

# ISAAC ASIMOV

WRITING AS PAUL FRENCH

## THE COMPLETE ADVENTURES OF LUCKY STARR



**Classic Adventure from an  
SF Grand Master!**

**ISAAC ASIMOV**

**WRITING AS PAUL FRENCH**

**THE COMPLETE  
ADVENTURES  
OF LUCKY STARR**

Back in the 1950s, Isaac Asimov was preparing to give television an outer space counterpart to "The Lone Ranger". The deal fell through but he carried on, producing (under the pseudonym Paul French) six science fiction mystery stories that readers have loved ever since.

"There was only one trouble as time went on," he acknowledges in his introduction. "I had, unfortunately, written the books just as astronomers began to use radar beams, satellites and probes as a way of studying the planets, and it turned out that a great deal of what they thought they knew...had to be modified." This effectively rendered his solar system into myth—an entirely different place than the one you know.

Outdated science or not, these are still some of the finest stories of the time, thrill-packed classics that are not only fun to read, but also hint at the connection between Lucky's world and the future history that forms the background of Asimov's acclaimed *Robot* and *Foundation* stories.

Meet David "Lucky" Starr—the youngest man ever to become a member of Earth's Council of Science, a dauntless detective in the face of a hostile universe.

(continued on back flap)





**THE COMPLETE  
ADVENTURES  
OF  
LUCKY STARR**



# THE COMPLETE ADVENTURES OF LUCKY STARR

*David Starr—Space Ranger*

*Lucky Starr and the Pirates of the Asteroids*

*Lucky Starr and the Oceans of Venus*

*Lucky Starr and the Big Sun of Mercury*

*Lucky Starr and the Moons of Jupiter*

*Lucky Starr and the Rings of Saturn*

**ISAAC ASIMOV**  
writing as **Paul French**



SCIENCE  
FICTION

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**THE COMPLETE  
ADVENTURES  
OF  
LUCKY STARR**



## EDITOR'S NOTE

Back in 1985, we decided to republish Isaac Asimov's six *Lucky Starr* novels as a set of two omnibus volumes. Isaac graciously agreed to write an introduction for each of our books; he also supplied the customary biographical note to appear at the end.

When we set about preparing this one-volume edition, we decided to retain both introductions. They explain why the books were written—and how the Good Doctor felt about them thirty years later.

The biographical note is, sadly, out of date—Isaac died in 1992. However, we felt it was so charming and expressed his warmth and humor so well that we decided to retain it exactly as it was.

*Ellen Asher*  
*Science Fiction Book Club*  
*June 2001*



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# INTRODUCTION

## Introduction to *The Adventures of Lucky Starr*

Back in 1951, it occurred to Doubleday that it might be a good idea for me to write a science fiction book for young people based on a continuing character. They hoped, you see, to place it on television which, at that time, was still quite new. No one yet understood that the combination of sight and sound would consume programs at a fearful rate. They were still thinking of television as though it were merely an extension of radio, and on radio favorite programs would continue for decades.

The particular radio program in mind was “The Lone Ranger.” It seemed to Doubleday that if a “Space Ranger” were invented who wore a futuristic version of a mask, the program could then continue indefinitely, for as any actor dropped out for any reason, a new one could substitute. With a mask on, who could tell the difference?

I was a little reluctant. I suspected that television would turn anything I wrote into trash and I didn’t want my name associated with it. Said Doubleday, “Use a pseudonym.” So I did. Having just heard that Cornell Woolrich deliberately chose a nationality for his pseudonym, becoming “William Irish,” I thought “Good enough!” and became Paul French.

I then wrote *David Starr—Space Ranger*. It didn’t take long after that first book came out, however, to realize that television was not in the cards. I was anything but broken-hearted, and simply kept on writing the books. I introduced David’s nickname of Lucky, and wrote *Lucky Starr and the Pirates of the Asteroids* and *Lucky Starr and the Oceans of Venus*.

There was only one trouble as time went on. I had, unfortunately, written the books just as astronomers began to use radar beams, sat-

ellites and probes as a way of studying the planets, and it turned out that a great deal of what they thought they knew about the planets had to be modified. Naturally, I had gone along with the astronomical knowledge of the early 1950's when I wrote these books, and my plots were promptly outmoded by the flood of new knowledge.

I can't change the plots without writing entirely new books, and these books, except for the dated science, still hold up as interesting adventures. All I can do, therefore, is point out where the plots make use of no-longer-correct science.

Since *David Starr—Space Ranger* was written, we have sent probes past Mars, placed a later probe in orbit about it, and in 1976 even landed probes upon its surface. We now know the surface details of Mars as well as we know those of our Moon. Although for nearly a century there had been a popular notion (not shared by most astronomers) that there were canals on Mars and remnants of a mighty civilization—a notion I made use of for its dramatic possibilities—the probes showed it to be wrong.

There are no canals on Mars. There are, instead, craters, giant volcanoes, and enormous canyons. The atmosphere is only 1 percent as dense as Earth's and is almost entirely carbon dioxide. The temperature is about that of Antarctica and there are no signs that advanced life ever existed on the planet. Indeed there don't seem to be clear signs that any life at all exists upon it.

Please read *David Starr—Space Ranger* with this in mind. I wouldn't want any readers to be misled by thinking that my descriptions of the planet are in line with the notions of the 1980's. Nor would I want them to think that I don't know any better than to suppose there are canals on Mars, for instance.

*Lucky Starr and the Pirates of the Asteroids* holds up well, fortunately. No new discoveries have been made about the asteroids that spoil any part of the book.

With *Lucky Starr and the Oceans of Venus*, however, the new astronomy ruined me. Within a couple of years after the book was written, astronomers found (to their own surprise) that Venus was much hotter than they had ever expected. The surface temperature, everywhere, was far above the boiling point of water, so there are no oceans.

The searing atmosphere of Venus is about 90 times the density of that of Earth and is almost all carbon dioxide. Even the cloud layer isn't ordinary water but is rather a solution of sulfuric acid. You just can't think of a world which is so like Earth in dimensions and yet so horrible in every other way. When you read *Lucky Starr and the*



*Oceans of Venus*, just remember that you're reading about a mythical planet and not one that exists.

Too bad, but it's the fault of the astronomers. Why didn't they get it right in the first place?

## Introduction to *The Further Adventures of Lucky Starr*

By the time I had written the first three Lucky Starr books I was so sick of the Paul French pseudonym I could hardly stand to look at them. I remember that one reviewer, who hated all the books I had written (and who has long since sunk into total and deserved oblivion) wrote a review in which he praised a Paul French book, and I wrote and told him that Paul French was Isaac Asimov, ha, ha.

Then, too, people who found out that Paul French was Isaac Asimov would say things like "Isaac Asimov is a respectable professor of biochemistry who writes science fiction under the name of Paul French, hoping that no one will ever find out he does such things."

You have no idea how that infuriated and frustrated me. I wrote all my science fiction but the Lucky Starr novels under my own name. I was *proud* of science fiction and I had no intention of hiding my work in that field under a pseudonym.

I couldn't change, however—or I thought I couldn't. I therefore wrote three more books under the Paul French byline: *Lucky Starr and the Big Sun of Mercury*, *Lucky Starr and the Moons of Jupiter*, and *Lucky Starr and the Rings of Saturn*.

