatic: courtmartial, followed by whatever penalty the court decides is appropriate, up to and including death."

"The Colonel will say," Delgado repeated stubbornly. "Whatever the Colonel says is right."

"Your loyalty to Colonel Danton is admirable. It's too bad it isn't matched by an equal loyalty to your country and the Air Force."

"What's the use making a big fuss over a little nap?" Delgado shrugged. "It ain't like it was important."

"There's nothing more important. What if you didn't see a missile base below because of your little nap? By this time those missiles could be over Washington or your own home town."

Delgado looked amazed. "Who'd want to do anything like that?"

Phillips gave, up. "Where's the missile-control officer?"

"The*who?"*

"The missile-control officer. According to your table of organization, he's in charge of Earth observation."

Delgado shook his head stupidly. "Never heard of him. You better ask the Colonel."

"I'll do that!" Phillips swung away, trying not to see Delgado's smothered yawn.

It was time to see Danton.

Phillips had only a few steps to go. Beyond the next door was the little-used celestial-observation room. Sitting motionless in front of one of the magnifying screens was Danton.

Phillips closed, the door carefully behind him. "Colonel!" he said sharply.

Not looking away from the screen, Danton gestured for silence. "Shhhh!"

Phillips took two quick steps toward him. "Amos! This is important!" He glanced at the screen. On it was

a vivid enlargement of a quadrant of Mars, rosy and sharp, the long-disputed canals clearly delineated.

"Oh, it's you, Lloyd," Danton said casually. He swung around in his chair. "What can I do for you?"

Grimly Phillips said, "A better question is: What can I do for *you?"*

"Okay," Danton said agreeably. "What can you do for me?"

"I can report a disrespect for authority in your command, a deteriorating morale situation, and a possible disaster in the making."

"Well, now," Danton said lazily, his eyelid jerking, "I guess that's not new. There never has been much respect for authority on the Little Wheel. Out here a uniform and an insignia isn't enough; a man must earn respect on his own. The morale has always been deteriorating. And there's always a disaster in the making. Anything else?"

"I just found a crewman asleep on watch." Phillips watched Danton closely. The reaction, for once, was appropriate.

Danton came out of the chair in one fluid movement. "Where?"

"Earth-observation."

Danton sank down again. "Oh! That's too bad."

"Is that all you can say—it's too bad?"

"Who was it?"

"Miguel Delgado—a resentful, unstable personality who should never have been given such responsibility in the first place."

"Well, Lloyd, we have to use what we've got. I don't think we should be too hard on him. He's just put in eight hours at hard labor on construction work outside, and he's got a six-hour stretch in a boring, unimportant job—"

"Unimportant?"

"Unimportant to him."

Phillips snapped, "In the Air Force I belong to enlisted men aren't judges of the importance of their jobs."

"I suppose he knows it's unimportant to me, too."

Phillips studied the tanned face under the white stubble. It was a face aged beyond its years. Phillips wished he could get behind it, wished he could get Danton into his cabin with the recorder underneath the table and the Rorschach clay on top, wished he could be certain that Danton was as paranoid as he seemed.

The martinet approach hadn't worked. He would have to proceed on the assumption of paranoia. "I don't understand you, Amos. Out here you've got the toughest job a colonel could hold in the Air Force, maybe the most responsible job anywhere, and you don't seem impressed at all."

Danton said dryly, "Maybe my values are a little different."

"The only possible conclusion is that twelve years out here without rest or leave has affected your judgment." Danton started to speak and Phillips held up a hand as he hurried to fire the thunderbolt he had been saving for this moment. "You needn't be surprised that I know about the standing orders General Pickrell left in your file. But you should know this: those orders have been torn up. You can go home whenever you wish."

For a moment Danton stared blankly at Phillips, and then he started to laugh. The laughter was not insane; it was not even hysterical. It was the laughter of a man who has just heard something indescribably funny.

Finally Danton wiped the tears from his eyes and asked weakly, "You think you can buy me, do you? You think for a few lousy weeks on Earth you can get my help to break up the Little Wheel?"

"That wasn't—" Phillips began, but this time Danton's hand was raised.

"I listened to you; now you listen to me. Sure the Fish—I beg your pardon—General Pickrell put those orders in my file, and for a good reason, a reason I may tell you some day. Later it became our own personal joke. But he never offered to remove them, and I never asked him to. Why should I want to go home? My mother died two years after I came out—yes, Lloyd, I came from a broken home—and there's nothing left in there I'm interested enough to cross the Wheel for. Go home, Captain? I*am* home."

"And for that reason, Amos, you aren't a good risk."

"Explorers have never been good risks."

"I'm not talking about insurance risks; I'm talking about the risk to Earth."

Danton grinned. "Don't go on! I can repeat everything Sackcloth told you. God knows he's sent it to me often enough: 'Under no conditions will you initiate independent action, no matter what the provocation or the state of communications. You will wait for order from superior authority. I don't need to tell you, Colonel, that I am not satisfied with a situation that includes the possibility of ultimate decision by man qualified for it neither by character nor by training.'" Danton's voice dropped. He stared blindly at the lighted screen in front of him. "Ashley has a nasty way of projecting his own desires and character into his mental concept of his subordinates. Who does he think is going to fire a missile without orders from Inside, and confirmation of those orders, and reconfirmation?"

"A neurotic man might. Anyone out here might crack under the strain of sitting with his finger eternally on the trigger. Even you, Amos—as certain as you are that space is your home—you might crack. And you have the power here to make yourself the dictator or the destroyer of the world."

That seemed to cheer Danton up. "Dictator, perhaps—but for how long? There are neuroses and neuroses, Lloyd; some are dangerous, and some are functional. A fear of heights, now, has kept a lot of people from taking the long plunge. I happen to think that our kind of neurosis is only dangerous when it is penned up."

Carefully Phillips said, "Unfortunately, you aren't a trained psychologist. My own opinion is that the Little Wheel is dangerously close to instability. You take great pains to make every part of the Wheel balance with the part diametrically opposite. It's even more important that the men inside, who must make the decisions, are carefully balanced.

"In a command distinguished by slovenly watch procedures, insolence, and disrespect for authority, you have managed to inspire great personal loyalty among your men. Perhaps you can keep them under control. But I ask you to consider this: what would happen if you were killed or suddenly recalled?"

Phillips suddenly remembered Ashley's haunted eyes as he had muttered, "What if he refused to come?"

Hastily Phillips went on, "These men are nervous, irritable, and unstable. The Wheel is a powder keg waiting for a spark."

Danton turned his head to look squarely at Phillips, his lips smiling but his flecked eyes hard. "Nervous, sure; irritable, maybe; but unstable, unh-unh! A force released is always stable. It's only a force contained that is unstable, and only that force will explode.

"Sure we're nervous, but we've got a right to be. We're prey to a dozen hazards men Inside never know. We're eternally conscious of our environment, because we have to bring it all with us. We live in a hollow world two hundred and fifty feet across; its walls are not much more than an inch thick, and most of that is air. We face imminent death from such exotic causes as sunburn, meteoric missiles, asphyxiation, and radiation poisoning.

"If I don't die violently, Lloyd, I won't live to be sixty years old. To me it doesn't matter. I wouldn't be anywhere else for a lifetime twice as long. This nervousness you speak of—I call it awareness of danger, and as long as we stay nervous, we'll stay alive, most of us.

"They don't need to be afraid of us, Inside. We're trying too hard to stay alive ourselves."

The timing was perfect. *Too perfect,* Phillips found time to think as the alarm went off with a clamor of bells and a blinking of overhead lights.

Danton stiffened, and Phillips stared with startled eyes at the too-thin walls. By the time he had released his breath, instinctively caught in his lungs, and assured himself that the walls separating him from vacuum and death were still imperforate, Danton was at the wall phone.

"Where is it?" he snapped. "Okay. I'll be there in two seconds. Get the air pressure up, and release the marker."

Danton had the door open and was through it before Phillips moved. The next few minutes for Phillips were a kaleidoscope of confusion that somehow achieved swift results.

The automatic doors of the air-testing lab were closed. The walls within had been pierced by a meteor that had burst through the bumper that stopped 99 percent of those hitting the Wheel. Emergency air blowers were building up air pressure inside the room to give the men within time to adjust emergency oxygen helmets, locate the holes by means of the harmless colored gas that had been released into the section, and plug them.

But something had gone wrong.

"What's the delay?" Danton demanded.

From a cluster of men performing incomprehensible jobs outside the airtight door, a sweaty face turned. Phillips recognized Lieutenant Chapman, the air-control officer.

"I don't know. They should be out by now. I can't raise anybody. Fred's in there and young Grant. All I can pick up is a low moaning noise. Somebody's alive. I've got two men outside trying to plug the leaks from there. Until then we can't open the door. Hold on!"

He turned to the crewman beside him who had a self-powered handset to his ear. "Air pressure is climbing. Yes, here comes the report now. The leak is plugged. It'll be a couple of minutes,"

"Leak?" Danton said softly.

Chapman looked at him and said, "Yes, sir. One."

The minutes passed leadenly. "Okay," Chapman said. "Open it up."

The door came open. Red fog drifted through. Phillips sniffed at it gingerly, but it was odorless. Within seconds two men were brought into the room, one bareheaded and limp in the arms of a rescuer who carried his one-third normal Earth weight without effort, the other helmeted and stumbling.

Danton said impatiently, "Well, what are you waiting for?"

Phillips looked up. Danton was frowning at him. "You're an M.D. Take care of that man." He pointed to the unconscious man who had been laid gently on the floor.

"The other one's in shock," Phillips objected. "He needs help, too."

Danton said grimly, "He'll live. Not that I care much. But Fred is important." When Phillips still hesitated, Danton shoved him roughly toward the man on the floor. "Get busy, damn it!"

Phillips started his examination. Danton, the emotion gone from his voice, said, "You don't understand, do you, Phillips? When that meteor hit and the air began whooshing out, Grant forgot everything he ever learned. He froze. Fred wasted precious seconds getting a helmet onto him. By that time it was too late to get into his own."

Phillips glanced up. Grant's helmet had been stripped from his head. His young face was no longer animated and open. His nose had bled down over his upper lip and chin. His eyes were wide and unseeing; his lips moved but no sound came out.

Suddenly Phillips was angry. The only normal man on the Wheel, and Phillips couldn't help him. "He was in shock," he snapped.

"Spacemen don't go into shock. We can't afford to. All our lives depend upon the ability of each one of us to be able to act swiftly and correctly in an emergency when *other* men might go into shock. If men can't do it—every time—they don't belong out here."

Phillips got up slowly.

"What are you doing?" Danton demanded roughly.

"He's dead," Phillips said.

Before Phillips could move, Danton's hand slapped viciously against Grant's cheek. The boy's head jerked, but his eyes remained blank as the cheek slowly reddened.

Danton screamed, "You dirty spy!"

When Phillips started toward Grant, Danton swung around to glare at him with mad eyes. Phillips stopped. In a moment Danton's breathing had slowed. He said, almost calmly, to Chapman, "Take him to first aid. When he comes around, tell him to get his personal belongings together. He's through."

"He needs immediate attention," Phillips said, his teeth clenched. "Serum and—"

"He'll get them. Come with me."

Reluctantly Phillips followed Danton's square back to weight control and down on the spoke of the Wheel to Phillips' cabin. Danton shoved open the door as if it were his own. He went in and put his back against the covered viewport.

When Phillips had followed and closed the door, Danton said casually, "You think I was hard on the kid."

Phillips ran his hand behind him under the table and turned on the recorder. "You make hard rules."

"This is a hard place; we have to be hard to stay out here. I'm not blaming the kid for being foolish. I was a young, foolish kid, too, and I almost got sent in for it. The reason he's going in is that he didn't do the right thing instinctively: he held his breath instead of releasing it—you saw his nosebleed. The expansion of gases in his lungs did that; it could as easily have been his lungs that hemorrhaged. I'm blaming him for not getting into his emergency helmet. I'm blaming him for killing a man, a good man, a man we couldn't afford to lose."

"You shouldn't have hit him."

"Did I hit him?" Danton said, surprised. He must have read the answer on Phillips' face. "I'm sorry I did that."

"And calling him a spy?"

"That, too, eh? I shouldn't have done that, either." Danton grinned but there was no mirth in it. "I don't know why I'm arguing with you about sending a boy in. You're the one who wants to send us all in."

"Not me. General Ashley."

"Oh, yes. General Ashley. We're going to have a time with him." Danton took a pace forward and absently picked up the blob of clay from the table. "We've read your papers up here with a lot of interest."

"You get the psychological journals?"

"Microfilms of things that interest us. A lot of us would like to know why we had to come out. But you haven't found the answer with your inquiries into broken homes and insecurity and neuroses."

"What makes you so certain?"

"Too easy. Men aren't that simple. It's like Neanderthal noticing a rainbow every time it rains and deciding that the rain makes the rainbow. The rain is part of it, but the sun is more important. It provides the energy. You can't reduce all the impulses to be different—the adventurousness, the criminality, the greatness—into cause and effect. After all the causes are fractionated off, you will still have an indefinable something that makes Man a man—a questioning, seeking animal."

"You can't argue away the fact that you are children playing explorer, too immature to tackle the everyday problems of life inside."

Danton didn't take the bait. He grinned. This time he almost meant it. "Is that how we look to you? Well, maybe we are. But it would be a sad commentary on the human race if all its progress had to be traced to the children of the race who ran away and found something new and wonderful beyond the hill.

"Did you ever ask yourself, Lloyd, why General Ashley picked you to do his field work—a capable officer we will quickly agree, but certainly a minor Air Force captain."

"I'm a young man. My adjustment rating is good."

"Could it be," Danton asked gently, "that he was sure, beforehand, what kind of a report you would bring back, that he knew your reputation and your convictions?"

Danton let the question die in Phillips' silence. Finally Phillips shrugged and said, "It doesn't matter. I'm going back on the next shuttle. I've got everything I need. And I'm going back with the same report any competent psychologist would make." He looked defiantly at Danton.

Danton chuckled. "Don't worry. We won't stop you. We could, but we won't. Sackcloth would just send up somebody else, and he might not be as easy to get along with. What are you going to tell Ashley?"

Phillips studied Danton for a moment. The question of paranoia was settled. What he had to decide was whether he had enough evidence or whether he could take the risk of pushing Danton to the cracking point. He took the risk. "The Big Wheel has taken over all your non-military functions: weather observation, scientific research, radio relay—"

"And is making money at it."

"If the Little Wheel has no other function than observation and missile guidance," Phillips continued steadily, "it has no reason for being. It can't do these things satisfactorily, and the very existence of the functions is a constant temptation to fulfill them. I can't guarantee the soundness of the men out here."

"Whose soundness can you guarantee?" Danton asked, letting his weariness show through. "You've seen General Ashley, and you've seen me. Whose finger would you rather have on the firing button?"

"The people chose General Ashley."

Danton's eyelid jerked. "What people? The only person who chose General Ashley was General Ashley."

Phillips insisted stubbornly, "He was chosen through the proper functioning of a democratic government. Nobody can be permitted to substitute his personal preferences or his own decisions."

"Even when 'the people's choice' is obviously a megalomaniac afflicted with agoraphobia?" Danton hesitated; when he spoke again his voice was apologetic. "That was unfair. I brought it up only to prove that you would trust General Ashley out here—even if he could endure it—even less than you trust me. Ashley sent you out with a question that had only one answer: no one can be trusted."

"Well? Isn't that a good reason for bringing you in?"

"If that were our only purpose out here, and we really could serve that purpose as everyone believes—yes, certainly. But it wouldn't do any good, because there's ten times the firepower stored Inside, waiting for a nervous finger to unleash it."

Danton looked straight into Phillips' face, his eyelid twitching. "You know the real reason Ashley doesn't want us up here. He's not afraid that we'll shoot without orders. He's afraid that he'll tell us to fire and we won't obey."

*How much of Danton's argument was truth, how much casuistry?* Phillips wondered. And then he remembered "What if he refused to come?" and thought: *Yes, Ashley was worried about that.*

That put a new and revealing light on Ashley, but it didn't change the basic premises of the situation: there were still men up here who could destroy the world if they weren't more than men can be expected to be.

The knock at the door was like punctuation for his thoughts. When Danton opened it, Chapman was there, tossing a slim length of tubing in his hand.

"Got it, eh?" Danton said, without surprise.

"Still reeks of gunpowder."

"No one tried to sneak it away?"

Chapman shook his head. "Can't figure it."

Phillips looked from the tube to Chapman to Danton. "What are you trying to say? That the lab wall was pierced by a bullet instead of a meteor?"

Danton shrugged impatiently. "Of course. A meteor that size would have gone clear through. Two holes. The missile had to come from inside. And where does that knock your theories, Mr. Freud?"

Phillips didn't pause to think. "It supports my belief that the men up here are unstable—unstable enough to attempt murder—or suicide."

Danton said mildly, "You think a spaceman did that? Unhunh. We have too great and natural a respect for meteors to create artificial ones. Besides, where would an unstable spaceman get a bullet? No. This was sabotage."

"Whose?"

"You figure it out. We've fought it before—for almost six months, as a matter of fact." Danton looked at Phillips suddenly with hard, frozen eyes. "As a matter of fact, Captain, you were the last one out."

There was a moment of awkward silence as Phillips leaned forward, incredulous, and Danton's suspicions filled the room. The flat, tinny voice of the wall speaker was loud: "All hands to emergency stations. The taxis are loose. Drifting. All hands—"

Danton's expression changed instantly. "Maybe I'm wrong." A wry smile twisted his lips. "Here, Captain, here's your Rorschach blob." He put the clay gently on the table and was gone.

Phillips stared at the door through which Danton had vanished. Did Danton seriously suspect him? Or was it only his paranoia peeping through? There were no grounds—

But there were—the tube smelling of freshly exploded gunpowder. If it did smell of gunpowder, and if it was found in the air-testing lab, and if it had not been planted there by Danton himself.

The thought had occurred to him when it happened that the timing was perfect. But that would imply an acting ability far beyond the self-limitations of paranoia. If Danton had planted the tube, he was not paranoid. If he had not, then someone was trying to sabotage the Wheel.

Phillips realized, as he should have realized before, that the whole case against the Wheel rested or fell on the sanity of the commanding officer. He looked down at the table and froze.

The clay that Danton had put there was no longer a blob.

It was a figure, the figure of a child standing sturdily on his feet, looking up. Deftly, as he had talked, Danton's fingers had worked, shaping, creating—a work of art. As such it should be judged, not in psychological terms. With a few skillful touches Danton had created what he had been describing—the child who ran away and found something new and wonderful beyond the hill. But there was more than

that—there was the concept of greatness here and the questing. . .

But Phillips had to judge it on his own terms, and there was where his distress was greatest. Because in this figure was understanding and compassion and belief in mankind—and not a trace of paranoia.

That meant—it could only mean—that Danton *was* surrounded by spies. He had a right to be suspicious. His neurosis was functional.

The difficulty was—Danton knew too much. What was it he had said as he left? *Here, Captain, here's your Rorschach blob.*

But that would imply that Danton knew himself so well, and his psychology so well, and was so consummate an artist, that he could create—this!

It was too much. Phillips' head whirled. Nausea churned his stomach like a touch of spacesickness.

Deliberately he picked up the figure and squeezed it back into shapelessness.

Only moments later did he recall why Danton had hurried away. The taxis were loose. Drifting. And if the taxis were gone, he was marooned.

Phillips threw himself through the doorway.

Phillips scrambled down the spoke to the Hub. It was empty. Only two spacesuits were hanging from their supports. He struggled into one that was too large. He squeezed through an airlock and then, carefully snapping the hook of his safety line to a ring just beyond the cagelike entrance, slipped outside.

He floated slowly out from the Hub, spinning in the black immensity of night, the pinpoint holes of the stars making streaks past his eyes like a poor astronomical plate. With a short tug on his line, working with an instinct he had never known he had, Phillips slowed his spin.

He saw one—a plump sausage with a plastic window—floating gently away from the gleaming rim of the wheel. Gently—and yet the taxi diminished with alarming swiftness. Then he saw another and another. All drifting away. As far as he could see, there were none left tied to the wheel.

There should have been chaos here, with suited men pouring out of the Wheel without plan or precedent for an emergency whose scope Phillips could only guess. But there was a crazy kind of order in the silence.

Men were snapping their safety lines to each other's suits instead of the Wheel. One man, in the lead, was clambering with incredible speed along the spoke until he reached the rim. Then he jumped, his bent legs thrusting him away from the satellite spinning beneath, his safety line trailing behind. As that line almost reached its limit, the man to whom it was attached jumped after him.

One after another they jumped, forming a living chain of spacesuited men linked together by almost invisible strands of cord, working together as a unit with the social instinct of army ants, reaching toward the stars, throwing a thin bridge across the impassable river of space.

Flame spurted from the suit at the head of the chain. It curved slowly toward the nearest taxi.

For Phillips it seemed like a metaphor. Men would die, but others would take their place, and one day men would cross over the bridge their comrades' courage and sacrifice had made, and reach the stars.

The taxi was still receding swiftly—swifter, it seemed to Phillips, than the chain that reached toward it.

Would the chain be long enough?

He caught a ring on the spoke of the Wheel and swung himself out toward the rim. Suddenly he was stopped. Something had caught him from behind. He swung his head around inside the helmet to look back. There was a spacesuited man behind him, the hook in his sleeve-ending caught somewhere in Phillips' suit beneath his range of vision. With the hook in his other sleeve, the man held himself to a ring on the Hub. Easily he pulled Phillips back toward him.

Phillips could not see who it was. The helmet viewplates were dark to keep out ultraviolet. Then he recognized a faded eagle on the chest of the suit.

His helmet bumped gently against the other helmet Transmitted through that contact came the metallic voice, "Where do you think you're going?" It was Danton.

"It may not be long enough."

Danton did not have to ask what he meant. "If it isn't, you can't help. That takes teamwork. Something you have to learn. Something you have to live. When everybody's life depends on the actions of everyone else, that comes easily."

The implication was clear: he wasn't a part of the team, not even a player on anyone's team. "But it's serious—"

"Of course it is. If they don't reach that taxi, we're stuck. We can't get supplies over from the shuttles. We can't finish our—work."

"Until they send out replacements?"

Even through the helmets, Danton's voice was ironic. "And that's something Ashley can veto."

"You think this is Ashley's doing?"

"That's for you to decide."

"We'd better help," Phillips said, trying to struggle free.

"How much help would you be?" Danton asked. He let Phillips swing away a little to see his safety line still clipped to a ring on the Hub. Then he pulled him back. "You'd just get in their way. They'll get it."

The two of them, clasped together like misshapen and amorous starfish, had floated around until the lengthening chain had drifted back into view. The first suit, its rocket jets blazing in brief spurts, was farther ahead of the second link than it should have been. It had cut its safety line, Phillips realized. It was heading out, alone, into the black, bottomless river.

But it was catching up. It reached out a stubby arm toward the taxi. And missed! No, it had caught a hold. The suit and the taxi drew together, became one. . .

For the first time Phillips wondered: *Who had cut the taxis loose? And why? And what had he been doing while everyone was outside?*

Suddenly he knew the answer to all of them.

He turned, but Danton was gone. He had gone, Phillips realized, even before the taxi had been caught.

Would Ashley go this far? Phillips asked himself. And he had to answer, Yes. How much farther would

he go to destroy the Little Wheel? The answer to that was: as far as he had to go.

Phillips was swinging into the Hub. As he slipped through the cage, he saw the captured taxi blasting toward another sausage-shape against the black-velvet curtain of night. Around the edge of the Wheel, like a giant moon, came that enigmatic circle of mirrorlike metal. Descending on the other side of the Wheel was that flimsy, impossible contraption of rocket motors and spherical tanks.

By the time Phillips had extracted himself from his suit, Danton had disappeared. Phillips followed, calling, "Danton! Amos!"

The words echoed in the empty Wheel. There was no answer. The weight-control room was deserted. So was the first-aid room, the pump room, and air control. Phillips went back through weight control and into celestial observation.

Danton was sitting in a chair staring calmly at the closed air-tight door that separated him from Earth-observation.

"You'd better come out, Grant," Danton said gently. "You'll get hurt in there." He was talking into a wall speaker.

From the speaker came a burst of hysterical laughter. "You're the ones who'll get hurt, Colonel, you and those stupid animals Inside." It was Grant's voice, Phillips recognized. "The missiles are set and armed, Colonel, and I've got my finger on the firing button. Try to get me out and blooey! There goes the world! And blooey! There goes the Wheel!"

"You can't do it, Grant," Danton said reasonably. "You wouldn't have time to guide them in. They'd burn up in entry."

"Grant?" Although Phillips had known it logically, he still found it hard to believe. "But he was in shock"

With Phillips' first word, Danton had slapped off the speaker. "So we thought," he said, turning slowly toward the psychologist "Evidently we were wrong. The cutting away of the taxis was a diversion. If it succeeded, fine. If not, it still gave Grant time to take over Earth-observation."

"What's he going to do?"

Danton shrugged. "You heard him."

"He's insane!"

"You're the authority on that."

"Can't we sneak in on him another way?"

"Before he can hit that button? Not a chance; even if he didn't have the other door locked. And even a madman would do that."

"Haven't you got gas? Can't you knock him out?"

"Before he realizes what's happening?" Danton shook his head impatiently. "We can't stock items up here unless we have a probable use for them."

Phillips sought desperately for a straw. "Someone cracked. It was what Ashley was afraid of!"

"Was it?" Danton asked, smiling gently. His eyes drifted back across the wide, flat photographic

projection screen where Mars still glowed redly, to the sealed door.

"Keep talking, Danton," Phillips said quickly. "In his condition, if he's alone too long he'll work up his courage to press the button."

"You're the psychologist. You talk him out."

"Me?" Involuntarily Phillips took half a step backward. "Who's your missile-control officer? He should know how to cut the firing circuit, disarm the missiles. . ."

"We had one once, but he got transferred five years ago. We never replaced him."

"He's in your t/o—"

"We've got no use for a missile-control officer. Look!" Danton swung around in the chair. It squealed a complaint He punched a button beside the viewport. The outside cover swung away, letting in the night. "See that?"

The great circle of shiny metal slid past the window. "That's an anti-missile screen," Danton said somberly, "and it's worthless. It's set squarely ahead of us in our orbit, sweeping space. But the first thing an aggressor would do would be to send up a missile with a warhead of weak gunpowder and fine lead particles. When it reached our orbit—going in the opposite direction—it would explode and leave in our path a cloud of eight billion tiny missiles. Every hour we would run into that cloud. The first time the anti-missile screen would intercept them, maybe even the second, but then it would look like a cheese grater. After that, we would be the cheese grater."

"You could strike back—"

"How? Even if we spotted the missile taking off and knew where it came from, it would take us hours to get a missile into the atmosphere without burning up. No, Lloyd, in a new war, we'd be the first casualties. This is a powder keg, all right, and we're sitting on it. We know it. We live with it every minute of every waking hour. But the fuse is down below, and the only way you can save this powder keg is to go in and stamp on it. Or make sure it is never lit."

"Then there's no reason at all for the existence of the Little Wheel! The Big Wheel has taken over all your other functions: weather observation, television relay, research. All that's left is military observation and missile guidance. You ignore the first and can't fulfill the second. Your presence here is a constant temptation to resolve your problems by destroying their source."

"And thereby destroy ourselves. We aren't that stupid. We can't exist independently of Earth—not yet."

"Decisions aren't always logical. Not even usually. Grant is your best example. Give me that speaker"

Danton said softly, "I think maybe he has his reasons." He hit the speaker switch. "But go ahead."

Phillips said urgently, "Grant! This is Dr. Phillips."

"What do you want, headshrinker?"

"Listen to me, Grant. Don't press that button! You didn't have to. I'll guarantee that the Wheel is destroyed."

For a long moment there was silence in the little room where the red image of Mars glowed from the screen. Phillips was suddenly aware of the Little Wheel's odor, a compound of oil and human sweat, like

a machine shop inside the steam room at the local ymca. On top of it all was the acrid odor of fear. Phillips could feel drops of sweat collecting on his forehead and trickling into his eyebrows.

Danton was looking at him. Phillips turned his head to meet Danton's half-tolerant contempt with cold eyes.

Grant's breathing came harshly through the speaker. "Don't make me laugh, headshrinker. Nobody's gonna trick me. When I get ready, I'm gonna push this button. Nobody can stop me."

Phillips spoke coldly, swiftly, "Listen to me! General Ashley sent me up here to make a report to him, and the report I'm going to make, Grant, will blast the Wheel right out of the sky. If you push that button, the world will die, Grant, and you'll die, too. You don't want that. You don't have to die, Grant. The Wheel is finished."

"Even if you were telling the truth, you couldn't do it, Phillips. Danton would stop you somehow. He's too tricky. He'd find a way out. But he can't stop me from pushing this button"

Phillips pleaded, "For God's sake, Grant—"

"No use, headshrinker. I think you're lying. Because Ashley sent me up to do this job, and I'm gonna do it. 'If you can't do it any other way,' he said, 'send down a missile. That'll be the end of the Wheel.' I'm really gonna do him a job." Grant laughed insanely. "I'm gonna send 'em all down."

Phillips whispered, "He's too far gone."

Dalton leaned toward the speaker. "It's no use pushing the button," he said quietly. "There aren't any missiles." He switched off the speaker and leaned back in his chair.

Phillips said quickly, "That won't do any good. He'll push it just to make sure."

"To men who have made up their minds the truth is never any good."

"What do you mean—the truth?"

"There aren't any missiles. Earth is in no danger from us. Too bad we can't tell them that. But we can't. And therefore we must live in constant expectation of a moment of madness Inside that will send up a missile to destroy a threat that doesn't exist."

"No missiles?" Phillips shook his head incredulously. Droplets of sweat flew from his face. "What happened to them? You had them!"

"Oh, we had them. But, as Ashley feared, their existence was a constant temptation. So we used them for a better purpose."

"What are you talking about? What better purpose?"

"In a moment." Danton looked through the viewport at the stars wheeling past, steady, many-colored, and available. "You talk of powder kegs. I'll tell you something about powder. It's only dangerous when it's imprisoned. Spread it out in the open air, set it off, and it makes a fizzling sound and a bright light. Look, there's Earth!" It rotated beyond the window, brilliant in reflected sunshine, an incredible jewel set against the velvet of the night. "That's your powder keg, masses of humanity penned up in unyielding containers, more people every minute. If you don't give them some outlet, an explosion is inevitable. Anything might set it off; an unguarded fire, an accidental spark, spontaneous combustion. . ."

"And you're the outlet?"

"Symbolically. Oh, there's no practical way of relieving population pressures except by birth control. We can't export our excess millions to the planets or the stars. But we can give them a vent for their excess energies, for their frustrated aggressions, for their unused dreams. The existence of a frontier is enough; everyone doesn't have to go there."

Danton paused, his eyes fixed on the viewport, for a moment the tic in his eyelid stilled, "Look. There! Now!" The ungainly contraption of rocket motors and spherical tanks floated past. "There's our outlet. There's where the missiles have gone: their motors are units for that ship, their warheads have been converted into atomic powerplants. They were designed with that purpose in mind."