However, I desperately began to make the books as much like Isaac Asimov books as I could. I dropped every last vestige of the "Space Ranger" bit. I emphasized the mystery-story aspects of the books even further since, by then, everyone knew I was specializing in the science-fiction mystery story. I even mentioned the Three Laws of Robotics, which were well-known to be used only by me.

After the sixth Lucky Starr adventure, the press of other work

forced me to abandon the series. When, eventually, paperback publishers decided to put out their own editions of the books, I took a deep breath and said, "Not unless you will put my real name on them." And they did. From then on, in a number of editions, both hard cover and soft cover, the books have been presented as by "Isaac Asimov writing as Paul French." Thank goodness.

I wish I could handle the scientific "facts" in the books as easily. Unfortunately, scientific advances *after* the books in this volume were written completely changed what we thought we knew about the planets.

For instance, in *Lucky Starr and the Big Sun of Mercury*, the plot hinges on the fact that Mercury faces only one side to the Sun at all times. That's what astronomers had thought for three quarters of a century. In 1965, however, nine years after I had published the book, astronomers discovered that Mercury does *not* face one side to the Sun at all times. It rotates slowly so that every portion of the planet experiences both day and night. Please remember this when you read the book, but pretend that you're reading about a different Mercury, the one that was thought to exist in the 1950's.

Then again, consider *Lucky Starr and the Moons of Jupiter*. We now know, as a result of probes that passed through the Jupiter system from 1973 onward, that Jupiter is surrounded by a very large and intense magnetic field that accumulated vast quantities of energetic, electrically-charged particles. It would be difficult, or even impossible, for space ships to encounter those charged particles without killing any human beings on board.

What's more, we know a great many details about the satellites we didn't know before. Io, for instance, is an active volcanic planet, with volcanoes erupting constantly and spewing sulfur all over the planet. Europa has a glacier that covers all of it with (perhaps) a liquid ocean underneath. And there are other small satellites of Jupiter even closer than Amalthea is. There was no way I could guess any of this in the 1950's.

*Lucky Starr and the Rings of Saturn* survives somewhat better, but probes in the late 1970's and early 1980's have shown us that the rings are very complicated affairs, consisting of hundreds and, perhaps, thousands of ringlets. Also there are a number of small satellites that astronomers never saw from their distant post on Earth. It would have been much fun to put in all that stuff and to describe a crater on Mimas so large that the collision that formed it must almost

have shattered the satellite. But there was no way I could have guessed except through sheer luck.

In any case, I trust you will enjoy the stories, while making allowance for the fact that they were written in the 1950's, with the astronomical knowledge of that time.



# DAVID STARR—SPACE RANGER

## DEDICATION

To Walter I. Bradbury,

without whom this book would *really* never have been written

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# 1

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## The Plum from Mars

David Starr was staring right at the man, so he saw it happen. He saw him die.

David had been waiting patiently for Dr. Henree and, in the meanwhile, enjoying the atmosphere of International City's newest restaurant. This was to be his first real celebration now that he had obtained his degree and qualified for full membership in the Council of Science.

He did not mind waiting. The Café Supreme still glistened from the freshly applied chromosilicone paints. The subdued light that spread evenly over the entire dining room had no visible source. At the wall end of David's table was the small, self-glowing cube which contained a tiny three-dimensional replica of the band whose music filled in a soft background. The leader's baton was a half-inch flash of motion and of course the table top itself was of the Sanito type, the ultimate in force-field modernity and, except for the deliberate flicker, quite invisible.

David's calm brown eyes swept the other tables, half-hidden in their alcoves, not out of boredom, but because people interested him more than any of the scientific gadgetry that the Café Supreme could gather. Tri-television and force-fields were wonders ten years before, yet were already accepted by all. People, on the other hand, did not change, but even now, ten thousand years after the pyramids were built and five thousand years after the first atom bomb had exploded, they were still the insoluble mystery and the unfaded wonder.

There was a young girl in a pretty gown laughing gently with the man who sat opposite her; a middle-aged man, in uncomfortable

holiday clothing, punching the menu combination on the mechanical waiter while his wife and two children watched gravely; two businessmen talking animatedly over their dessert.

And it was as David's glance flicked over the businessmen that it happened. One of them, face congesting with blood, moved convulsively and attempted to rise. The other, crying out, stretched out an arm in a vague gesture of help, but the first had already collapsed in his seat and was beginning to slide under the table.

David had risen to his feet at the first sign of disturbance and now his long legs ate the distance between the tables in three quick strides. He was in the booth and, at a touch of his finger on the electronic contact near the tri-television cube, a violet curtain with fluorescent designs swept across the open end of the alcove. It would attract no attention. Many diners preferred to take advantage of that sort of privacy.

The sick man's companion only now found his voice. He said, "Manning is ill. It's some sort of seizure. Are you a doctor?"

David's voice was calm and level. It carried assurance. He said, "Now sit quietly and make no noise. We will have the manager here and what can be done will be done."

He had his hands on the sick man, lifting him as though he were a rag doll, although the man was heavysset. He pushed the table as far to one side as possible, his fingers separated uncannily by an inch of force-field as he gripped it. He laid the man on the seat, loosening the Magnoseams of his blouse, and began applying artificial respiration.

David had no illusion as to the possibility of recovery. He knew the symptoms: the sudden flushing, the loss of voice and breath, the few minutes' fight for life, and then, the end.

The curtain brushed aside. With admirable dispatch the manager had answered the emergency signal which David had tapped even before he had left his own table. The manager was a short, plump man, dressed in black, tightly fitting clothing of conservative cut. His face was disturbed.

"Did someone in this wing——" He seemed to shrink in upon himself as his eyes took in the sight.

The surviving diner was speaking with hysterical rapidity. "We were having dinner when my friend had this seizure. As for this other man, I don't know who he is."

David abandoned his futile attempts at revival. He brushed his thick brown hair off his forehead. He said, "You are the manager?"

"I am Oliver Gaspere, manager of the Café Supreme," said the

plump man bewilderedly. "The emergency call from Table 87 sounds and when I come, it is empty. I am told a young man has just run into the booth of Table 94, and I follow and find this." He turned. "I shall call the house doctor."

David said, "One moment. There is no use in that. This man is dead."

"What!" cried the other diner. He lunged forward, crying, "Manning!"

David Starr pulled him back, pinning him against the unseeable table top. "Easy, man. You cannot help him and this is no time for noise."

"No, no," Gaspere agreed rapidly. "We must not upset the other diners. But see here, sir, a doctor must still examine this poor man to decide the cause of death. I can allow no irregularities in my restaurant."

"I am sorry, Mr. Gaspere, but I forbid the examination of this man by anyone at the moment."

"What are you talking about? If this man dies of a heart attack——"

"Please. Let us have co-operation and not useless discussion. What is your name, sir?"

The living diner said dully, "Eugene Forester."

"Well, then, Mr. Forester, I want to know exactly what you and your companion ate just now."

"Sir!" The little manager stared at David, with eyes swelling out of their sockets. "Are you suggesting that something in the food caused this?"

"I'm not making suggestions. I'm asking questions."