Phillips said slowly, "That just about covers every offense in the code: disobedience, insubordination, dereliction of duty, misappropriation of material, mutiny. . ."

Danton dismissed them with a wave of his hand. "Words. They aren't important. Survival is important. And that ship is the key to survival."

"Where are you going in that thing?"

Danton looked past Phillips toward the photographic enlargement on the projection screen. "Mars."

Phillips studied the hard, blackened face.*Madman or prophet? Traitor or something greater than patriot?* He had to decide, and soon. He looked back at the viewport, but the flimsy structure was gone. "In that?"

"The Vikings crossed the Atlantic in their tiny dragon ships."

"How are you going to get away with it?"

"We were going to wait until we could announce a successful trip, but it's too late for that. Ashley is getting desperate; next time he might not fail. We might not be here when the ship returned. Instead we'll release the news that the ship will start soon." Danton grinned unexpectedly. "Then let Ashley deny it if he dares."

"He'll never rest until he drags down the Wheel."

"Let him try that, too, when the world knows what we're going to do. That's our hole card, the aroused dreams of the world's billions. Go back, Lloyd. Tell them we're all neurotic, all crackpots, and we'll tell them they're in no danger from us. We've beaten our swords into dreams. We'll show them the Wheel, and we'll show them the Mars ship, and we'll invite them, vicariously, on the first trip to another world. They'll come. They can't refuse. They're men like us; they're dreamers."

"Out here isn't far enough," Phillips said softly. "You're running farther away."

"Call it 'running' if you like. Another man may call it conquest or adventure. Words. What makes a man run doesn't matter; it's where he runs and what he does when he gets there and what his running means. What makes you run, Lloyd?"

"What do you mean?" Phillips stiffened.

"You've been analyzed. What drove you to be a psychologist? What made you enlist in the Air Force? What forced you to investigate the submerged motives of spacemen? What was it: a broken home, an overprotective mother, a disinterested father? What complex was it? Give it a name"

Panic raced through Phillips' veins.*He can't know. He's guessing—*

"Give it a name," Danton continued without pausing, "and I won't give a damn. What matters to me is that you're good spaceman material gone to waste. You're one of the rare ones, one of those first air breathers, and you won't climb out upon the land because there's something left out of you. That's a pity. We need men like you. You could help us put it over—this little thing with Ashley and the big victory over Mars and the fantastic distance that lies between.

"We could use your knowledge of psychology to help pick the men who could make the trip and stay sane and come back to report their success to us and the world. You could help us phrase our releases to the imaginations of men, releases that will open their hearts and shape their dreams. You wouldn't have to go back; I could declare you essential and keep you here until Sackcloth or I died of old age."

"Help you do what? Defraud the people as you have defrauded their government and their defenses?"

"The exploration of the unknown is always a fraud," Danton said, his eyes distant, remembering. "Because we can't know, by definition, what we are going to find, we can't have the right reasons for finding it or even for going where we can find it. And the reasons we give ourselves will always be the wrong reasons, because the only real reason is that there's something unknown to be discovered.

"Fraud," Danton repeated, his eyelid jerking again. "I'll tell you about fraud. When I came out my eyes were filled with visions and my head was swimming with dreams. And I found out that the visions were false, and the dreams were the wrong ones.

"That was when I ran. I ran to the S.1.1. You know what it is—the ship in the same orbit as the Little Wheel, one hundred miles ahead, in which Rev McMillen first conquered space, in which he died because he couldn't get back.

"Do you know what I found? A hollow shell. No one was ever inside. It wasn't built for a passenger. They couldn't build one to carry a man—not with the funds they had—and Bo Finch and Pickrell and a few others perpetrated a fraud on the people so that space could be conquered. And it was conquered—for the wrong reasons and in the wrong way.

"The visions were wrong. Men never find what they are seeking. That's what keeps them seeking. Men will never find out here what they're looking for—not peace or wealth or the thrill of final conquest.

"I learned then, as every man must learn if he is to become a man, that he must be stronger than his dreams, that he must be able to watch them shatter and go on. Call it childish. Call it what you will."

Danton's voice dropped wearily. Now he looked like an old man instead of a man this side of forty with prematurely white hair. "The fact remains that it is the soul of man and his salvation. He is a dream-maker, and the latest dream is the best, no matter how many have been shattered before.

"Go Inside, Captain Phillips. Go Inside if you wish and tell them what I have told you, all of it. And I will lie and call you a liar, and the lies won't matter, just as the shattered dreams don't matter.

"The people will believe me, because I am a dreamer, and they understand dreams. This is the latest dream in the oldest dream of all—humanity's conquest of the universe.

"And that dream is invincible."

The door to Earth-observation opened. Grant stumbled through the doorway. His face was blank. His eyes stared, but they saw nothing.

"I pushed it," he said tonelessly. "I pushed it and nothing happened."

Danton had stood up as the door opened. Grant walked right into him. At the contact he collapsed. He hid his face against Danton's chest. A sob broke from his throat.

Danton patted the boy's shoulder. "That's all right. It's all right. The truth is hard to find, and when you find it, it always hurts. I know. I found it."

He looked at Phillips. "You see," he said gently, "it isn't the neurotic men out here you have to be afraid of, not the men who had to come out. The dangerous ones are the men who come out for something else, for money or for glory."

Phillips looked at Danton for a moment and then turned his eyes away, turned them to the open viewport and the stars. They were too bright; but they were not as bright as Danton.

Danton was right.

Phillips could not decide when he had first known it Perhaps it had been just a few minutes ago as he had pleaded with Grant, not a spacemen but a displanted Earthman, to spare the Earth. Perhaps it had been earlier as he watched the spacemen building a bridge toward the stars and he had moved to help. Perhaps it had been when he had seen the compassion and understanding in the Rorschach blob.

But he thought it was much earlier, when he had realized that he himself was a spaceman, one of the air breathers who had crawled out upon the land and found the experience so satisfying that he could never go back to the mother sea.

If a man is lucky he has one such time in his life when he knows himself. But it meant that his entire concept of the human animal had to change.

*The basic quality of life is movement. An immobile animal is a dead animal. Carnivore and prey know this instinctively.*

And man is a dissatisfied animal. Satisfy him and he ceases to be a man. Quiet him and he stops being alive.

Phillips stood with his feet planted against the centrifugal force that simulated one-third Earth-normal gravity, knowing where he was with a spacemen's sure instinct. He was 1,075 miles above the surface of the Earth, in a two-hour orbit, in a satellite spinning once every 22 seconds.

The Earth was Inside. He was Outside, and with boldness, with courage, and with infinite sacrifice, he could stay Outside.

He was moving. He was alive. By being alive here, by outfacing the eternal enemies—heat, cold, and airlessness, distance, acceleration, and the ever-present missiles of space itself, and even other men—he kept humanity alive.

Once in his life, if he is lucky, a man finds something worth doing. He had found it.

The long journey to the stars was the most human thing that men could do. It would keep the whole race human.

The first trip would fail, he felt sure, and perhaps the second and the third. But one day men would come back from the long trip out, if the men who were born equipped to do the job did not lose faith.

He was one of them.

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# Space is a Lonely Place

TERRY PHILLIPS WATCHED her husband come out of the bedroom brushing down his graying hair. It wouldn't lie right after it was washed, even though Lloyd tried to tame it with a stocking cap. The one-third gravity did that.

She studied him with eyes cleared for a moment of ten years' habit. Those ten years had aged Lloyd more than they should. He looked much older than a man still this side of forty. His face was dark and marred by frown and squint lines. His eyes were flecked with cataracts. He was thinner. But he was still a handsome man, almost as handsome as when he had stood with her in their marriage ceremony.

There were unpleasant memories, too, but she wouldn't think of those. Not now. Not when her mind was made up.

Lloyd was worried. She wondered if it was the ship.

But the first thing he asked about was the children.

Terry laughed. She could still laugh. "Paul and Carl have been up for hours. It's ten o'clock, sleepy head. They're in the recreation room."

"Oh. Fine. Fine." He rubbed his chin absently and stared at the rungs of the metal ladder fixed against the inner wall They mounted toward a square door in the convex ceiling. It was closed. Something thumped against it; they heard muffled laughter.

Terry said gently, "Breakfast is ready."

Lloyd started. "Oh. Yes." He sat down and drained his glass of reconstituted orange juice. He started in on the powdered eggs as if he really enjoyed them. "I got in late last night. After one. Didn't wake you, did I?"

Terry lied. "No. Were the films bad again?"

Lloyd nodded, frowning. "Two hundred and fifty-nine days. If they can hold out one day longer, they'll make it. They'll be the first men to complete a successful trip to Mars. They've got to hold out!"

She said slowly, "I think you must be the most cold-blooded man I've ever known. Those men are friends of yours, and you care more about the success of the trip than whether they live or die."

Lloyd sipped the instant coffee. "You think I wouldn't have traded places with any of them? They knew what they were doing. They knew that two previous attempts had failed. Horribly. They went out with their eyes open.

"What do you think it's like to be in the viewing room, watching them walk to the brink of madness and lean over, and know that they're God-knows-how-many million miles away, and you can't do a thing?"

"I'm sorry. Forget it."

Lloyd looked at her quickly. "You aren't really sorry, are you?" He paused. "I've decided to get scooters for the kids on their birthdays."

Terry put down the cup she had been holding in both hands as if to warm them. "Lloyd! Carl's just six, and Paul's only eight."

"You can't keep them cooped up in these six rooms forever. They're responsible kids. It's perfectly safe."

Terry said with iron-hard determination, "They'll never use them." Her lips were compressed into thin, pale lines. "You might as well know. I'm leaving you. I'm taking the children with me. I wasn't going to tell you while you were worried about the *Santa Maria,* but we can't go on like this any longer."

"Terry!" Lloyd's eyes were shocked and hurt. "I know I'm hard to live with, but I'm no worse than I ever was. You know I couldn't live without you and the kids. You're my wife—"

Terry shook her head sadly. "You're married to that Wheel out there. You're mother to those men. You don't need a wife. I don't know why I ever thought I could make it work. I must have been crazy. Everyone said I was crazy to come out here with you.

"I've been living in this stupid ball for ten years. It stinks, Lloyd, literally stinks. Old sweat and old food and oil. If I fry onions I can smell them for weeks. The air is so wet and thick you can almost feel it like damp cotton in your lungs. I want to feel like a human being again. I'm going Inside, Lloyd. I'm never coming out again." Her voice was close to hysteria. "Never!"

Lloyd said quickly, "But there are other women out here now. This is a permanent base. We're space dwellers. You can't expect us to live without families—"

"Women can't live out here, Lloyd!" Terry tried to control her voice. "The other women are hermits, just like me. How long has it been since you saw one of them, outside her cocoon? When we get together, it's by television. Did you ever try to play bridge by television? I haven't seen another woman in the flesh for a year."

Lloyd's voice was suddenly sober. "Have you thought about the kids?"

"That's all I have thought about. Do you know those children have never been on Earth? Never? They're being cheated of their birthright—blue skies and green grass and playing baseball with the other kids. They'll never be human beings." She was screaming now. "They're growing up into monster! Monsters!"

Lloyd looked at her, not moving, not saying anything. "I think they're pretty darned nice kids. Don't project your disappointments into them, Terry. Children don't see things the way we do. As long as they have love and security—"

She was panting with the effort to control herself.

Lloyd said gently, "Maybe you need a vacation. We can afford it."

"Another one? Without the children? No, thanks. When I leave it will be for good, and the children will go with me."

Lloyd's face grew tight. He bit his lower lip the way he did when he tried to suppress his emotion. *If he'd only let it out, Terry thought. Just once. So I wouldn't have to guess—*

Lloyd's voice was ragged. "Give me a chance to think about it. Please, Terry?"

She nodded reluctantly. She couldn't bear to see him hurt. Still.

"And please don't worry the children," Lloyd said. "Don't let them feel that we've been arguing—and

especially not about them."

Terry said bitterly, "Always the psychologist!"

"Perhaps it was the father speaking that time." Lloyd turned and went up the ladder quickly. The port came open at his touch, swinging upward. The sound of laughter came through clearly now and childish voices shouting, "Daddy! Daddy! Look at me!"

Terry blinked fast to keep back the tears. "Lloyd! Lloyd!" she said. "If you only loved me!"

But she said it to herself.

They were sturdy boys, all brown, long arms and legs and the kind of dark-brown eyes that seem almost black and look down deep inside a man. They floated in the center of the spherical recreation room, their faces laughing, their bodies as graceful as porpoises in the sea.

Lloyd looked at them and his heart grew cold. What would he be without them? An old man, dying.

"Hello, kids," he said. "What is it today?"

Paul answered. "We're playing Martians.*He's* playing Martian. I'm an Earthman, and I try to catch him, because he's trying to keep me from getting to Mars. If I catch him in five jumps, I get to Mars, and if he gets away, I'm dead."

Carl chanted, "Nyah, nyah! You can't catch me!" He stuck out his tongue at Paul and pushed himself away. He hit the opposite wall and bounced back. In the middle, where there was no-gravity, he did a curious kind of flip that sent him twisting in another direction.

Lloyd had never seen anything like it.

Paul's hands, outstretched to catch his brother, missed by inches, and the older boy landed on the curved wall, his legs under him, bent and thrusting.

Lloyd jumped for the ceiling. Beside these brown, silken creatures he felt old and stiff. He touched the inner airlock door and slowly drifted from a handstand to his feet as the door opened. He slipped through.

He kept remembering their voices as he zipped himself with the ease of long practice into his suit. Children played like that. In the midst of wars they were soldiers. In the midst of plagues they were doctors and nurses. In the midst of space. . .

The other suits hung like decapitated monsters on the walls of the rectangular shaft. Terry's suit hadn't been used for a long time. He would have to check it carefully. If she were going to leave—

No. He wouldn't think of that.

He unlocked the outer door and slid through until he caught the hook-on ring. The door clanged shut. Now he could see the cottage from the outside. His home.

It was a sphere, a miniature world thirty feet in diameter, which is not so small in terms of living area when all of it is usable space. The sphere spun rapidly to give the illusion of one-third gravity in the rooms nearest the surface, diminishing rapidly toward the axis near which he stood. The axis consisted of the airlock, an imaginary cylinder through the recreation room, and the cargo hold at the other end.

Around the cottage was space—the night was a sooty black scattered with more stars than seemed

possible to someone reared inside Earth's filter of air.

There to the right was the red brilliance of Mars, closer than any of the others he could see, but still very, very far. To the left was Earth, 1,075 miles away, dark now with the sun and the moon both on the other side. It was a huge, black disk, dotted here and there with the reddish spots of cities, blotting out the stars, beneath one moment, hanging like a gigantic weight above him the next.

A man could do that to his senses out here where there was no up or down, where the only directions were here and away. He could drive himself mad with illusions. What must those poor lost souls out there near Mars be suffering, so far from home that Earth seemed like only another star among millions? He looked at Mars again, but he couldn't possibly glimpse the *Santa Maria.* Even the best telescope on the Wheel couldn't pick it out now.

A few hundred feet away was the Wheel, a spinning inner tube crossed by a single spoke, gleaming white in the starlight, against the velvet night. Around the Wheel were the spheres of other cottages—nine of them. Somehow they made the Wheel seem more like home. They humanized it, made it less like a foothold in space and more like a colony of men and women who were there and intended to stay. He *couldn't* let that be broken up.

It was hard on a woman. Men can live on dreams, sometimes, but women need solidity. But men need women and children, and always, somehow, they had induced women to go with them to the frontiers and build homes.

The question was: Had men gone so far that their women couldn't follow?

He launched himself toward the Wheel and floated effortlessly toward it. As he passed the round Hub at the center, he reached out with the hook of one sleeve-ending and caught the cage into which the taxis slipped with their human cargoes.

He went through the airlock, removed his suit and hung it on its rack, and clambered down the sagging netting to the weight control room. The air was bad in here—thick and hot and humid and filled with the many odors men make living and working. It was worse than the cottage.

Colonel Danton was waiting for him outside Celestial Observation. He looked old and haggard and sick. His hair was a thin, pure-white stubble on his head. His eyes were almost blind with cataracts, and his body was bent and thin. He looked eighty years old instead of less than fifty.

Phillips thought, *He won't be able to stand another failure.*

Danton said, "Jim Faust is here." His voice still carried the firmness and force of authority.

Lloyd said, "Here? What does he want?"

"He's worried. He wants to go over the films himself. He doesn't think he can carry us much longer—not if this shot fails."

Lloyd stared thoughtfully at Danton. "You don't need to go through this again. Take it easy this morning."

Danton's jaw tightened and then slowly relaxed. "Doctor's orders? Keep him happy, Lloyd. I'll see you at lunch."

Lloyd turned, opened the airtight door, and went into the darkness of the improvised viewing rooms where Faust was watching films of the fifth day. . .

## II

Five days out The*Santa Maria* was one million miles from Earth. The ship was a child's toy of spheres and cylinders and rocket engines flimsily bolted together with pieces from an Erector set. It was all white; it gleamed like porcelain in the relentless sunlight.

The top half of the central cylinder was cargo space for equipment that would be needed for the investigation of Mars. Above that was the personnel sphere, dotted with portholes and shutterlike temperature regulators. There were three decks: the supply deck, with its lockers for spacesuits and its cylindrical airlock; the living deck; and the control deck. At the top was the plastic bubble of the astrodome.

The ship tumbled slowly as it coasted along the seven-hundred-and-thirty-five-million-mile ellipse that would carry it into the orbit of Mars at the instant the red planet would reach that point. The rocket motors had blasted for fifteen minutes; the rest of the two-hundred-and-sixty-day trip would be in utter, inescapable silence.

Inside the sphere, the predominant impression was bare utility: everything was painted metal, plastic, and rubber tile. Every wall of the ship and much of the nominal walls and ceilings were used for gauges, ducts, lockers, bunks, chairs, tanks, conduits. . .

The control deck was a closed universe of grinning gauges and shifting spots of colored light, but the man on watch glanced at them only occasionally. He was staring through the astrodome, watching for the Earth as the ship's slow tumbling brought it past.

Like all the crew members, Burt Holloway was a short man. He was a slim five feet seven with thin, mobile hands, short, blond hair, and very blue eyes. He was not handsome. Men said he had a monkey face, with his weak mouth and receding chin, but women thought he needed mothering. He was barefooted. His only garment was a pair of shorts.

Four of the crew were on the living deck, which was reached from either of the other two by concentric holes in the separating partitions bisected by a painted aluminum fireman's pole. Fastened to one curving wall were bunks which could be folded back. The other side of the room belonged to the dining unit: a snack dispenser, a giant freezer that extended into the storage deck, a short-wave range, and a circular table.

Jack "Iron" Barr, five feet eight of bulging muscles and matted red hair, lay in his bunk, his belt snapped to rings on the framework. He had dark blue eyes and eyebrows that met in a straight line above his crooked nose. He was reading a letter written on pale-blue note paper. Occasionally he brought it close to his face and sniffed, his eyes closed, a slow smile stretching his wide mouth.

"Hey, now," he said huskily. "Listen to this: 'Lover, honey, baby—I'll never forget that night you showed me—'"

"The Big Dipper," Ted Craddock finished. He was sitting in the slings of the table, a plastic flask of orange juice in one tanned hand. He was the baby of the group at twenty-five, a beautiful, brown-skinned young man. His hazel eyes squinted into laugh lines at the corners. "That woman must drench her note paper with musk. Put it away, Iron. It's stinking up the place." He broke off in a brief spell of coughing.

Barr said irritably, "It's better than the other stinks we breathe all the time. I swear I never knew you guys were so smelly. And you, Ted, spraying the place with germs. Why don't you cover your mouth? Hey, now, listen to this one." He drew a folded square of pink paper from under the waistband of his shorts. "This was a blond little joy baby—"

Emil Jelinek said quietly, "Knock it off, Iron." He was thirtyish to the others' late twenties, a thin, angular man with sparse black hair and a small, rakish mustache. He was lying in the bunk next to Barr, his hands folded behind his head. "Women are more than two and a half years away. By the time you get back they'll have two kids apiece."

"Not these," Barr boasted. "They'll wait. That's what Ellen says here. She says she'll wait for five years if she has to, or ten. She says there's nobody like me."

Tony Migliardo laughed from the other side of the deck where he floated beside the snack dispenser. He was a good-looking, dark-skinned young man with liquid brown eyes and blue-black hair. "There are many men like you, Iron, and she will find them—reproductive organs with minor attachments for mobility."

"You dirty little—" Barr tried to spring out of his bunk, but the belt pulled him back.

Jelinek turned his head and stared hard at Barr. "Everybody be quiet for ten seconds! If we're like this in five days, what will we be doing in two hundred and sixty? Mig? Do you hear me?"

"I am very sorry, Iron," Migliardo apologized. "I should not have said that."

Barr relaxed. "Okay then."

"And, Iron," Jelinek added. "I think it would be best if you didn't enlighten us on the details of your amorous conquests. There are enough natural irritants."

Barr grumbled, "You guys are missing your chance for the kind of education you don't get in the Academy. Go ahead. Stay stupid."

Craddock began to cough.

Barr twisted to stare at him. "What about that? That could get old, too."

Jelinek said, "I'll see what I can do. Ted?" He opened the locker beside his head and pulled an opthalmoscope down.

Craddock freed himself from the table slings and floated over beside Jelinek's bunk. He held himself there, with one hand while Jelinek inspected his throat. "The lining is irritated, but that could be just from coughing." He reached into the locker for a small, metal cylinder. He flicked a small lever on the side. Two smooth, blue pills popped into his hand. "A little penicillin won't hurt. Come back for another in six hours."

Barr said suddenly, "Hey, now, Emil. That ain't right what you said about five days."

Migliardo glanced at the repeater clock on the wall. "Five days, one hour, sixteen minutes, thirty-one seconds."

Barr muttered, "That clock must be wrong. It's more like a month."

Jelinick said, "It's synchronized with the crystal-stabilized chronometer on the control deck. There isn't a more accurate timekeeper anywhere."

Barr grumbled, "I wouldn't put it past Phillips to rig it slow. He's full of tricks like that. Then when we were halfway and about to go batty, he'd tell us the trip was almost over. He'd think that was cute."

"Now, Iron," Craddock said, floating back toward the dining table, "what's the use of starting something

like that, even as a joke?"

"Who's joking? I *know* we been gone more than five days."

Craddock caught the table edge and slipped his feet through the slings. "There's no radio—how could he tell us?"

Barr said sarcastically, "What do you think that swivelmounted, parabolic dish antenna is for?"

"That's for telemetering the sounding rockets when we get to Mars."

"So they told us." Barr sneered. "But why is it always pointed toward Earth?"

Craddock said violently, "How do I know? Maybe it's telemetering our gauges."

"Telemetering! With the power that thing pulls? Are you kidding?"

Migliardo swallowed the bite of candy bar he had been chewing. "There's no big drain."

Barr looked at him scornfully. "That's why you're assistant engineer on this tub instead of engineer. The drain doesn't show on the gauge. I wondered why the reactor wasn't delivering its rated capacity. That dish out there takes part of it, and the power bypasses the gauge. It's gimmicked."

"Now, Iron," Migliardo said peacefully, "why would they do anything like that?"

"Why would they seal up a wall of the control deck and place it out of bounds?" Barr demanded. He twisted to face Jelinek. "You know more than anybody else."

Jelinek said calmly, "We were told that there is a safety factor in addition to the safety factors in fuel and structural strength."

"Why didn't they tell us what it was?"

"As a psychologist I can tell you that a safety factor you know all about isn't really a safety factor at all. You start figuring it in with the rated capacity. This is something we can depend on to get us through if everything else fails. We're better off not knowing exactly what it is."

Migliardo said, "Like believing in God."

Jelinek nodded. "It's a matter of faith."

Barr's lips curled. "Nuts. I want to *know*. I'll leave God to those who need him. He doesn't show up on any of my gauges. Take my word for it, this business of a safety factor is just as phony. They didn't tell us what it was because there isn't any. That sealed wall is nothing. If we opened it up, we'd find it as empty as the Pope's promises."

Migliardo said intensely, "Barr—!"

Jelinek's mild voice cut through. "Mig! Keep your opinions to yourself, Iron, and keep your hands off that panel. If it's empty we're better off not knowing. The time business that started this is absurd, and you know it We check it every day when we figure our position."

"Well, yeah," Barr conceded, "but—"

Something went *pingngng!* The echoes raced through the ship. The lights went out. Somebody screamed,

"Meteor!" Voices shouted a confused cacophony of orders. Bodies blundered about.

Then Barr said stridently, "Shut up! Everybody It didn't hit the sphere. Burt? You all right?"

"Okay," Holloway called from the control deck. "But we're on battery now. I'm trying to locate the hit."

"No need," Barr said. "It's up ahead—in the reactor or the wiring between."

Craddock began, his voice quavering, "If it's the reactor—"

"We're dead," Barr said bluntly. "The battery will only last a few hours, and then the air conditioning goes off." There was a scuffling sound. "I'll go out and check. Mig. Suit up and get ready to lend a hand."

And then even the sound was gone.

**III**

In the viewing room of the Little Wheel, the screen was dark. Lloyd flipped on the lights and looked at Faust. The dapper little man was turning, his iron-gray, immaculate head becoming a finely chiseled face. He was no more than five feet four, but everything about him was in proportion, from his feet to his controlled face.

His smooth forehead was wrinkled now, his blue eyes hard. "It's you, Lloyd," he said, too quickly, in his big, orator's voice. "Was that the end? Is that what you are keeping from me?"

"Calm down, Jim," Lloyd said. "We're not keeping anything from you. The meteor didn't hit the reactor. It clipped a lead, and the*Santa Maria* went on battery. There wasn't enough power to give us anything but voice, and even that was a drain the ship couldn't take for long. Barr located the hole and spliced the lead in twenty-five minutes."

Faust relaxed. "Thank God for Barr. The rest of them sounded like an uninstructed delegation."

"Barr is the man of action," Lloyd said. "When the unexpected demanded quick, accurate action, he took charge. That's why he was there."

"Then he earned his passage. Let's get back to it."

"We have two hundred and fifty-nine days of film—twenty-four hours a day."

Faust frowned. "Can I trust you to make a selection for me?"

Lloyd stood up. To him the room seemed big. It was Celestial Observation, a room about twenty feet high by twenty feet wide. To Faust, though, the room must seem cramped, sticky, and stinking. Of course, after ten years a man can get used to these things, just as he can get so used to a wife that he would be only part of a man if she should leave.

He took a chair close to Faust and looked squarely into the politician's eyes. "You'll have to, Jim. What's got into you? You're our public relations man. You've trusted us before. I think you're the politician now, Jim."

"I'm both. The Party has consistently thrown its weight behind spaceflight, starting with the first mad rush to reach the S.1.1 in time to save Rev McMillen. We've fought your battles for more than thirty years, Lloyd. I think we deserve a little trust."

Lloyd said softly, "You've got it, you and the Party, but let's not put everything down to disinterested

benevolence. You've done very well out of it, politically and financially. The party is the most powerful single political force on Earth, even though it does not have an absolute majority. And you're the biggest voice in the Party.

"You've also done well personally. Nothing shady, I realize, but your side of the bread has been very well buttered. And you had some of your own money in the Big Wheel. You've made your profit. Now you say you can't trust us."

"Trust," Faust said, "is a two-way street."

Lloyd said slowly, "What would it do to public confidence if the world knew that the crew of the*Santa Maria* was bickering before the ship had been out a week?"

"The stock market would take it hard."

Lloyd spread his hands expressively. "So?"

"So I'm here, Lloyd," Faust said evenly. "*I* have to know the truth. The planets aren't indispensable. We can relax for a few years, consolidate our gains, forget about Mars and Venus."

"What about the surpluses, Jim? What about the economic dislocation?"

"Better a dislocation now that we can ride than a crash later that will throw us all into the mud and put somebody like Deacon McIntire in the saddle. We can stand a dislocation if we handle it right, if we *prepare* the public for another failure. They've seen two ships sail right past Mars and sweep back. If we broke the news of this failure suddenly, there would be chaos—political and economic. McIntire would gain enough of our shocked voters to give his Fundamentalist Coalition a clear majority. Once he's in, we couldn't get him out. We'd have to assassinate him, and that would really tear it. I don't want to see that, Lloyd. Space is important, but it's not as important as people. We can come back, Lloyd, if we aren't torn apart now."

"There's a saying about fighters. They never come back. Everything has its psychological moment. This is it for Mars. It's now or never."

Faust's voice was regretful. "Maybe you're right. It may be never. If that happens I'll be very, very sorry. But I'll live, and so will you. I'd like to see Earth go on living, too, even without the stars."

Lloyd said in amazement, "You really are prepared to throw us over! The Party has been identified with spaceflight Could you shake that tag?"

Faust hesitated. "It would be rough, but we could do it Space has been good to us—all of us, not just the Party. The people would understand retrenchment. But they would have to be prepared for it. Starting now."

"Sure, Jim," Lloyd said bitterly "But you've got to understand. Everything isn't what it seems. It takes interpretation." He spoke briefly into the wall mike. "Here's the thirtieth day."

**IV**

Thirty days out. The*Santa Maria* was five and one-half million miles from Earth. The planet was still a perceptible disk, but the moon beside it had dwindled to a point. Both were still the most brilliant bodies in the universe, excepting the sun. Holloway stood at the dark port staring back the way they had come at the planet called home. He did not move; he scarcely seemed to blink.

The living deck of the personnel sphere was completely quiet. It was a silence which would not even be imagined by anyone except a spaceman. Then came a slap of a magnetized card on the dining table where Craddock and Migliardo were playing gin rummy.

Craddock coughed and laid his ten cards face down on the table while he covered his mouth with both hands. The paroxysm jarred him, shaking his whole body.

Migliardo picked up a flask and shoved it into Craddock's hand. Barr twisted in his bunk, a stereoscopic viewer held carelessly in one hand. He shouted, "Knock it off! Knock it off!"

Craddock squeezed water into his mouth, swallowed convulsively between coughs, and squeezed again until all the water was gone. Slowly the seizure eased. Craddock wiped tears from his eyes. "Thanks, Mig," he said weakly. He had grown thinner. They all had.

"Emil!" Barr shouted from his bunk "Why the hell don't you do something about that?"

Jelinek's calm voice floated to them from the control deck. "I've told you, Iron, it's psychosomatic."

Barr muttered, "If somebody doesn't do something, Ted is gonna wake up some morning without a throat to cough through."

Jelinek's thin face appeared in the hole. "What do you mean by that, Iron?"

"Just what I said."

Craddock said apologetically, "He didn't mean anything. It gets on his nerves, my coughing all the time. Hell, it gets on my nerves, too."

Jelinek hadn't moved. "We're all in this together, Iron. We all get through or none of us. Oh, I know—maybe Mig could take over for you and do a job that might be good enough. Burt could pilot the ship if something happened to me. Mig could navigate for Burt if he had to, and you know enough about wiring and electronics to do the essentials of Ted's work. But actually it wouldn't work out that way. There's five of us. That's a bare minimum for sanity. Any less and none of us would make it."