"You have no right to ask questions. Who are you? You are nobody. I demand that a doctor examine this poor man."

"Mr. Gaspere, this is Council of Science business."

David bared the inner surface of his wrist, curling the flexible Metallite sleeve above it. For a moment it was merely exposed skin, and then an oval spot darkened and turned black. Within it little yellow grains of light danced and flickered in the familiar patterns of the Big Dipper and of Orion.

The manager's lips trembled. The Council of Science was not an official government agency, but its members were nearly above the government.

He said, "I am sorry, sir."

"No apologies are necessary. Now, Mr. Forester, will you answer my first question?"

Forester muttered, "We had the special dinner number three."

"Both of you?"

"That's right."

David said, "Were there no substitutions on either part?" He had studied the menu at his own table. The Café Supreme featured extraterrestrial delicacies, but the special dinner number three was one of the more ordinary meals native to Earth: vegetable soup, veal chops, baked potato, peas, ice cream, and coffee.

"Yes, there *was* a substitution." Forester's brows drew together. "Manning ordered stewed marplums for dessert."

"And you didn't?"

"No."

"And where are the marplums now?" David had eaten them himself. They were plums grown in the vast Martian greenhouses, juicy and pitless, with a faint cinnamon flavor superimposed on their fruitiness.

Forester said, "He ate them. What do you suppose?"

"How soon before he collapsed?"

"About five minutes, I think. We hadn't even finished our coffee." The man was turning sickly pale. "Were they poisoned?"

David did not answer. He turned to the manager. "What about the marplums?"

"There was nothing wrong with them. Nothing." Gaspere seized the curtains of the alcove and shook them in his passion, but did not forget to speak in the softest of whispers. "They were a fresh shipment from Mars, government tested and approved. We have served hundreds of portions in the last three nights alone. Nothing like this has happened till now."

"Just the same you had better give orders to eliminate marplums from the list of desserts until we can inspect them again. And now, in case it wasn't the marplums at all, please bring me a carton of some sort and we will transfer what is left of the dinner for study."

"Immediately. Immediately."

"And of course speak to no one of this."

The manager returned in a few moments, smearing his brow with a feathery handkerchief. He said, "I cannot understand it. I really cannot."

David stowed the used plastic dishes, with scraps of food still adhering to them, in the carton, added what was left of the toasted rolls, recapped the waxed cups in which the coffee had been served,

and put them aside. Gaspere left off rubbing his hands frantically to reach a finger toward the contact at the edge of the table.

David's hand moved quickly, and the manager was startled to find his wrist imprisoned.

"But, sir, the crumbs!"

"I'll take those too." He used his penknife to collect each scrap, its sharp steel sliding easily along the nothingness of the force-field. David himself doubted the worth of force-field table tops. Their sheer transparency was anything but conducive to relaxation. The sight of dishes and cutlery resting on nothing could not help but leave diners tense, so that the field had to be put deliberately out of phase to induce continual interference sparkles that gave rise to an illusion of substance.

In restaurants they were popular since at the conclusion of a meal it was necessary only to extend the force-field a fraction of an inch to destroy whatever adhering crumbs and drops remained. It was only when David had concluded his collection that he allowed Gaspere to perform the extension, removing the safety catch first by a touch of the finger and then permitting Gaspere to use his special key. A new, absolutely clean surface was instantly presented.

"And now, just a moment." David glanced at the metal face of his wrist watch, then flicked a corner of the curtain aside.

He said softly, "Dr. Henree!"

The lanky middle-aged man who was sitting on what had been David's seat fifteen minutes earlier stiffened and looked about him with surprise.

David was smiling. "Here I am!" He put a finger to his lips.

Dr. Henree rose. His clothes hung loosely upon him and his thinning gray hair was combed carefully over a bald spot. He said, "My dear David, are you here already? I had thought you were late. But is anything wrong?"

David's smile had been short-lived. He said, "It's another one."

Dr. Henree stepped within the curtain, looked at the dead man, and muttered, "Dear me."

"That's one way of putting it," said David.

"I think," said Dr. Henree, removing his glasses and playing the mild force-beam of his pencil-cleaner over the lenses before replacing them, "I think we had better close down the restaurant."

Gaspere opened and closed his mouth soundlessly, like a fish. Finally he said in a strangled gasp, "Close the restaurant! It has been open only a week. It will be ruin. Absolute ruin!"

"Oh, but only for an hour or so. We will have to remove the body and inspect your kitchens. Surely you want us to remove the stigma of food poisoning if we can, and surely it would be even less convenient for you to have us make arrangements for this in the presence of the diners."

"Very well then. I will see that the restaurant is made available to you, but I must have an hour's grace to allow present diners to finish their meals. I hope there will be no publicity."

"None, I assure you." Dr. Henree's lined face was a mask of worry. "David, will you call Council Hall and ask to speak to Conway? We have a procedure for such cases. He will know what to do."

"Must I stay?" put in Forester suddenly. "I feel sick."

"Who is this, David?" asked Dr. Henree.

"The dead man's dinner companion. His name is Forester."

"Oh. Then I am afraid, Mr. Forester, you will have to be sick here."

The restaurant was cold and repulsive in its emptiness. Silent operatives had come and gone. Efficiently they had gone through the kitchens atom by atom. Now only Dr. Henree and David Starr remained. They sat in an empty alcove. There were no lights, and the tri-televisions on each table were simply dead cubes of glass.

Dr. Henree shook his head. "We will learn nothing. I am sure of that from experience. I am sorry, David. This is not the proper celebration we had planned."

"Plenty of time for celebration later. You mentioned in your letters these cases of food poisoning, so I was prepared. Still, I wasn't aware of this intense secrecy which seems necessary. I might have been more discreet if I had known."

"No. It is no use. We cannot hide this trouble forever. Little by little there are tiny leaks. People see other people die while eating and then hear of still other cases. Always while they're eating. It is bad and will grow worse. Well, we will talk more of this tomorrow when you talk to Conway himself."

"Wait!" David looked deep into the older man's eyes. "There is something that worries you more than the death of a man or the death of a thousand. Something I don't know. What is it?"

Dr. Henree sighed. "I'm afraid, David, that Earth is in great danger. Most of the Council does not believe it and Conway is only half-convinced, but I am certain that this supposed food poisoning is a

clever and brutal attempt at seizing control of Earth's economic life and government. And so far, David, there is no hint as to who is behind the threat and exactly how it is being accomplished. The Council of Science is entirely helpless!"

---

## The Breadbasket in the Sky

Hector Conway, Chief Counselor of Science, stood at his window in the topmost suite of Science Tower, the slender structure which dominated the northern suburbs of International City. The city was beginning to sparkle in the early twilight. Soon it would turn to streaks of white along the elevated pedestrian promenades. The buildings would light up in jeweled patterns as the windows came to life. Almost centered in his window were the distant domes of the Halls of Congress, with the Executive Mansion snuggled between.

He was alone in his office, and the automatic lock was adjusted to Dr. Henree's fingerprints only. He could feel some of his depression lifting. David Starr was on his way, suddenly and magically grown up, ready to receive his first assignment as a member of the Council. He felt almost as though his son were about to visit him. In a way, that was how it was. David Starr *was* his son: his and Augustus Henree's.

There had been three of them at first, himself and Gus Henree and Lawrence Starr. How he remembered Lawrence Starr! They had all three gone through school together, qualified for the Council together, done their first investigations together; and then Lawrence Starr had been promoted. It was to be expected; he was by far the most brilliant of the three.

So he had received a semi-permanent station on Venus, and that was the first time the three had not tackled a proposition together. He had gone with his wife and child. The wife was Barbara. Lovely Barbara Starr! Neither Henree nor himself had ever married, and for neither were there any girls to compete with Bar-



bara in memory. When David was born, it was Uncle Gus and Uncle Hector, until he sometimes got confused and called his father Uncle Lawrence.

And then on the trip to Venus there was the pirate attack. It had been a total massacre. Pirate ships took virtually no prisoners in space, and more than a hundred human beings were dead before two hours had passed. Among them were Lawrence and Barbara.

Conway could remember the day, the exact minute, when the news had reached Science Tower. Patrol ships had shot out into space, tracing the pirates; they attacked the asteroid lairs in a fury that was completely unprecedented. Whether they caught the particular villains who had gutted the Venus-bound ship none could ever say, but the pirate power had been broken from that year on.

And the patrol ships found something else: a tiny lifeboat winding a precarious orbit between Venus and Earth, radiating its coldly automatic radio calls for help. Only a child was inside. A frightened, lonely four-year-old, who did not speak for hours except to say stoutly, "Mother said I wasn't to cry."

It was David Starr. His story, seen through childish eyes, was garbled, but interpretation was only too easy. Conway could still see what those last minutes within the gutted ship must have been like: Lawrence Starr, dying in the control room, with the outlaws forcing their way in; Barbara, a blast gun in her hand, desperately thrusting David into the lifeboat, trying to set the controls as best she could, rocketing it into space. And then?

She had a gun in her hand. As long as she could, she must have used it against the enemy, and when that could be no longer, against herself.

Conway ached to think of it. Ached, and once again wished they had allowed him to accompany the patrol ships so that with his own hands he might have helped to turn the asteroid caves into flaming oceans of atomic destruction. But members of the Council of Science, they said, were too valuable to risk in police actions, so he stayed home and read the news bulletins as they rolled out on the ticker tape of his telenews projector.

Between them he and Augustus Henree had adopted David Starr, bent their lives to erase those last horrible memories of space. They were both mother and father to him; they personally supervised his tutoring; they trained him with one thought in mind: to make him what Lawrence Starr had once been.

He had exceeded their expectations. In height he was Lawrence, reaching six feet, rangy and hard, with the cool nerves and quick

muscles of an athlete and the sharp, clear brain of a first-class scientist. And beyond that there was something about his brown hair with the suggestion of a wave in it, in his level, wide-set brown eyes, in the trace of a cleft in his chin which vanished when he smiled, that was reminiscent of Barbara.

He had raced through his Academy days leaving a trail of sparks and the dead ash of previous records both on the playing fields and in the classrooms.

Conway had been perturbed. "It's not natural, Gus. He's outdoing his father."

And Henree, who didn't believe in unnecessary speech, had puffed at his pipe and smiled proudly.

"I hate to say this," Conway had continued, "because you'll laugh at me, but there's something not quite normal in it. Remember that the child was stranded in space for two days with just a thin lifeboat hull between himself and solar radiation. He was only seventy million miles from the sun during a period of sunspot maximum."

"All you're saying," said Henree, "is that David should have been burnt to death."

"Well, I don't know," mumbled Conway. "The effect of radiation on living tissue, on *human* living tissue, has its mysteries."

"Well, naturally. It's not a field in which experimentation is very feasible."

David had finished college with the highest average on record. He had managed to do original work in biophysics on the graduate level. He was the youngest man ever to be accorded full membership in the Council of Science.

To Conway there had been a loss in all this. Four years earlier he had been elected Chief Counselor. It was an honor he would have given his life for, yet he knew had Lawrence Starr lived, the election would have gone in a worthier direction.

And he had lost all but occasional contact with young David Starr, for to be Chief Counselor meant that one had no life other than the beetling problems of all the Galaxy. Even at graduation exercises he had seen David only from a distance. In the last four years he might have spoken to him four times.

So his heart beat high when he heard the door open. He turned, walking rapidly to meet them as they walked in.

"Gus old man." He held out his hand, wrung the other's. "And David boy!"

An hour passed. It was true night before they could stop speaking of themselves and turn to the universe.

It was David who broke out. He said, "I saw my first poisoning today, Uncle Hector. I knew enough to prevent panic. I wish I knew enough to prevent poisoning."

Conway said soberly, "No one knows that much. I suppose, Gus, it was a Martian product again."

"No way of telling, Hector. But a marplum was involved."

"Suppose," said David Starr, "you let me know anything I'm allowed to know about this."

"It's remarkably simple," said Conway. "Horribly simple. In the last four months something like two hundred people have died immediately after eating some Mars-grown product. It's no known poison, the symptoms are those of no known disease. There is a rapid and complete paralysis of the nerves controlling the diaphragm and the muscles of the chest. It amounts to a paralysis of the lungs, which is fatal in five minutes.

"It goes deeper than that too. In the few cases where we've caught the victims in time, we've tried artificial respiration, as you did, and even iron lungs. They still died in five minutes. The heart is affected as well. Autopsies show us nothing except nerve degeneration that must have been unbelievably rapid."

"What about the food that poisoned them?" asked David.

"Dead end," said Conway. "There is always time for the poisoned item or portion to be completely consumed. Other specimens of the same sort at the table or in the kitchen are harmless. We've fed them to animals and even to human volunteers. The stomach contents of the dead men have yielded uncertain results."

"Then how do you know it's food poisoning at all?"

"Because the coincidence of death after eating a Martian product time after time without known exception, is more than coincidence."

David said thoughtfully, "And it isn't contagious, obviously."

"No. Thank the stars for that. Even so, it's bad enough. So far we've kept this as quiet as we can, with full co-operation from the Planetary Police. Two hundred deaths in four months over the population of all Earth is still a manageable phenomenon, but the rate may increase. And if the people of Earth become aware that any mouthful of Martian food might be their last, the consequences could be horrible. Even though we were to point out that the death rate is only fifty per month out of a population of five billions, each person would think himself certain to be one of those fifty."

"Yes," said David, "and that would mean that the market for

Martian food imports would fall through the floor. It would be too bad for the Martian Farming Syndicates."

"That!" Conway shrugged his shoulders, thrusting aside the problem of the Farming Syndicates as something of no moment. "Do you see nothing else?"

"I see that Earth's own agriculture can't support five billion people."

"That's it exactly. We can't do without food from the colonial planets. There would be starvation on Earth in six weeks. Yet if the people are afraid of Martian food, there will be no preventing that, and I don't know how long it can be staved off. Each new death is a new crisis. Will this be the one that the telenews will get hold of? Will the truth come out now? And there's Gus's theory on top of everything."

Dr. Henree sat back, tamping tobacco gently into his pipe. "I feel sure, David, that this epidemic of food poisoning is not a natural phenomenon. It is too widespread. It strikes one day in Bengal, the next day in New York, the day after in Zanzibar. There must be intelligence behind it."