His face disappeared and silence descended again. Barr shrugged and looked back into his stereoscopic viewer. Craddock and Migliardo drew cards from the thick pack on the table and slapped them down. Holloway stared silently out the port.

Jelinek said, "Tank B is starting to freeze. I'm going to rotate it into sunlight."

Nobody moved or looked up. Somewhere in the ship a motor whined as it accelerated a flywheel. Very slowly the ship began to turn. The whine descended the scale again, faded into silence.

Holloway screamed. He pointed a shaking finger at the port as everyone turned toward him and Jelinek's face appeared in the opening.

"What the—"

"Burt!"

"For God's sake, Burt!"

"There—" Holloway said. "There was something—out there!"

"What was it?" Jelinek said. "Try to tell us what you saw."

Holloway clung to a handhold by the port and shook. His body floated out in the air. "I don't know what it was. Something—something white. It's gone now."

Jelinek said sharply, "You saw more than that to make you scream. What was it, Burt?"

Migliardo said softly, "It could be garbage, perhaps."

"Yes," Holloway said quickly. "That was it. Floating beside the ship. When you turned the ship, it went past the port."

Jelinek said insistently, "Maybe that was it, Burt, but what did you think it was?"

Angrily Holloway said, "All right It looked like a face, a face with a beard!"

"Look like anybody you ever saw?" Jelinek asked.

Holloway's shaking had dropped to occasional tremors. "I'm not crazy, Emil. No, I never saw that face before."

"Did it look dead?"

"No!"

"How do you know?"

Holloway took a deep breath and said steadily, "It looked in at me. It saw me. Its eyes—I never saw such a look of sorrow and pity before. It felt—sorry for me. Sorry for all of us."

"For God's sake!" Barr complained. "I never heard so much bull in my life. You'd just been burning your eyes out looking at Earth and the moon. It was an after-image."

Jelinek nodded. "I suppose that was it—superimposed upon a flash of sunlight. Or maybe, like Mig said, some trash. Don't let it worry you, Burt."

Holloway laughed shakily. "Who's worrying? What could be out here, almost six million miles from anywhere?"

"Hey, now," Barr said. "Here's something worth looking at." He flipped the plastic viewer toward Holloway.

Holloway caught it, put it up to his eyes, and stared into it. "So that's what you've been having such a time with!" he said flatly.

Craddock said eagerly, "Let me see!"

Holloway tossed it to him as if he were getting rid of filth. Then he wiped his hand on his shorts and turned back to the port.

Craddock stared into the viewer for a long time, clicked another scene into place, and stared again. His cheeks grew flushed.

Migliardo was watching him curiously. "What's this all about?" He reached over to grab the viewer.

"You'll get your turn!" Craddock said.

Migliardo yanked it away. "You can have it back." He stared into it and then hastily tore it away from his

eyes. "In the name of—" He crossed himself automatically."How did you smuggle these damned things aboard? Can't you find anything better to do than staring at these dirty—?"

Craddock held out his hand. "Give it back! Give it to me!"

Jelinek's head was looking through the hole again. "I swear I spend more time looking at you idiots than I do looking at the gauges. Let me see that!"

Migliardo flicked it contemptuously toward Jelinek. He reached for it, but the viewer sailed through the hole and out of sight. A moment later there was a crash of plastic against metal.

Barr released his belt hooks in a swift, practiced movement and sprang toward the pole. He stared through the hole at Jelinek, who appeared again holding the smashed viewer.

"Sorry, Iron," Jelinek said apologetically. "Clumsy of me."

Barr said furiously, "If I thought you did that on purpose—"

"You'd what?" Jelinek asked calmly.

In a cold, deadly voice Barr said, "I'd beat you until you'd walk out that airlock without a suit rather than stay in here with me. It's ruined," he wailed.

"I'm not really sorry," Jelinek said. "Can't you understand that dirty pictures just aren't the proper thing for a two-and-a-half year stag cruise. The only way you'll get back to women is by *not* thinking about them."

Barr said angrily, "Give it to me!" He grabbed the wreckage from Jelinek's hand. "You get by your way, and I'll get by mine." His eyes held a heavy-lidded look of dislike. "Don't get in my way again, headshrinker, or one of us won't get back."

Barr slipped his thick, hairy legs into two table straps and carefully put the smashed viewer on the table. None of the pieces were missing. Carefully, with a great delicacy in his thick fingers, he separated the broken segments and gently placed them on the table. "Hey, Burt," he called, "throw me that tube of liquid cement in my locker."

In a moment it came sailing toward him. Barr raised a careless hand and plucked it out of the air. The movement stirred the pieces on the table, and Barr covered them quickly to keep them from blowing away. Slowly, moistening each edge with clear cement he began to fit the pieces together.

Migliardo went "gin," and he gleefully added up the score.

Holloway stared out the port, unmoving.

"I'm hungry," Barr said suddenly. "You're cook today, Mig. Put something on. I'd go for a nice, juicy steak today."

"We had steak yesterday," Migliardo said absently, studying his cards.

"I don't care when we had steak," Barr said. "I want steak today."

"If we eat steak once a week, we have enough to last for the whole trip," Migliardo said. "If we eat it every day, we will have none for two years. Today we will have filet of sole."

"What is this—Friday?" Barr asked.

"As a matter of fact," Migliardo said, "it is."

Barr sneered. "I thought I smelled a fish eater. Well, I hate fish! Why should I eat fish because of you?"

"There is fish enough for fish once a week," Migliardo said calmly. "Friday is as good a day for the rest of you as any other. You liked fish before."

Barr slammed his hand down on the table. "Well, now I hate it! I tell you what," he said slyly, "you eat my fish and I'll eat your steak."

"No, thank you," Migliardo said politely. "I like fish once a week. I like steak once a week, too. Anyhow—" Migliardo glanced up at the clock—"it is not time for supper."

Barr roared, "That clock's wrong! Which are you gonna believe, my stomach or that clock? I know which I'm gonna believe." He slipped his legs out of the slings and pulled himself around to the deep freeze beside the range, He sorted through the prepared meals until he found what he wanted and slipped it into the range.

Migliardo started to say something, shrugged, and closed his mouth. Craddock threw down a card.

"Gin!" Migliardo said triumphantly, putting down his cards. "That's three hundred and twelve dollars you owe me."

Craddock stared down incredulous. Suddenly he looked up and threw his cards into Migliardo's face. "Cheater!" he shouted hysterically. "You lousy cardsharp, I'm not going to pay you! I'm not going to play any more, either! You're a dirty dago cardsharp!"

He broke off in a convulsion of coughs that racked his body and made his hazel eyes bulge in their sockets. Migliardo stared at him in astonishment, blood oozing from a cut under his left eye where the corner of one card had hit him.

The screen went dark.

## V

As the lights came on, Faust turned quickly toward Lloyd. "Another meteor?"

"End of the reel."

Faust's breath sighed out. "It doesn't look good."

Lloyd said, "Don't be misled. We're showing the worst of it. There are many days when life went on in an ordinary, uneventful fashion. No arguments, no fights, no disagreements."

"Something like that once a month would be too often. . . It seems like—an oddly assorted group of men that was chosen."

Lloyd smiled. "Criticism intended? We picked them carefully, first looking for crew balance, then the necessary skills. They were intended to complement each other, one man's weakness against another's strength. We tried to figure pressures, the abrasion of personalities, the pecking order—but it's like trying to predict the nature of matter on Jupiter. Those men are living out there under conditions about which we had no information—when we chose them. We're getting it now."

Faust looked curiously at Lloyd. "I thought those men were friends of yours." Lloyd's face hardened. "They are. Every one of them. You wouldn't put a friend through a test to destruction? Maybe not. But

you'd nominate the best candidate and then watch his campaign closely, so that if he fails you won't make the same mistake again. I don't want to send out any more men blind."

Faust frowned. "I see. But doesn't the television equipment take up space that could be used for something that could help them survive? More food and water? Enough steak so that Barr could have one every day? Radio receiving equipment?"

Lloyd shook his head. "If there were enough steaks, Barr wouldn't be interested. His drive is psychological—all their drives are. Receiving equipment isn't a help but a threat to their sanity. How would you feel if you knew you were cut off, irretrievably, from the rest of humanity for a minimum of two and a half years, and you could hear, constantly, the reminder that men were living safe, sane, happy lives, that they were eating anything they wanted, going to ball games, sleeping with women, walking out on the green Earth? It would drive you mad.

"We tried that on the *Pinta* and the *Niña.* On the *Pinta* the radio was smashed the first week. On the *Niña* it lasted ten days. Those men are cut off. They must know it, know that they can receive no help, that they're on their own. Psychologically they must feel that life has stopped for everyone else, too. If they can get back, they will find everything just as it was when they left, the same friends, the same jobs, the same girls to love them. No, receiving equipment isn't the answer."

Faust said, "You sound as if you're trying to convince yourself."

"You think I'm not? You think I don't dread watching these films? And yet I look forward to it with a fascination that horrifies me.

"And still I know that those men have enough to get them through—if men can get through at all. They have more than enough food, more than enough fuel, more than enough air. And on top of that, there is a safety factor."

Faust's eyes brightened. "Ah, the mysterious safety factor. I had almost forgotten that. What is it?"

Lloyd hesitated. "I'd rather you saw for yourself. It worked out rather—oddly." He glanced at his wrist watch. "How about lunch? Amos is waiting."

Faust's voice mellowed. "Amos looks worse than a year ago. How long is he going to last?"

"Not long enough to do what he wants to do."

"Why hasn't he ever made general?"

"He's turned it down repeatedly. A colonel commands the Little Wheel. Inside, they think it's not a big enough job for a general; take his job away and he'd die. Physiologically it would be disastrous. Don't tell him I told you—he's got a bad heart. Heavy primary damage. He'll live longer here."

"You've never made general yourself," Faust said. "How many promotions have you turned down?"

"A few," Lloyd said curtly. "Here we are." He pulled open a door, and they were in the mess hall, three long aluminum tables with benches attached. The room was empty except for Amos Danton, who sat next to the delivery chute of the electronic range. He was staring expressionlessly at his tray as the door opened, but he looked up, smiling, as they entered.

"I've taken the liberty of ordering for you," he said.

They seated themselves at the trays and set to work. Danton, Lloyd noticed, had only a chef's salad. He

stirred it around with his fork, but Lloyd did not see him take a bite.

He loved this man, this carved, blackened face with the almost-blind eyes and the thin stubble of white hair, this hard, talented leader of men who had sent too many of them to their deaths and had died with every one of them, this strange, dedicated spacefarer, this father-image.

Danton was saying quietly, "What do you think, Jim? You know men, and you're fresh. You haven't lived with it as we have. Is it bad?"

Faust nodded slowly. "It will be a miracle if they make it."

Danton groaned. "And you've only seen the first thirty days. Lloyd, I told you I should have gone. You should have let me go."

Lloyd started to speak, but Faust was there ahead of him. "No, Amos. You were indispensable. Without you there would be nothing here now. You're still indispensable."

"I'd like to believe you," Danton said, covering his face with a wrinkled hand. "But Lloyd can carry on." He turned fiercely on Lloyd. "You *will* carry on, Lloyd! You can't have any life but this." He looked toward the open port, where the many-colored stars turned endlessly. "The old order passeth. The day of the unspecialized spaceman is done. Now comes the psychologist who can fit men to space and not space to men."

Lloyd said, "Ready?"

Danton rose with them.

Lloyd turned to Faust. "Go on ahead, will you, Jim?"

Faust nodded and headed briskly for the door.

When they were alone, Lloyd said, "Amos, Terry is leaving me."

Danton closed his eyes for a moment and then looked with concern at Lloyd. "Taking the kids?"

"So she says. She's had it, Amos. I've seen it coming for years. I've tried to stave it off, but what can you do when a woman wants the company of sane people with their feet on the ground, wants her children to run across green lawns bareheaded in the sunshine, to play baseball and football, go to dances and sit with a girl under a full moon? How can you argue with that?"

"You don't argue, son. Even a man who's never had a wife can tell you that much."

"I've thought of one thing," Lloyd said slowly. "We went wrong when we built the cottages. There's too much loneliness out here already without adding more. We've got nine families and one empty cottage since Chapman's wife left him. Let's connect the nine together with the empty one in the middle. That one we'll convert into a recreation center with lounges, a dance floor, card rooms, a gym in the center. The women can get together without going outside, and the crewmen can use it, too. Can we afford it?"

Danton nodded. "Sounds like mostly labor, and we've got nothing to work on, now. We not only can afford it, we can't afford not to have it. But that isn't going to solve your problem."

Lloyd's face turned gloomy again. "I know."

"I hate to sound like an advice-to-the-lovelornist," Danton said, "but women need security. Emotional security. How long has it been since you showed Terry that you love her?"

"Too long," Lloyd said soberly. And then with a sudden explosion of better spirits, he said, "Let's go see the films."

## VI

Seventy-three days out. The ungainly contraption of fuel tanks and rocket motors and fragile living space, the *Santa Maria,* was twelve million miles from Earth. For the last few days, the bright double star that was the Earth and the moon had slowly dimmed and disappeared. It had turned its night side to the ship.

This time the ship was not quiet. Music pounded throughout the personnel sphere, with wild riffs, the sudden brassy blare of trumpets, the low dirty growling of slide trombones. Holloway was on watch. He was staring through the combination telescope and celestial camera at the spectacular event that was about to begin.

Craddock was at the water spigot, filling his flask. Coughs occasionally shook his body. His face looked quite thin now; he seemed years older.

Barr was lying in his bunk. He was reading a paperback book. Occasionally a chuckle broke through the crash of the music.

Jelinek and Migliardo clung to the handholds at the port. A thick, translucent shield had been slipped over it, but the sun was still a white-hot disk through it.

"Iron!" Craddock said suddenly, "can't you turn down that noise just a little? We've heard those tapes twenty times."

Barr said, "It's better than listening to you hack all the time."

Jelinek said, not looking around, "Just a little lower, Barr. That's not asking much."

"The hell it isn't," Barr said.

"Mig?" Jelinek asked. "Too loud?"

"Too loud," Mig said.

"Three of us say it's too loud, Iron. We don't need to bother Burt. You're outvoted. Turn it down."

"Fuck you!" Barr said.

Jelinek spun to Barr's bunk and twisted the knob on the stanchion. The music stopped. Instantly Barr had Jelinek's thin wrist in his big left hand. The bones grated together. Barr pulled himself up to Jelinek's face in the silence that was more absolute than the grave.

Barr said, "I like it, see! The silence is too loud; you have to drown it out. I want life around me, if I have to kill every one of you. Now leave me alone!" He threw Jelinek's arm away, switched the music to its highest volume; and let the straps pull him back into a floating position above his bunk.

Jelinek looked down at his wrist. White fingermarks ate deep into the tanned skin. Slowly they turned red. He chewed at the end of his mustache. It had grown ragged. Then he turned, shrugging, and caught the handhold by the port. Migliardo looked at him questioningly. Jelinek lifted an eyebrow helplessly.

Barr roared, "And get away from that water, Craddock!"

Craddock jumped. He said sullenly, "There's lots of water."

"Not the way you've been lapping it up," Barr said. "Every time I look I see you sneaking another drink."

"I'm allotted four and a half pounds a day. And you know it."

"You've been swilling twice that. Cut it out, or I'll have to put a lock on it like I put on the freezer to keep you guys out of the steaks."

Jelinek said, "There's more than enough water, Barr. If we get desperate, we've got utility water."