"I tell you—" began Conway.

"Let him go on, Uncle Hector," urged David.

"If any group were seeking to control Earth, what better move could they make than to strike at our weakest point, our food supply? Earth is the most populous planet in all the Galaxy. It should be, since it is mankind's original home. But that very fact makes us the weakest world, in a sense, since we're not self-supporting. Our breadbasket is in the sky: on Mars; on Ganymede; on Europa. If you cut the imports in any manner, either by pirate action or by the much more subtle system being used now, we are quickly helpless. That is all."

"But," said David, "if that were the case, wouldn't the responsible group communicate with the government, if only to give an ultimatum?"

"It would seem so, but they may be waiting their time; waiting for ripeness. Or they may be dealing with the farmers of Mars directly. The colonists have minds of their own, mistrust Earth, and, in fact, if they see their livelihood threatened, may throw in with these criminals altogether. Maybe even," he puffed strenuously, "they themselves are——But I'll make no accusations."

"And my part," said David. "What is it you would have me do?"

"Let me tell him," said Conway. "David, we want you to go to

Central Laboratories on the Moon. You will be part of the research team investigating the problem. At this moment they are receiving samples of every shipment of food leaving Mars. We are bound to come across some poisoned item. Half of all items are fed to rats; the remaining portions of any fatal pieces are analyzed by all the means at our disposal."

"I see. And if Uncle Gus is right, I suppose you have another team on Mars?"

"Very experienced men. But meanwhile, will you be ready to leave for the Moon tomorrow night?"

"Certainly. But if that's the case, may I leave now to get ready?"

"Of course."

"And would there be any objection to my using my own ship?"

"Not at all."

The two scientists, alone in the room, stared down at the fairy-tale lights of the city for a long time before either spoke.

Finally Conway said, "How like Lawrence he is! But he's still so young. It will be dangerous."

Henree said, "You really think it will work?"

"Certainly!" Conway laughed. "You heard his last question about Mars. He has no intention of going to the Moon. I know him that well. And it's the best way to protect him. The official records will say he is going to the Moon; the men at Central Laboratories are instructed to report his arrival. When he does reach Mars, there will be no reason for your conspirators, if they exist, to take him for a member of the Council, and of course he will maintain an incognito because he will be busy fooling us, he thinks."

Conway added, "He's brilliant. He may be able to do something the rest of us could not do. Fortunately, he's still young and can be maneuvered. In a few years that will be impossible. He would see through us."

Conway's communicator tinkled gently. He flipped it open. "What is it?"

"Personal communication for you, sir."

"For me? Transmit it." He looked wildly at Henree. "It can't be from the conspirators you babble about."

"Open it and see," suggested Henree.

Conway sliced the envelope open. For a moment he stared. Then he laughed a bit wildly, tossed the open sheet to Henree, and slumped back in his chair.

Henree picked it up. There were only two scrawled lines which read, "Have it your way! Mars it is." It was signed, "David."

Henree roared with laughter. "You maneuvered him all right." And Conway could not help but join.

# 3

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## Men for the Farms of Mars

To a native Earthman, Earth meant Earth. It was just the third planet from that sun which was known to the inhabitants of the Galaxy as Sol. In official geography, however, Earth was more: it included all the bodies of the Solar System. Mars was as much Earth as Earth itself was, and the men and women who lived on Mars were as much Earthmen as though they lived on the home planet. Legally, at any rate. They voted for representatives in the All-Earth Congress and for Planetary President.

But that was as far as it went. The Earthmen of Mars considered themselves quite a separate and better breed, and the newcomer had a long way to go to be accepted by the Martian farmboy as anything more than a casual tourist of not much account.

David Starr found that out almost at once when he entered the Farm Employment Building. A little man was at his heels as he walked in. A really little man. He was about five feet two and his nose would have rubbed against David's breastbone if they had stood face to face. He had pale red hair brushed straight back, a wide mouth, and the typical open-collar, double-breasted overall and hip-high, brightly colored boots of the Martian farmboy.

As David headed for the window over which glowed the legend, "Farm Employment," footsteps rattled about him, and a tenor voice cried out, "Hold on. Decelerate your footsteps, fella."

The little man was facing him.

David said, "Is there anything I can do for you?"

The little man carefully inspected him, section by section, then put out one arm and leaned negligently against the Earthman's waistline. "When did you descend the old gangplank?"

"What gangplank?"

"Pretty voluminous for an Earthie at that. Did you get cramped out there?"

"I'm from Earth, yes."

The little man brought his hands down one after the other so that they slapped sharply against his boots. It was the farmboy gesture of self-assertion.

"In that case," he said, "suppose you assume a waiting position and let a native attend to his business."

David said, "As you please."

"And if you have any objection to taking your turn, you can take it up with me when we're through or any time thereafter at your convenience. My name is Bigman. I'm John Bigman Jones, but you can ask for me anywhere in town by the name of Bigman." He paused, then added, "That, Earthie, is my cognomen. Any complaints about it?"

And David said gravely, "None at all."

Bigman said, "Right!" and left for the desk, while David, breaking into a smile as soon as the other's back was safely turned, sat down to wait.

He had been on Mars for less than twelve hours, just long enough to register his ship under an assumed name in the large sub-surface garages outside the city, take a room for the night at one of the hotels, and spend a few hours of the morning walking through the domed city.

There were only three of these cities on Mars, and their fewness was to be expected in view of the expense required to maintain the tremendous domes and to supply the torrents of power necessary to provide the temperature and gravity of Earth. This, Wingrad City, named after Robert Clark Wingrad, the first man to reach Mars, was the largest.

It was not very different from a city on Earth; it was almost a piece of Earth cut out and put on a different planet; it was as though the men on Mars, thirty-five million miles away at the very nearest, had to hide that fact from themselves somehow. In the center of town, where the ellipsoidal dome was a quarter of a mile high, there were even twenty-story buildings.

There was only one thing missing. There was no sun and no blue sky. The dome itself was translucent, and when the sun shone on it, light was uniformly spread over all its ten square miles. The light intensity at any region of the dome was small so that the "sky" to a



man in the city was a pale, pale yellow. The total effect, however, was about equivalent to that of a cloudy day on Earth.

When night came, the dome faded and disappeared into starless black. But then the street lights went on, and Wingrad City seemed more than ever like Earth. Within the buildings artificial light was used day and night.

David Starr looked up at the sudden sound of loud voices.

Bigman was still at the desk, shouting, "I tell you this is a case of blacklist. You've got me blacklisted, by Jupiter."

The man behind the desk seemed flustered. He had fluffy sideburns with which his fingers kept playing. He said, "We have no blacklists, Mr. Jones——"

"My name is Bigman. What's the matter? Are you afraid to exhibit friendship? You called me Bigman the first few days."

"We have no blacklists, Bigman. Farmhands just aren't in demand."

"What are you talking about? Tim Jenkins got placed day before yesterday in two minutes."

"Jenkins had experience as a rocket man."

"I can handle a rocket as well as Tim any day."

"Well, you're down here as a seeder."

"And I'm a good one. Don't they need seeders?"

"Look, Bigman," said the man behind the desk, "I have your name on the roster. That's all I can do. I'll let you know if anything turns up." He turned a concentrated attention on the record book before him, following up entries with elaborate unconcern.

Bigman turned, then shouted over his shoulder, "All right, but I'm sitting right here, and the next labor requisition you get, I'm being sent out. If they don't want me, I want to hear them say so to me. To me, do you understand? To me, J. Bigman. J., personally."

The man behind the desk said nothing. Bigman took a seat, muttering. David Starr rose and approached the desk. No other farmboy had entered to dispute his place in line.

He said, "I'd like a job."

The man looked up, pulled an employment blank and hand printer toward himself. "What kind?"

"Any kind of farm work available."

The man put down his hand printer. "Are you Mars-bred?"

"No, sir. I'm from Earth."

"Sorry. Nothing open."

David said, "Well, look here. I can work, and I need work. Great Galaxy, is there a law against Earthmen working?"

"No, but there isn't much you can do on a farm without experience."

"I still need a job."

"There are lots of jobs *in* town. Next window over."

"I can't use a job in town."

The man behind the desk looked speculatively at David, and David had no trouble in reading the glance. Men traveled to Mars for many reasons, and one of them was that Earth had become too uncomfortable. When a search call went out for a fugitive, the cities of Mars were combed thoroughly (after all, they were part of Earth), but no one ever found a hunted man on the Mars farms. To the Farming Syndicates, the best farmboy was one who had no other place he dared go. They protected such and took care not to lose them to the Earth authorities they half-resented and more than half-despised.

"Name?" said the clerk, eyes back on the form.

"Dick Williams," said David, giving the name under which he had garaged his ship.

The clerk did not ask for identification. "Where can I get in touch with you?"

"Landis Hotel, Room 212."

"Any low-gravity experience at all?"

The questioning went on and on; most of the blanks had to be left empty. The clerk sighed, put the blank into the slot which automatically microfilmed it, filed it, and thus added it to the permanent records of the office.

He said, "I'll let you know." But he didn't sound hopeful.

David turned away. He had not expected much to come of this, but at least he had established himself as a somewhat legitimate seeker after a farming job. The next step——

He whirled. Three men were entering the employment office and the little fellow, Bigman, had hopped angrily out of his seat. He was facing them now, arms carried loosely away from his hips although he had no weapons that David could see.

The three who entered stopped, and then one of the two who brought up the rear laughed and said, "Looks as if we have Bigman, the mighty midget, here. Maybe he's looking for a job, boss." The speaker was broad across the shoulders and his nose was flattened against his face. He had a chewed-to-death, unlit cigar of green Martian tobacco in his mouth and he needed a shave badly.

"Quiet, Griswold," said the man in front. He was pudgy, not too tall, and the soft skin on his cheeks and on the back of his neck was

sleek and smooth. His overall was typical Mars, of course, but it was of much finer material than that of any of the other farmboys in the room. His hip-high boots were spiraled in pink and rose.

In all his later travels on Mars, David Starr never saw two pairs of boots of identical design, never saw boots that were other than garish. It was *the* mark of individuality among the farmboys.

Bigman was approaching the three, his little chest swelling and his face twisted with anger. He said, "I want my papers out of you, Hennes. I've got a right to them."

The pudgy man in front was Hennes. He said quietly, "You're not worth any papers, Bigman."

"I can't get another job without decent papers. I worked for you for two years and did my part."

"You did a blasted lot more than your part. Out of my way." He tramped past Bigman, approached the desk, and said, "I need an experienced seeder—a good one. I want one tall enough to see in order to replace a little boy I had to get rid of."

Bigman felt that. "By Space," he yelled, "you're right I did more than my part. I was on duty when I wasn't supposed to be, you mean. I was on duty long enough to see you go driving wheels-over-sand into the desert at midnight. Only the next morning you knew nothing about it, except that I got heaved for referring to it, and without reference papers——"

Hennes looked over his shoulder, annoyed. "Griswold," he said, "throw that fool out."

Bigman did not retreat, although Griswold would have made two of him. He said in his high voice, "All right. One at a time."

But David Starr moved now, his smooth stride deceptively slow.

Griswold said, "You're in my way, friend. I've got some trash to throw out."

From behind David, Bigman cried out, "It's all right, Earthie. Let him at me."

David ignored that. He said to Griswold, "This seems to be a public place, friend. We've all got the right to be here."

Griswold said, "Let's not argue, friend." He put a hand roughly on David's shoulder as though to thrust him to one side.

But David's left hand shot up to catch the wrist of Griswold's outstretched arm, and his right hand straight-armed the other's shoulder. Griswold went whirling backward, slamming hard against the plastic partition that divided the room in two.

"I'd *rather* argue, friend," said David.

The clerk had come to his feet with a yell. Other desk workers

swarmed to the openings in the partition, but made no move to interfere. Bigman was laughing and clapping David on the back. "Pretty good for a fellow from Earth."

For the moment Hennes seemed frozen. The remaining farmboy, short and bearded, with the pasty face of one who had spent too much time under the small sun of Mars and not enough under the artificial sun lamps of the city, had allowed his mouth to drop ridiculously open.

Griswold recovered his breath slowly. He shook his head. His cigar, which had dropped to the ground, he kicked aside. Then he looked up, his eyes popping with fury. He pushed himself away from the wall and there was a momentary glint of steel that was swallowed up in his hand.

But David stepped to one side and brought up his arm. The small, crooked cylinder that ordinarily rested snugly between his upper arm and body shot down the length of his sleeve and into his gripping palm.

Hennes cried out, "Watch your step, Griswold. He's got a blaster."

"Drop your blade," said David.

Griswold swore wildly, but metal clattered against the floor. Bigman darted forward and picked up the blade, chortling at the stubbled one's discomfiture.

David held out his hand for it and spared it a quick glance. "Nice, innocent baby for a farmboy to have," he said. "What's the law in Mars against carrying a force-blade?"

He knew it as the most vicious weapon in the Galaxy. Outwardly, it was merely a short shaft of stainless steel that was a little thicker than the haft of a knife but which could still be held nicely in the palm. Within it was a tiny motor that could generate an invisible nine-inch-long, razor-thin force-field that could cut through anything composed of ordinary matter. Armor was of no use against it, and since it could slice through bone as easily as through flesh, its stab was almost invariably fatal.

Hennes stepped between them. He said, "Where's your license for a blaster, Earthie? Put it away and we'll call it quits. Get back there, Griswold."

"Hold on," said David, as Hennes turned away. "You're looking for a man, aren't you?"

Hennes turned back, his eyebrows lifting in amusement. "I'm looking for a man. Yes."

"All right. I'm looking for a job."

"I'm looking for an experienced seeder. Do you qualify?"

"Well, no."

"Have you ever harvested? Can you handle a sand-car? In short, you're just, if I may judge from your costume"—and he stepped back as though to get a better over-all view—"an Earthman who happens to be handy with a blaster. I can't use you."

"Not even," David's voice fell to a whisper, "if I tell you that I'm interested in food poisoning?"

Hennes's face didn't change; his eyes didn't flicker. He said, "I don't see your point."

"Think harder, then." He was smiling thinly, and there was little humor in that smile.

Hennes said, "Working on a Mars farm isn't easy."

"I'm not the easy type," said David.