Barr looked at Jelinek, his lip curling contemptuously. "Would you drink that stuff?"

"Yes."

"I guess you would! Well, I won't. I want clean water. Lots of it. You want to make it hard on yourself, go ahead!"

Jelinek said carefully, "Don't drive us too hard, Barr. We'll let you have the steaks, we'll let you—"

"Who's letting me?" Barr said brutally. "I'm taking!"

"We'll let you drive us a ways, because we're all on the *Outward Bound* together. But if you push us too far, we may decide that we have a better chance without you."

"Fuck you! You bastards wouldn't crock a flea if it was crawling on your—"

Mig shouted, "Emil! It's starting!"

Jelinek swung around. Across the flaming disk of the sun edged a small black spot. It was Earth. They were seeing what few other eyes had ever seen—a transit of the Earth and moon. An hour later a smaller speck would appear and follow the Earth toward the sun's blazing center. The transit would last eight hours.

Holloway called exultantly, "Thirteen hundred twelve and six seconds. Right on the nose."

Migliardo said, "I'd better give Burt a hand. We need these readings for course correction." He swung to the pole and pulled himself toward the control deck.

Craddock looked at Barr and said, "I'm going to check on the supplies." He coughed and disappeared through the hole leading to the storage deck.

When they were alone, Jelinek said to Barr, "Turn it down a little, Barr. I want to talk to you, and I'd rather the others didn't hear. It isn't often any two of us are alone."

Sullenly Barr reached over and switched the music down.

Jelinek moved his hand impatiently. "What are you trying to do, Barr?"

"Get what's mine."

"All the steaks? That's yours? Listen, Barr!" Jelinek said urgently. "We could be just as hard as you are. But we know we're living in an egg shell. We're all together on the *Onward Bound* —"

"It's the *Santa Maria,* " Barr snapped.

"Sorry. Bad habit. What I'm trying to say is—we know that our lives depend on you. In the same sense, your life depends on every one of us. You can't get back without me, Barr. I'm the pilot. If something

happens to me, you're dead. Get that! Dead, dead, dead! No more steaks, then, Barr. No more women. No more Barr."

"I don't scare worth a damn, Jelinek."

"Barr! It's time you were scared. We're looking death right in the face. If you aren't scared now, there's no help for any of us!"

"Shut up!" Barr screamed. "Shut up or I'll shut you up! We're in no more danger than we were on that joy ride to the moon. We've got it made, Emil! We're only ten days out."

"Barr. This is only the seventy-third day. We've got one hundred and eighty-seven to go."

"You're trying to scare me," Barr said quickly. "I've kept track. Don't look at the clock! It's wrong. They're trying to trick us, Phillips is. I know how he works. We're almost there, Emil. Don't lie to me! It's true, isn't it? We're almost—"

Jelinek was shaking his head slowly. "It would be no kindness to let you go on thinking that. Look out there—a transit of the Earth and moon. Seventy-three days out, Barr, exactly."

Barr's eyes were bulging with fear; his chest drew in huge gulps of air. "No, no. . ."

Craddock's voice floated up gleefully from the storage deck. "Barr, I just urinated in the water supply. Hear me, Barr? What will you drink now, Barr?"

Anger contorted Barr's face like an expression of relief. He started up. "That filthy, little—"

Jelinek shoved him back. "He's lying, Barr. There's no way to get into the water supply down there. But that's how far you've driven him."

Barr's eyes gleamed savagely. "He'd find a way. He hates me. You all hate me. I don't give a damn! You all watch me and talk about me and plot against me! Go ahead. I can take you one at a time or all at once."

There was a scrambling sound as Craddock went through the airlock door, and a clang as it slammed down. Barr said viciously, "I'll get the little—when he comes back in."

"This morning when—I came on watch," Jelinek said slowly, "I found tool marks around the sealed panel on the control deck. They weren't there yesterday. You had the watch before mine."

Barr sneered. "So what?"

"You've been trying to get in there. You're going to stop, Barr. If I find any more tool marks around that panel, I'm going to kill you, Barr. It would be easy for me. A hypodermic some night, a little arsensic on one of the steaks. You stay away from that panel!"

After a moment Barr said, "You wouldn't dare kill me. You're too careful. It would reduce your chances of getting through."

"I wouldn't take a chance on it if I were you, Barr," Jelinek said.

The music clicked back up. The beat made the ship vibrate.

There was a scrambling sound from the supply deck. Jelinek turned. Craddock, in full spacesuit, was drifting along the pole. Through the faceplate Jelinek could see Craddock's face contorted, his eyes

staring, his mouth open.

Jelinek sprang toward him and started loosening the wing nuts that held the helmet in place. He pulled the helmet off. Craddock's screams rose above the crash of the music. They came out one after another with scarcely time between for a breath.

"Ted!" Jelinek shouted. He slapped him across the face, clutching one arm of Craddock's suit to keep from being spun across the room.

Craddock's screams stopped suddenly. The room was horribly silent.

Craddock drew a shuddering breath, closed his eyes, and opened them. Sanity had come back into them.

Jelinek said forcefully, "What happened, Ted?"

"I was—going down—to check—on the supplies—" He drew in another ragged breath. "I saw him. Somebody back there. He came out from behind one of the sounding missiles."

"What did he look like?"

"Pale face. Beard. Very white hands—"

Jelinek said sharply, "How could you see his hands if he had on a suit?"

"No suit. He had a sort of cloth around his hips like a sloppy pair of shorts. No helmet, no suit."

Somebody said, "Stowaway!"

Jelinek looked toward the hole leading to the control deck.

Two faces were framed there: Migliardo's, dark and frowning; Holloway's, white, stricken. Holloway had spoken. "There's no air back there," Jelinek said. "No food or water.

"No way a man could live for five minutes, much less seventy-three days."

Holloway said, "It doesn't have to be a man."

Barr shouted, "What else could it be?"

Holloway didn't say anything.

Barr shouted, "What are you trying to do, scare me? It's just a joke, eh, Ted? Trying to get even?"

"No joke to him, Barr," Jelinek said. "He's terrified. It was an illusion. We're all liable to see things. It's when we all see the same thing that it will be too late. Barr, go down and see what it was."

Barr swung himself out of his bunk eagerly. "You bet."

Jelinek snapped. "Mig! Help me get this suit off." Craddock couldn't seem to move at all. After the suit was removed, he trembled in every muscle. Every few seconds he would cough. Migliardo guided him toward his bunk. As Migliardo strapped him down, Jelinek got a hypodermic from his locker.

"I'll give him some reserpine."

Migliardo said softly, "Did Ted's description remind you of anything?"

"The face Burt saw through the port. It's natural. Suggestion is a powerful force."

Another scream came from the storage deck. Jelinek and Migliardo stiffened, but this was a scream of rage. Barr swarmed into the room along the pole. He hung there like an angry, red monkey. "Somebody tried to kill me!"

"We were all here," Jelinek said.

Barr's voice rose higher. "Somebody's been messing with the oxygen gauge on my suit. The gauge reads full, but the tank is empty."

"It must have been an accident," Jelinek said briskly.

"I know who did it," Barr shouted. "That little sneak lying there." He pointed a trembling finger at Craddock. "He did it before he said he ruined the water. He wanted me to chase him outside. Then he'd come back and you'd say it was an accident. Too bad."

"That's absurd, Barr!" Jelinek snapped. "Clip on another tank and check around the sounding missiles"

Barr swung toward him viciously. "Unh-unh! Maybe something else is wrong with the suit. It'd be easy to poke a pinhole in one of the joints, jigger a valve. . . I'm never gonna use that suit. If you want to kill me, you'll have to do it where I can see you." He was shaking all over.

Jelinek said, "Mig. Go check."

Mig swung along the pole.

"Barr!" Jelinek said. "Lie down. Read one of your filthy books. Just shut up!" He looked toward Holloway's white face and staring blue eyes. "Burt! Get back on watch!"

An unnatural silence fell over the sphere.

Minutes passed. No one moved. Finally there was the clang of the airlock door and then the sounds of someone stripping off his suit.

"Nothing," Migliardo said, coming along the pole. "Nothing white. Nothing moving. Nothing."

Beyond the port, the transit of the Earth and moon was proceeding placidly.

## VII

Jim Faust was shaking his head as Lloyd turned on the lights. His face was as pale as Holloway's had been. "Bad," he muttered. "Bad, real bad."

"Remember," Lloyd said, "that you're seeing the worst of them. They aren't all like that."

"God," Faust muttered, "how I hate that Barr!"

Lloyd cleared his throat. "He's a good man. He was our extrovert. Balance. If they'd all been like Migliardo or Jelinek, they'd all be insane by now, drawn into fetal positions. Barr gives them something to hate. We didn't figure it that way, but it happened."

Faust said, "You can't live with hate."

"Sometimes," Lloyd said, "you can't live without it. The*Santa Maria* has been operational for almost five

times as long as the *Pinta,* for three times as long as the *Nina."*

"Better isn't good enough," Faust said.

"In some of the reels we skipped," Lloyd said, "Jelinek had started psychoanalysis."

Faust said bluntly, "He's not qualified to give it. The man's not sane himself. He can't control Barr. He's already threatened him with death. That's not the act of a sane psychologist. Barr's frightened enough as it is. He has tried to convince himself that the trip is almost over. But he knows this isn't true, and he compensates by acting the petty tyrant. You can't frighten a man who's already scared to death."

"Jelinek has pinned his faith on that sealed panel," Lloyd said. ."Barr threatens that faith. What about Migliardo?"

"Compared to the others, he seems sane. Maybe he's just quiet. He's probably going quietly mad inside. They all have symptoms of paranoia. People are plotting against them, spying on them—"

Lloyd shook his head. "Let's watch the next reel." Faust and Danton turned their swivel chairs toward the frosted screen as Lloyd flipped off the lights.

## VIII

One hundred and thirty-three days out. The *Santa Maria* coasted silently along the seven-hundred-and-thirty-five-million-mile ellipse that would bring it finally to Mars. Inside the personnel sphere it was silent, too.

The ports were all closed. The room was dark. It was 0300 by ship's time. It was part of the enforced period of inactivity the crew called night in a place where the sun never set, where the night was all about them eternally.

Only the deep, regular breathing of men at sleep could be heard and occasionally a relay clicking on the control deck. Then a dark figure twisted in its bunk and started screaming.

Men tumbled out of their bunks, scrambling in the weightlessness for a handhold.

Migliardo found the light switch, and the room sprang into prosaic reality from its shadowed horror. Jelinek, Barr, and Migliardo were floating in the air. Holloway had pushed himself up in his bunk. He was still screaming.

Jelinek wrapped his thin legs around a stanchion and shook Holloway violently. The navigator's eyes opened blankly as his head flopped. He saw Jelinek. He stopped screaming.

"What the hell happened to you?" Barr asked querulously.

"I had a dream," Holloway said. "I dreamed I was falling."

"Oh, shit!" Barr said with great disgust. "One of those. I wish I had a cigarette. I'd give my right nut for a cigarette."

Holloway went on as if he hadn't heard. His eyes were distant and remembering. "I dreamed I was dead. I was in a metal coffin, and I was falling. I would never be buried, and so I could never rest. I was dead, but I could still hear and see and feel, and I could never rest because I was in a metal coffin, and I was falling."

Migliardo said quietly, "Aren't we all?"

Barr twisted around fiercely. "Aren't we all *what?"*

Jelinek said. "We're all in a metal coffin, and we call it the *Outward Bound."*

Migliardo looked at him. "I finally remembered where I heard that name. It was an old play. A group of people were on this ship, heading for an unknown port. And they finally realized they were all dead."

Jelinek said ruefully, "A man's subconscious plays tricks on him."

Barr had been glancing back and forth between them, a look of horror growing on his face. "What are you guys talking about? We aren't dead."

"No," Jelinek said. "It's a grisly joke, and one we can't afford."

"Emil," Holloway said in a quiet and terrible voice. "Emil. Ted's lying there in his bunk. He hasn't moved."

Ted's bunk was next to Holloway's. Jelinek spun around the end of it and caught the aluminum framework. He stared down at Craddock. "Mig. Throw me my stethoscope." But he didn't wait for it; he put his ear to Craddock's chest. In a moment he let "his head float upright. "Never mind," he said softly. "He's dead."

Migliardo crossed himself and began murmuring something under his breath. Barr's eyes bulged with terror. Holloway floated over his bunk, shaking, hugging himself.

"I'm cold," Holloway said vaguely. "Don't you think it's cold in here? The air is bad, too. I think I'm going to be sick."

Jelinek began an inspection of Craddock's body. Suddenly he looked up sharply and glanced around the room as if he were counting them. His lips moved. "Who's on watch?" he asked sharply. "Barr. This is your trick, isn't it?"

"Shepherd offered to take it," Barr said sullenly.

"He's been standing a lot of your watches, hasn't he?"

"No more than for Burt or Ted." Barr's voice was shaky. "What killed him?"

"Not what," Jelinek said slowly. "Who. Ted was murdered."

In the silence, Jelinek looked at each of them.

"How do you know?" Barr said. "He was dying. We all knew that He hasn't been able to keep down any food for a month."

"Somebody couldn't wait. He was strangled."

"W-who—" Holloway stammered, "who—who did it?"

Jelinek looked at each of them soberly. "Do we really want to know? If we know, we'll have to do something about it. If we aren't sure, then we can go on pretending."

"And leave a murderer unmarked among us?" Migliardo said. "How can we be sure he won't kill again?" He looked from Barr to Holloway to Jelinek.

Barr said, "Maybe the murderer doesn't even know it. Anybody who'd do a thing like that would have to

be crazy. He—he wouldn't necessarily know he had done it."

"That's a good point," Jelinek said. "Maybe we have a homicidal schizo among us. I think you're right, Mig. We should know. So we can tell the murderer who he is."

"How can you be sure?" Holloway said weakly. "Anybody could have done it. Barr—you were always fighting with him about his coughing and drinking. You said you'd kill him. Now you've done it! Just as you said!"

"Me!" Barr said, outrage in his voice. "What about you? You hated him. You wanted to trade bunks with Mig so you wouldn't have to sleep next to him. Or Mig! You fought with him, too, Mig. He called you a dirty, dago cardsharp"

Jelinek said wearily, "Who didn't fight with him—and with everybody else? Anyway, Ted marked the murderer for us. He was stronger than the murderer thought. He's got skin under his fingernails. A little blood, too. It belongs to the murderer. And the murderer has marks on his arms where Ted clawed him in the final struggle. Everybody hold out their arms."

Holloway was staring at his already; so was Migliardo. Holloway held his arms out eagerly. "No scratches. See? Nothing."

"Mig?"

With an expression of relief, Mig held his arms out.

"You're clean. Iron?"

Barr put his arms behind him. "Let's see yours."

Jelinek held out his arms and turned them over slowly so that the palms were down. They were unmarked. "Iron?"

Barr hesitated. "I scratched my arms yesterday trying on my suit. Somebody has been messing with it again. Somebody's been trying to kill*me!* That's the one to look for." The words came spilling from his mouth. "He couldn't get me so he got Ted. Ted was easy. Ted was dying anyway. I'm too tough, so he got Ted. Somebody's been watching us, trying to kill us, and he finally saw his chance."

"Iron?" Jelinek repeated quietly.

"What about Shepherd?" Barr asked eagerly. "Why don't you look at his arms?"

"I don't think we have to look any farther. Anybody who won't show his arms must be sure he's guilty."

Barr said suddenly, "It's a trick. I bet there isn't any skin under Ted's fingernails. You just said that because you saw my arms yesterday when I scratched them." He pushed himself toward Ted's bunk. "You're trying to trick me into saying I killed him."