The other looked over his rangy frame again. "Well, maybe you're not. All right, we'll lodge and feed you, start you with three changes of clothing and a pair of boots. Fifty dollars the first year, payable at the end of the year. If you don't work out the year, the fifty is forfeited."

"Fair enough. What type of work?"

"The only kind you can do. General helper at the chowhouse. If you learn, you'll move up; if not, that's where you spend the year."

"Done. What about Bigman?"

Bigman, who had been staring from one to the other, squawked, "No, sir. I don't work for that sand-bug, and I wouldn't advise you to, either."

David said over his shoulder. "How about a short stretch in return for papers of reference?"

"Well," said Bigman, "a month, maybe."

Hennes said, "Is he a friend of yours?"

David nodded. "I won't come without him."

"I'll take him too, then. One month, and he's to keep his mouth shut. No pay, except his papers. Let's get out of here. My sand-car's outside."

The five left, David and Bigman bringing up the rear.

Bigman said, "I owe you a favor, friend. You may collect at will."

The sand-car was open just then, but David could see the slots into which panels could slide in order that it might be enclosed against the drifting dust storms of Mars. The wheels were broad to minimize the tendency to sink when crossing the soft drifts. The area

of glass was reduced to a minimum and, where it existed, merged into the surrounding metal as though they had been welded together.

The streets were moderately crowded, but no one paid any attention to the very common sight of sand-cars and farmboys.

Hennes said, "We'll sit in front. You and your friend may sit in back, Earthman."

He had moved into the driver's seat as he spoke. The controls were in the middle of the front partition, with the windshield centered above. Griswold took the seat at Hennes's right.

Bigman moved into the rear and David followed him. Someone was behind him. David half turned as Bigman called suddenly, "Watch out!"

It was the second of Hennes's henchmen who was now crouching in the car door, his pasty bearded face snarling and taut. David moved quickly, but it was far too late.

His last sight was that of the gleaming muzzle of a weapon in the henchman's hand, and then he was conscious of a soft purring noise. There was scarcely any sensation to it, and a distant, distant voice said, "All right, Zukis. Get in back and keep watch," in words that seemed to come from the end of a long tunnel. There was a last momentary feeling of motion forward, and then there was complete nothingness.

David Starr slumped forward in his seat, and the last signs of life about him vanished.

# 4

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## Alien Life

Ragged patches of light floated past David Starr. Slowly he became aware of a tremendous tingling all about him and a separate pressure on his back. The back pressure resolved itself into the fact that he was lying face up on a hard mattress. The tingling he knew to be the aftermath of a stun-gun, a weapon whose radiation worked upon the nerve centers at the base of the brain.

Before light became coherent, before he was thoroughly aware of his surroundings, he felt his shoulders being shaken and the distant sting of sharp slaps on his cheeks. The light washed into his open eyes and he brought his tingling arm up to ward off the next slap.

It was Bigman leaning over him, his little rabbity face with its round snub nose nearly touching his. He said, "By Ganymede, I thought they finished you for good."

David brought himself up to an aching elbow. He said, "It almost feels as if they did. Where are we?"

"In the farm lockup. It's no use trying to get out, either. The door's locked; the windows are barred." He looked depressed.

David felt under his arms. They had removed his blasters. Naturally! So much was to be expected. He said, "Did they stun you, too, Bigman?"

Bigman shook his head. "Zukis horizontaled me with the gun butt." He fingered a region of his skull with gingerly distaste. Then he swelled, "But I nearly broke his arm first."

There was the sound of footsteps outside the door. David sat up and waited. Hennes entered, and with him there came an older man, with a long, tired-looking face set off by faded blue eyes under bushy gray eyebrows that seemed fixed in a permanent furrow. He was

dressed in city costume, which was much like that of Earth. He even lacked the Martian hip boots.

Hennes spoke to Bigman first. "Get out to the chowhouse and the first time you sneeze without permission you'll be broken in two."

Bigman scowled, waved to David with an "I'll be seeing you, Earthman," and swaggered out with a clattering of boots.

Hennes watched him leave and locked the door behind him. He turned to the man with the gray eyebrows. "This is the one, Mr. Makian. He calls himself Williams."

"You took a chance stunning him, Hennes. If you had killed him, a valuable lead might have gone with the canal-dust."

Hennes shrugged. "He was armed. We could take no chances. In any case, he's here, sir."

They were discussing him, David thought, as though he weren't there or were just another inanimate part of the bed.

Makian turned to him, his eyes hard. "You, there, I own this ranch. Over a hundred miles in any direction is all Makian. I say who is to be free and who is to be in prison; who works and who starves; even who lives and who dies. Do you understand me?"

"Yes," said David.

"Then answer frankly, and you'll have nothing to fear. Try to hide anything and we'll have it out of you one way or another. We may have to kill you. Do you still understand me?"

"Perfectly."

"Is your name Williams?"

"It's the only name I will give on Mars."

"Fair enough. What do you know about food poisoning?"

David swung his feet off the bed. He said, "Look, my sister died over an afternoon snack of bread and jam. She was twelve years old, and lay there dead with the jam still on her face. We called the doctor. He said it was food poisoning and told us not to eat anything in the house till he came back with certain analytical equipment. He never came back.

"Somebody else came instead. Someone with a great deal of authority. He had plain-clothes men to escort him. He had us describe all that had happened. He said to us, 'It was a heart attack.' We told him that was ridiculous because my sister had nothing wrong with her heart, but he wouldn't listen to us. He told us that if we spread ridiculous stories about food poisoning, we would get in trouble. Then he took the jar of jam with him. He was even angry with us for having wiped the jam from my sister's lips.

"I tried to get in touch with our doctor, but his nurse would never



admit he was in. I broke into his office and found him there, but all he would say was that he had made a mistaken diagnosis. He seemed afraid to talk about it. I went to the police, but they wouldn't listen.

"The jar of jam the men took away was the only thing in the house my sister ate that day that the rest of the family hadn't eaten as well. That jar was freshly opened and it was imported from Mars. We're old-fashioned people and like the old food. That was the only Mars product in the house. I tried to find out through the newspapers whether there had been any other cases of food poisoning. It all seemed so suspicious to me. I even went to International City. I quit my job and decided that in one way or another I would find out what had killed my sister and try to nail anyone that might be responsible. Everywhere I hit a blank, and then there came policemen with a warrant for my arrest.

"I was almost expecting that, and got out a step ahead of them. I came to Mars for two reasons. First, it was the only way to keep out of jail (though it doesn't seem so now, does it?), and second, because of one thing I *did* find out. There were two or three suspicious deaths in the restaurants of International City and in each case they were at restaurants which featured Martian cuisines. So I decided the answer was on Mars."

Makian was running a thick thumb down the long line of his chin. He said, "The yarn hangs together, Hennes. What do you think?"

"I say, get names and dates, and check the story. We don't know who this man is."

Makian sounded almost querulous. "You know we can't do that, Hennes. I don't want to do anything that would spread news of all this mess. It would break the entire Syndicate." He turned to David. "I'm going to send Benson to speak to you; he's our agronomist." Then, again to Hennes, "You stay here till Benson comes."

It was about half an hour before Benson came. During that interval David leaned carelessly back on the cot paying no attention to Hennes, who, for his part, played the same sort of game.