"Look!" Migliardo said and pointed at Barr's arm.

On the outside of the arm, just above the wrist, were three long, red, vertical scratches. Serum oozed from them.

Barr hid the arm in front of him. "I didn't kill him!" he shouted hysterically. "I'd remember if I killed him. I don't remember." His voice trailed away in hysterical sobs.

"What now?" Migliardo asked.

Jelinek's eyebrows lifted. "I suppose we might as well have the funeral."

Holloway said, "What are you going to do with the body?"

Jelinek said, "Give it a spaceman's burial. It's all we can do."

"And have him follow the ship to Mars?" Holloway's voice quavered. "See him floating out there every time we look out?"

"If we give it a good shove," Jelinek said, "it would be out of sight in a few hours."

"He should be buried," Holloway muttered. "He won't stay quiet unless he's buried."

Jelinek shrugged. "We'll give him a spaceman's burial—he'd have wanted that. Do you know any of the ceremony, Mig?"

"I'll try."

"Food," Barr said craftily. "We may run short of food. What's the use of throwing away—"

"If we ever get that desperate," Jelinek said sadly, "we'll be finished. Unfasten him from the bunk. Bring him to the storage deck."

Barr shoved himself away from the bunk. "Me? I don't want to touch him. Somebody else. I can't do it. Let Shepherd do it."

In a cold, hard voice, Migliardo said, "Tow him over here, Barr, or we'll tie him around your neck."

"No!" Barr whimpered. "No!"

"Take him, Barr," Holloway said in a thin voice.

Slowly Barr drifted back to the bunk. Moving with great caution, so that he did not touch the body, he released the belt on either side. Slowly he pulled on one strap. The body rolled in the air and followed him. Suddenly the eyelids sprang open. The sightless eyes stared accusingly at Barr.

Barr dropped the strap as if it burned his hand and threw his arm up in front of his face. "Ted!" he screamed. "I didn't do it!"

The body drifted to Jelinek, who was clinging to the fireman's pole. He caught it by one arm. "Barr!"

Moving like a man asleep, Barr turned and pushed himself toward Jelinek. He caught the pole and then took the belt strap in his hand. He went through the hole.

The others followed—Jelinek, Migliardo, Holloway. They formed a circle around the pole. Jelinek straightened out the body so that it lay at their feet. The eyelids refused to close.

Migliardo said, "How about Shepherd?"

"He's on watch," Jelinek said.

Migliardo cleared his throat. "'Man that is born of woman,'" he said softly, "'hath but a short time to live, and is full of misery. He cometh up and is cut down like a flower; he fleeth as it were a shadow, and never continueth in one stay. . .'"

They bowed their heads for a moment.

Jelinek looked up. "Get into your suit, Barr."

Barr turned blindly, opened a locker, and put on his suit automatically. When he was ready, Migliardo had the airlock door open.

Jelinek said, "Take the body out. Give it a good shove."

Barr picked up the trailing belt strap and moved clumsily into the airlock. The body stirred. Jelinek guided it into the cylinder.

The clang of the door was a somber note of finality. They stared at it for a moment and then, one by one, they swung along the pole to the living deck.

Holloway turned immediately to one of the ports, opened it, and looked out. "I don't see anything."

Migliardo asked, "What are we going to do with Barr? We can't let him go free."

"Vengeance?" Jelinek asked.

"Common sense. Do you suppose there was really something wrong with his suit?"

Jelinek shook his head gloomily. "Too easy. And too ironic. Justice doesn't work so directly. No, Barr was the only homicidal personality we had aboard. And we're going to have to live with him for the next two years or so. Jolly."

"Can't you—" Migliardo's voice broke, "put him away?"

"No, I can't. I can remember when he was my best friend. He might be that again." Jelinek's voice dropped. "Barr didn't kill Ted; space did it. How can you condemn a man for something you've considered, rationally, cold-bloodedly, yourself? Could you kill Barr?"

Migliardo hesitated. "No."

"None of us could."

Holloway said urgently, "I don't see them. There's something wrong. There's nothing out there."

The airlock door suddenly clanged. Jelinek looked around the room and then floated quickly to Barr's locker, opened it, and pulled out a small pipe wrench. "Go lie in your bunk, Burt. Hide this. Use it if necessary."

Holloway stared at Jelinek with frightened eyes and then moved to his bunk. He adjusted his straps to the rings and stretched out, the wrench along the leg nearest the wall.

Barr had removed his suit. He came cautiously along the pole.

"Did you shove off the body?"

"Yes." Barr's eyes shifted to the open port.

"Mig," Jelinek said quietly. "Check."

Migliardo looked once at Barr and left.

"Barr," Jelinek said, "what are we going to do with you?"

Barr's muscular hands flexed nervously. "I don't know."

"You might kill again."

"No!" Barr shouted. "I wouldn't. I was only—I swear to you, Emil, I didn't kill him."

"Iron," Jelinek said, shaking his head, "how can we believe you? How can we trust you?"

He pushed himself away from the wall with one hand. He floated toward Barr. Barr shoved himself back. "Don't try anything!" he said wildly. "I'm warning you. I'll do something. I'll—I'll take care of all of you. I'll kill you, Emil, if you touch me." His fists were doubled as his back touched the wall close to Holloway's bunk. He started drifting back.

Jelinek moved his hand. The needle of the syrette gleamed.

"You're trying to poison me!" Barr screamed. "I'll kill you—all of you. I'll—"

Holloway brought the wrench down on Barr's head. It made a dull, hollow sound. Barr's eyes rolled back in his head. His body twitched once, and then it was still, floating in the air.

Jelinek said, "Thanks, Burt," and began towing Barr toward his bunk. He snapped Barr's belt onto the rings. He went to his locker and got a roll of adhesive tape. Carefully he taped Barr's wrists to the framework of the bunk, winding the tape around and around. Then he selected a vein on the inside of Barr's elbow and injected the contents of the syrette.

The airlock door clanged. In a few moments Migliardo came into the room. He took in the situation at a glance. Jelinek was rubbing disinfectant into the cut on Barr's head.

Migliardo said, "He stuffed Ted's body in among the sounding missiles. I shoved it off. I see you took care of—the situation."

Jennek looked up angrily. "For how long? My sedatives will last for thirty days. What do we do then?"

"Maybe when we reach Mars—" Migliardo stopped.

"Can we trust him then?"

Migliardo shrugged helplessly. "You're the doctor."

Barr's eyelids flickered. "Mama," he said.

Migliardo turned to the pole. "I'm going to talk to Shepherd."

The deck was silent then except for the voice of a mistreated child saying, "Mama."

## IX

When the lights came on, Faust was blinking. "Those poor, damn bastards," he said softly. It was almost a prayer.

Danton was staring blankly at the screen, his hands clenched in his lap. "I can't take any more," he said hoarsely.

Faust said, "Don't blame yourself, Amos."

Danton looked at Faust with eyes filled with guilt and horror. "I sent them out, Jim. Me. I sent them into that. I killed Ted. I made Iron into a homicidal maniac."

"I picked them," Lloyd said.

Faust said, "Nobody's responsible. It's space. Those men went because they had to, just as you came out, Amos, because you had to. Any new environment is hungry. Men tame it by dying for it. Men died for the Western Hemisphere, to tame the Antarctic, to develop atomic power, to build skyscrapers and roads. Men died to build the Little Wheel and the Big Wheel. Space is hungry, too. And men stick their heads in its mouth because they're men."

"Too old," Danton said, shaking his white head, "I grew old too soon." He turned and walked erectly out of the room.

"Thanks," Lloyd said quietly.

"You think I didn't mean it?"

"I know you meant it. But that wasn't all you meant. You didn't tell him we'd have to give up if the *Santa Maria* doesn't make it."

"He knows it," Faust said.

"Another film?"

"No," Faust said. He smiled wearily. "Like Amos, I can't take any more." He tried to sound cheerful. "Well, maybe they'll make it. There's still five of them."

"Five?"

"Sure. Barr, Jelinek, Holloway, Shepherd, Migliardo."

"Jim," Lloyd said, "only five men went aboard that ship when it started for Mars. One of them is dead."

"But there's five!"

"What does Shepherd look like?"

Faust said thoughtfully, "He's got a beard. Rather tired, deepset eyes—"

"How do you know, Jim? You've never seen him."

Faust looked startled. "I must have. I can almost see him now—He must have been a stowaway. That's why he wasn't in the first few films. Behind that sealed panel—?"

"Jim," Lloyd repeated, "you've never seen him."

Faust rubbed his eyes hard with his knuckles. "You're right. He was on the control deck the whole film. Hallucination? How do you account for it?"

Lloyd shrugged helplessly. "I know the seed, but I can't account for the flower. There's that safety factor we told them about. And there was a posthypnotic suggestion we gave them: if they were ever in desperate trouble, there would be help."

"Barr thought you were tricky."

"No trick, Jim. It's real. There's help. But we never expected it to take this form." Lloyd's jaw tightened. "Come on, Jim, I'll show you your cabin."

He led Faust down the spoke to the other side of the wheel and the cabin he had once occupied when he had first come out.

"Amos is having some dinner sent in for the two of you," Lloyd said. "He'll expect you in his cabin next door at 1800. Anything you'd like?"

Faust shook his head. As Lloyd turned toward the spoke, Faust said in a puzzled voice, "If I never saw Shepherd, how did I know what he looked like?"

Lloyd said, "I wish you could answer that question for me."

The hot, steamy hydroponics room was on the other side of the Wheel beyond the air-conditioning unit. A wide, flat tank of green-scummed water took up most of the floor space. The algae in the tank were absorbing carbon dioxide from the Wheel's air and producing fifty times their own volume of oxygen every hour.

Beyond the big tank was a smaller one in which flowers and vegetables were growing. An old man was puttering among them—not really old, but old by spaceman's standards. He was fifty.

Lloyd saluted. "General Kovac!"

Kovac waved carelessly at him. "Relax, Lloyd. I'm just the gardener now. If Amos and I hadn't been young officers together, he'd never have let me retire to this job and you know it." His wrinkled face creased in a smile. "Thanks, though."

Lloyd smiled back. "I wondered, Max, if maybe you could spare me some flowers."

Kovac picked up a box wrapped in thick padding. "All boxed and insulated. Gardenias, Amos said."

Lloyd took the box and looked down at it, biting his lower lip. "Gardenias. You and Amos—"

"Shut up now," Kovac snapped. "Don't want to hear any more about it. Neither does Amos. Tell Terry not to be a fool."

"Thanks, Max. I'll try."

The recreation room of the cottage was empty. Lloyd wondered where the boys were. He unwrapped the insulation from the box and opened it. The gardenias were as fresh and white as if they had been just picked on Earth. Lloyd looked down at them, took a deep breath, and lifted the door to the living room.

Terry looked up as he came down the ladder. She was ironing a frilly dress. She started to say something and stopped. Lloyd dropped the last few feet and landed lightly. "For you," he said, presenting the gardenias.

Terry looked at the flowers, and her face crumpled. Blindly, she held out her hand to take them. She raised them to her face and breathed in their fragrance.

"Oh, Lloyd," she said. "They're beautiful."

Lloyd said, "Not as beautiful as you." His voice was husky.

Terry's face was flushed. "I don't know what to say."

"Don't say anything. If I brought you flowers every time I wanted to say 'I love you' there'd be no room in the cottage for us. I do love you, Terry. More than anything. More than my job. If you want to go Inside—I'll go with you."

"Oh, Lloyd!" She brushed her eyes with the back of one hand. "I do sound like a fool, don't I? You know I wouldn't take you away. I just—I just want to feel needed."

"If you should leave me," Lloyd said, "the stars might as well fall out of the sky."

She looked at him searchingly. "I almost believe you mean that. Oh, I will believe it. Lloyd!" She out her arms around him and squeezed him tightly to her. "I'm so happy."

He could feel her heart beating against his chest, hard and fast. He thought,*If only I wasn't a psychologist, if I could stop analyzing myself and everyone around me, if I could act blindly instead of always the right way. Well,* he thought,*don't you love her? Yes. Yes!*

Her face was raised to his, her eyes closed. His mouth descended on hers, hard and demanding. Her lips parted.

When he raised his head the words were tumbling out, "Terry, we're going to throw the nine cottages together with the tenth in the middle for a recreation center. You'll have a chance to see the other families oftener. There'll be dances, card parties, movies, all kinds of get-togethers. We'll have a real community—"

She put a finger across his lips and murmured, "That's fine, honey. That's wonderful." He kissed her again.

With that communion of marriage that sometimes makes explanations unnecessary, he said irrelevantly, "What about the boys?"

'They're taking a nap," she whispered, clinging to him.

He picked her up and carried her easily toward the bedroom. She opened her eyes and whispered, "The iron, honey."

Swearing, he stormed back across the room, yanked out the cord with a jerk, and stamped back toward the bedroom.

Terry sighed. She was smiling.

## X

One hundred and ninety-seven days out. The*Santa Maria* swept on through space with its animate and inanimate cargo. Earth was far behind now. Mars was appreciably closer—it showed a perceptible disk.

Holloway was lying in his bunk. He was propped up by a ripped piece of padding against the pressure of his belt so that he could stare out the port. He was much thinner. His eyes were burned holes in the blank sheet of his face.

Barr was taped to the framework of his bunk. Migliardo clung with one leg to a stanchion beside it. He was trying to feed Barr cut-up steak from a covered dish with a pair of tongs. Migliardo put a bite of meat into Barr's mouth. Barr spat it out.

"You're trying to poison me!" Barr screamed. "I ain't gonna eat anything! You're trying to get rid of me."

"Iron," Migliardo said patiently, grabbing the bit of meat out of the air and holding it in his hand, "you saw me get the meat out of the freezer. You saw me put it in the range. You saw me take it out and bring it, over here. If you don't eat, you'll die for sure."

Barr's body flopped in the air as he struggled against the tape that bound him to the bunk, but he could get no leverage. Even Barr was gaunt. "I ain't gonna eat!" he shouted. "And I ain't gonna die. One of these days I'm get loose, and I'm gonna kill everyone of you—you and Emil and Burt and' Ted and—Everybody but Shepherd. He's nice to me. . ."

Migliardo sighed and pushed away. He scraped the food into the garbage ejector and floated to the pole, Barr's hysterical obscenities following inexorably. He pulled himself to the control deck. Jelinek was sitting in the navigator's chair. He was sighting at Mars through the telescope.

"Emil," Migliardo said.

Jelinek jumped and banged his eye on the eyepiece of the telescope. He looked around, rubbing his eye.

"What are you doing?"

Jelinek grinned sheepishly. "Practicing my navigation. Burt isn't going to be much help, and if something should happen—"

"To me?" Migliardo nodded. "Good idea. I guess I should practice my piloting. But I never was much of a pilot. Anyway, there's Shepherd."

They looked at each other steadily, considering all the possibilities. Migliardo's face relaxed. "We're going to get through, hey, Emil?"

"You and me and Shepherd."

"You know, I was never what you would call a good Catholic, but I've been praying lately. Shepherd and me. Maybe it's helped."

"Maybe. But don't forget that the Lord helps those who help themselves. How are the engines?"

"Number two rigid-mount is pitted, but it should stand up under one more firing easily—two if we're lucky."

Barr was still screaming. Migliardo listened for a moment. He said, "I don't know how much longer I can take it, Emil. Night and day that goes on. You can't get away from it. Doesn't he ever sleep?"

"He takes catnaps all day long. We don't notice. We should be like Burt. He doesn't notice anything." Jelinek studied Migliardo. "He's bound to weaken. He hasn't eaten for a week, and if we tried to feed him intravenously like Burt, he'd tear out the IV."

Migliardo listened to Barr and shivered. "Anything we can do?"

"I ran out of morphine a month ago; reserpine doesn't help. Besides, he thinks he's being poisoned."

Migliardo rubbed his mouth nervously. "It's like taking care of a baby, feeding him, washing him, bringing him bedpans. Only a baby can't talk."

"I'd spell you, Mig—you know that. But it only makes him worse. He's more afraid of me."

Migliardo bit his lower lip. "Sure. Sorry. Sometimes it just gets too much for me—" He turned his head to

listen. "There! He stopped." His expression changed. "That was quick. Too quick. I'll go check."

He slid along the pole. There was a brief period of silence and then Migliardo's horrified shouts, "Emil! For God's sake, Emil!"

There was a red haze in the living deck. Red droplets floated in the air. Barr was lying in his bunk, his jugular vein still spurting blood into the air. Jelinek caught the bunk's framework and pressed his hand to the three-inch, horizontal gash in Barr's throat, but the pumping had already slowed. It stopped as Jelinek fumbled for the vein. Barr was dead.

Barr's eyes were open. In them was a mixture of terror and hatred. The door to the locker beside his head was standing open. His right arm was free. In his right hand was a razorsharp clasp knife. The knife and the hand were covered with blood. His whole body was bathed in blood.

So was Migliardo, who clung to the bunk beside Jelinek. Between red smears, his face was white.

"It's all over, Mig," Jelinek said quietly. "Better clean up."

Migliardo said slowly, "I never knew a man had so much blood in him." He seemed unable to move.

Jelinek pushed him toward the shower stall. "Go sponge off. And put those shorts in the ejector." When he heard the brief hiss of water from the stall, Jelinek drifted to his bunk and took a towel from his locker. Slowly he wiped the blood from his hand. "Did you see anything, Burt?"

Holloway was staring out the port. "No," he said distantly, "I haven't seen anything. Only the stars. Earth is still a long ways off. Sometimes I don't think we will ever get there. I think maybe Earth is just a dream I dreamed one night, and there isn't really an Earth at all. Or maybe I'm just a dream someone else is dreaming. Then it wouldn't matter. Dreams don't matter." His voice trailed away.

The red fog was gone, sucked away through the air-conditioning intakes, but many spherical red drops still floated aimlessly in the air. Methodically Jelinek slapped at them with the towel. When there were only minute droplets that air movement would take care of, Jelinek tied the stained towel around Barr's neck and closed the staring eyes.

Migliardo came out of the shower stall, clean, naked, and very pale. The room was oppressively silent as he went to his locker for a pair of shorts.

Jelinek said, "Barr's better off now. He was incurable, even if we could have got him back to Earth. Let's get him to the storage deck."

They towed the body to the pole and along it to the deck next to the airlock door. "Shepherd?" Jelinek said.

They stood there, Jelinek and Migliardo, their heads bowed above Barr's restless body. After a few moments they looked up. Jelinek said, "Thanks, Shepherd. Mig?"

Migliardo nodded silently and began putting on his suit.

"When you get back," Jelinek said, "you and Shepherd better clean up the splashes. Get rid of the bunk canvas through the ejector. I'm going back on watch."

Migliardo nodded again and lowered his helmet over his head. Jelinek adjusted the wing nuts and then went along the pole toward the control deck. As he passed the living deck, he looked slowly around the deck and frowned. Then he continued along the pole.

## XI

Without turning on the lights, Lloyd said to the two heads between him and the screen, "The two hundred and sixtieth day film has just been processed. Shall we run it?"

Danton said hoarsely, "Yes. It will tell the story."

Faust said, "Run it."

The film flickered on the screen.

## XII

Two hundred and sixty days out. In front of the *Santa Maria,* Mars was a vast disk, glowing red and white and green. It was 8,500 miles away. The canals were clearly visible, natural faults in the Martian crust through which fog rolled from the south pole. The surface seemed to rotate with ever-increasing speed.

Ignition was sixty-four minutes away.

Migliardo was sitting in the table slings reading a book bound in black leather. It was a Bible.

Jelinek was floating beside Holloway's bunk. The navigator's eyes were closed. His chest scarcely seemed to move. Jelinek held his wrist and counted to himself. Finally he nodded in the silence and glanced at the clock. "Sixty-two minutes until ignition. We'd better get busy, Mig."

Migliardo did not look up. "Shepherd will take care of it."

"Mig—" Jelinek began and hesitated. "I've been going through the log, Mig. I can't find any mention of Shepherd before one hundred and twelve days out."

Migliardo shrugged. "You made a mistake."

"No. I was surprised. I checked twice. Mig, what does Shepherd look like?"

Migliardo kept on reading. "You know what he looks like.

He's got a beard. Sad, deepset eyes—"

"A sort of towel wrapped around his hips?"

"Of course not," Migliardo said. "He wears khaki shorts like the rest of us."

Jelinek sighed and drifted toward Migliardo. "So he does. It's amazing he should look the same to both of us."

"Why? That's how he looks."

Jelinek caught the edge of the table and brought his face close to Migliardo's. "Because, Mig, he really isn't there."

Migliardo looked up sharply. "Don't say that, Emil! We're jittery enough as it is. Don't you crack on us!"

"Think back, Mig," Jelinek said softly. "A long, long way. Back to the moment when we boarded this ship from the Little Wheel. Phillips had said good-by, Danton had said good-by; we were all alone, now, and the taxi had taken us to the *Santa Maria,* and we were there where we would live, some of us, for

two and a half years. Who was there, Mig?"

Migliardo's forehead furrowed. "You and me and Iron and Burt and Ted and—and—" He looked at Jelinek with wide, dark eyes. "Shepherd wasn't there."

"When did he get on, Mig?"

"How could he get on after we had started, Emil? He wasn't there and now he is. That's all."

"Guess for me, Mig. What is Shepherd?"

"You guess."

"I'll tell you something else I've been checking on. The supplies. Just the two of us have been eating, Mig. Just the three of us, counting Burt, have been breathing and drinking. Shepherd doesn't eat or drink or breathe.

"What would I call him? A mass hallucination, whatever that might be. The manifestation of a deep-felt need triggered by certain instructions given us and perhaps by a posthypnotic suggestion. But I don't think it was planned."

Migliardo said, "That's just witch doctor stuff, Emil."

Jelinek nodded. "True. But the subconscious plays some funny tricks. Now you guess for me."

"You're wrong about the first mention of Shepherd. What about the face Burt saw through the port? What about the stowaway Ted saw?"

"That would make him something—not human."

"Whatever he is, he's not human. How do we know what waits for man in interplanetary space?"

"That's not your best guess, Mig."

"My best guess isn't a guess; it's a faith. Why do we call him Shepherd? Did he tell us? Did one of us name him? Or was it something else that just came to us?"

"You tell me."

Migliardo said softly. "'The Lord is my shepherd; I shall not want. He maketh me to lie down in green pastures: he leadeth me beside the still waters. He restoreth my soul: he leadeth me in the paths of righteousness for his name's sake. Yea, though I walk through the valley of the shadow of death, I will fear no evil.'"

"That's a good guess, Mig," Jelinek said slowly. "Maybe better than mine. It has all the stigmata of a psychological truth and contact points with experience—the still waters and the valley of the shadow of death. I wish I wasn't such a skeptic. I'd like to pray with you and Shepherd. The trouble is—I haven't seen Shepherd lately."

"Emil—!" Migliardo began. "I've been wanting to tell you something for a long time."

"Confession?" Jelinek asked gently.

"In more ways than one. I killed Barr."

"I know you did. The tape that held his wrist was cut, not torn. He couldn't have cut it until he had the knife, and he couldn't get the knife until his hand was free. Besides, Barr would never have committed suicide. He would have cut loose and come after us."

Migliardo put his hand across his eyes. "He was my friend."

"It was what he would have wanted a friend to do—if he had been sane enough to know a friend. There are none of us innocent, Mig." Jelinek looked at the clock. "Twenty-five minutes until ignition."

An expression of concern crossed Migliardo's face. "If Shepherd isn't real, then we can't—He's on the control deck, isn't he, Emil?"

Jelinek frowned. "I don't know. I haven't seen him lately."

Migliardo was already pulling his legs free of the slings. He swung along the pole hastily and stopped with his head just beyond the partition. "Shepherd! Emil, he's gone!" He came back along the pole and, searched the living deck with dark, frightened eyes. "Shepherd! Shepherd!"

He kept on moving along the pole until he reached the storage deck. "Shepherd!" he called. And despairingly, "Shepherd?"

Suddenly Jelinek moved. "Mig!" He leaped toward the pole.

"Shepherd!" Migliardo called once more and then the airlock door clanged shut. Before Jelinek could reach the door, he heard the hissing sound of air escaping.

Jelinek turned, gnawing his mustache, and opened the lockers along the wall. Migliardo's suit was there. So were the other four. Jelinek looked at the airlock door and said softly, "So long, Mig. I hope you find him."

With a great weariness, he pulled himself along a pole to the living deck. There was a great silence in the ship, a silence alive and unbearable. Jelinek looked at the clock. Twenty minutes until ignition. He looked at Holloway. He could barely see his chest move.

"The silence," he muttered. "That's the worst."

He floated to Holloway and felt his pulse again. He frowned, turned to a cabinet set in the wall, and withdrew one end of a coil of plastic tubing. There was a needle on the end of it. Jelinek found a vein on Holloway's arm, inserted the needle, and turned on the tiny motor that forced the sugar solution drop by drop into Holloway's vein.

Jelinek floated to his locker, opened it, and removed a hypodermic already filled with a clear liquid. He studied it for a moment, looked at Holloway, and then looked at the clock. Fifteen minutes until ignition.

He tossed the hypodermic back into the locker and slammed the door. He pulled himself swiftly along the pole to the control deck and strapped himself into the captain's chair. His eyes ran over the master controls, his fingers hovering over the control board. Ten minutes more. Not enough time.

Suddenly there came the sound of pumps churning and water surging. Jelinek looked down at his fingers. They had not touched the control board.

There was a series of small explosions somewhere in the ship, like firecrackers in the distance on the Fourth of July. Jelinek listened. Somewhere motors started and flywheels turned. Mars slowly began to slip away from the astrogation dome as the ship turned. Through a porthole in the side Jelinek could see a

giant white globe floating gently away. It was an empty fuel tank.

Jelinek smiled suddenly and took his hand away from the control board. "Ah, there, Shepherd!"

Mars appeared in the living-deck porthole by Holloway's bunk. It filled it completely, a spinning red, white, and green sphere.

Holloway pushed himself upright in his bunk, his eyes open, a shaky finger pointing. From that arm the plastic tube dangled and swung. "Earth!" Holloway shouted. His eyelids flickered. His eyes rolled back. Slowly, under the pressure of his belt straps, he sank toward the bunk. When he was parallel with it again, his chest was not moving.

"Burt!" Jelinek called from the control deck. He did not call again. The speaker imbedded in the stanchion by Holloway's bunk was utterly silent. "You weren't so bad a navigator, Burt. After all, Columbus never knew he had discovered the New World."

He stared around the room, watching the lights winking and changing color, the dials turning, the ship silhouette on the artificial horizon slowly changing shape. The control deck was alive. . .

He listened to the sounds it made, the cluckings and the tickings, the whines and the creaks. He smelled the air, all the mingled, ineradicable stinks of men sweating and breathing and eliminating, as if he were smelling it for the first time in a long while, and the smell was sweet. He ran his hands along the chair arms.

He put his hand over the control panel and pressed the button marked "Air Conditioner—Stop." One of the sounds—a whisper—was no more. He then pressed the button beside it: "Air—Eject." A red light sprang to life on the control board; a thin whistling noise began.

"Lloyd," Jelinek said softly, "I suppose you're watching. You never told me, but I guess that's the way it had to be. I hope you've learned something." He chuckled; it was almost a happy sound. "Perhaps to pick a better psychologist."

His voice changed, sobered. "I'm sorry, Lloyd. I couldn't face it—the loneliness and the silence. I think the silence was worst of all.

"Tell Amos—the crew was a failure—but the ship was a success. And tell him—there'll be a ship—out here—in good working order—with fuel and supplies—if anyone—ever makes it"

After a little the whistling stopped and the air was gone. On the control deck two blind eyes looked out at the circling stars and two deaf ears listened to the sound of rocket engines screaming. . .

## XIII

The silence in the little room was almost as unbearable as that aboard the *Santa Maria.* Lloyd had forgotten to turn on the lights. Nobody noticed; nobody said anything. When Lloyd finally remembered, Danton was still clutching the arms of his chair in knuckle-whitened hands, tears rolling down his face unashamedly.

Faust was shading his eyes with his hands. "So," he said finally, "I must prepare for the worst. There is little time."

Lloyd's voice sounded strange to him. "What could you do with two years?"

Faust looked up quickly. His eyes, too, were damp. "Where would we get two years?"

"The ship isn't expected back until then."

"How could you fake it that long?"

Lloyd said methodically, "The *Santa Maria* has taken up its orbit around Mars, six hundred and twenty miles up. It will be sending back telemetered reports from its telescopic examination of the surface, from its sounding missiles, and there are even several missiles equipped to land on Mars, conduct geological explorations within a limited radius, analyze samples, and telemeter back their findings.

"That was our safety factor—apart from special, unlikely emergencies such as that meteor damage, the ship alone was capable of making the trip and doing the job. Subconsciously the men realized it. They personified the ship; they called it Shepherd. It wasn't enough. . ."

Lloyd stopped, then began again. "The ship's reports will give us something to announce from time to time. As far as the crew is concerned, we don't *have* to know about it If we need more time still, we can announce that the ship will wait for the next favorable opportunity to return."

"Too many people know. You couldn't keep it a secret."

Lloyd sighed. "We're used to keeping secrets, aren't we, Amos? The men who are working on the films will be here until we're ready to release the information. They have years of work ahead of them."

"Maybe it could be done," Faust admitted, "but why? Do you think, you can pick a better crew—one that will succeed where those men failed?"

Danton's voice was cold and harsh.

"Those were the best!"

"Then where are you going to get the spacemen?" Faust asked gently.

"We aren't," Danton said fiercely. "Turn on that still of the *Santa Maria!"* The picture of the ship appeared on the screen, silvery white and fragile. "There's your spaceman. That's all there will ever be—packed solid with usable stuff. No neuroses, no tummy aches, no weakness, no indecision, no space-madness. It doesn't need oxygen, food, or water, medicine, sterilizers, entertainment, and the rest of the junk we have to have to survive. Just servo-mechanisms and telemetering devices. Robots. There's your spaceman. He can travel anywhere, sense almost everything, do almost anything, and never worry about coming back."

Faust shook his head.

"No, Amos," Lloyd said, "it won't do. As a research tool, it's fine. As a symbol it just won't do. Men's representatives, meaningful representatives, must be living, breathing, fearful men like themselves. They've got to be men doing something the people who are left behind think they could have done, given the opportunity—men whose doings give them glory. You told me that once, Amos. Do you remember? I've never forgotten."

Faust said slowly. "How long do you need?"

"Eight years maybe. Ten years for sure."

"That's a long time."

"Mars will wait."

"Where are you going to get them," Faust asked, "these spacemen?"

Lloyd knew that he had his ten years. "If we can't find them readymade, we'll have to make them ourselves."

## XIV

In the airlock of the cottage, Lloyd extracted himself from his suit, picked up his insulated box, and opened the inner door. Two squirming bundles of exuberance launched themselves at him, plastic helmets on their dark heads, ray guns in their hands, shouting their welcomes, "Daddy, you're home early! Play spaceman with us! Hey, Daddy?"

"Hello," Lloyd said gently. "Hello, spacemen."

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