Then the door opened and a voice said, "I'm Benson." It was a gentle, hesitant voice and it belonged to a round-faced individual of about forty, with thinning sandy hair and rimless eyeglasses. His small mouth spread itself in a smile.

Benson went on, "And you, I suppose, are Williams?"

"That's right," said David Starr.

Benson looked carefully at the young Earthman, as though he were analyzing him by eye. He said, "Are you disposed to violence?"

"I'm unarmed," David pointed out, "and surrounded by a farm full of men quite ready to kill me if I step out of line."

"Quite right. Would you leave us, Hennes?"

Hennes jumped to his feet in protest. "That's not safe, Benson."

"Please, Hennes." Benson's mild eyes peered over his spectacles.

Hennes growled, clapped one hand against a boot in disgruntlement, and walked out the door. Benson locked it behind him.

"You see, Williams," he said apologetically, "in the last half-year I've grown to be an important man here. Even Hennes listens to me. I'm still not used to it." He smiled again. "Tell me. Mr. Makian says you actually witnessed a death by this strange food poisoning."

"My sister's."

"Oh!" Benson flushed. "I'm dreadfully sorry. I know it must be a painful subject to you, but might I have the details? It's very important."

David repeated the story he had earlier told Makian.

Benson said, "And it happened as quickly as that."

"It could only have been five to ten minutes after she had eaten."

"Terrible. Terrible. You have no idea how distressing all this is."

He was rubbing his hands together nervously. "In any case, Williams, I'd like to fill in the story for you. You've guessed most of it, anyway, and, somehow, I feel responsible to you for what happened to your sister. All of us here on Mars are responsible until such time as we clear up the mystery. You see, this has been going on for months now, these poisonings. Not many, but enough to have us at our wit's end.

"We've traced back the poisoned foodstuffs and we are certain they come from no one farm. But one thing did turn up: all the poisoned food is shipped out of Wingrad City; the other two cities on Mars are clean so far. That would seem to indicate that the source of infection is within the city, and Hennes has been working on the assumption. He has taken to riding to the city, nights, on detective expeditions of his own, but he has turned up nothing."

"I see. That explains Bigman's remarks," said David.

"Eh?" Benson's face twisted in puzzlement, then cleared. "Oh, you mean the little fellow who goes about shouting all the time. Yes, he caught Hennes leaving once, and Hennes had him thrown out. Hennes is a most impulsive man. In any case, I think Hennes is wrong. Naturally all the poison would travel through Wingrad City. It is the shipping point for the entire hemisphere.

"Now Mr. Makian himself believes the infection to be deliberately spread through human agency. At least he and several others of the Syndicate have received messages offering to buy their farms for a ridiculously small sum. There is no mention of the poisoning and no evidence whatsoever of any connection between the offers to buy and this horrible business."

David was listening intently. He said, "And who makes these offers to buy?"

"Why, how should we know? I have seen the letters and they only say that if the offers are accepted, the Syndicate is to broadcast a coded message over a particular sub-etheric waveband. The price offer, the letters say, will decrease by 10 per cent each month."

"And the letters can't be traced?"

"I'm afraid not. They pass through the ordinary mails with an 'Asteroid' postmark. How can one search the Asteroids?"

"Have the Planetary Police been informed?"

Benson laughed softly. "Do you think Mr. Makian, or any of the Syndicate for that matter, would call in the police for a thing like this? This is a declaration of personal war to them. You don't properly appreciate the Martian mentality, Mr. Williams. You don't run to the law when you're in trouble unless you're willing to confess it's something you can't handle yourself. No farmboy is ever willing to do that. I've suggested that the information be submitted to the Council of Science, but Mr. Makian wouldn't even do that. He said the Council was working on the poisoning without success, and if that were the kind of darned fools they were, he would do without them. And that's where I come in."

"You're working on the poisoning too?"

"That's right. I'm the agronomist here."

"That's the title Mr. Makian gave you."

"Uh-huh. Strictly speaking, an agronomist is a person who specializes in scientific agriculture. I've been trained in principles of fertility maintenance, crop rotation, and matters of that sort. I've always specialized in Martian problems. There aren't many of us and so one can get a rather good position, even though the farmboys sometimes lose patience with us and think we're just college idiots without practical experience. Anyway, I've had additional training as well in botany and bacteriology, so I've been put in charge by Mr. Makian of the entire research program on Mars with respect to the poisoning. The other members of the Syndicate are co-operating."

"And what have you found out, Mr. Benson?"

"Actually as little as the Council of Science, which is not sur-

prising considering how little I have in the way of equipment and help in comparison with them. But I have developed certain theories. The poisoning is too rapid for anything but a bacterial toxin. At least if we consider the nerve degeneration that takes place and the other symptoms. I suspect Martian bacteria."

"What!"

"There *is* Martian life, you know. When Earthmen first arrived, Mars was covered with simple forms of life. There were giant algae whose blue-green color was seen telescopically even before space-travel was invented. There were bacteria-like forms that lived on the algae and even little insect-like creatures that were free-moving, yet manufactured their own food like plants."

"Do they still exist?"

"Why, certainly. We clear them off the land completely before converting areas to our own farms and introduce our own strains of bacteria, the ones that are necessary to plant growth. Out in the uncultivated areas, however, Martian life still flourishes."

"But how can they be affecting our plants, then?"

"That's a good question. You see, Martian farms are not like the Earth farm lands you're used to. On Mars, the farms are not open to sun and air. The sun on Mars doesn't give enough heat for Earth plants and there is no rain. But there is good, fertile soil and there is quite enough carbon dioxide which the plants live on primarily. So crops on Mars are grown under vast sheets of glass. They are seeded, cared for, and harvested by nearly automatic machinery so that our farmboys are machinists more than anything else. The farms are artificially watered by a system of planet-wide piping that carries back to the polar icecaps.

"I tell you this so you will realize that it would be difficult to infect plants ordinarily. The fields are closed and guarded from all directions except from beneath."

"What does that mean?" asked David.

"It means that underneath are the famous Martian caverns and within them there may be intelligent Martians."

"You mean Martian *men*?"

"Not men. But organisms as intelligent as man. I have reason to believe that there *are* Martian intelligences that are probably anxious to drive us intruding Earthmen from the face of their planet!"

# 5

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## Dinnertime

“What reason?” demanded David.

Benson looked embarrassed. He moved one hand slowly over his head, smoothing the sparse strands of light hair that did not manage to hide the pink streaks of hairless skull that lay between. He said, “None that I could convince the Council of Science with. None that I could even present to Mr. Makian. But I believe I’m right.”

“Is it anything you would care to talk about?”

“Well, I don’t know. Frankly, it’s been a long time since I’ve spoken to anyone but farmboys. You’re a college man obviously. What did you major in?”

“History,” said David promptly. “My thesis concerned the international politics of the early atomic age.”

“Oh.” Benson looked disappointed. “Any courses in science at all?”

“I had a couple in chemistry; one in zoology.”

“I see. It occurred to me that I might be able to convince Mr. Makian to let you help me in my laboratory. It wouldn’t be much of a job, especially since you have no scientific training, but it would be better than what Hennes will have you doing.”

“Thank you, Mr. Benson. But about the Martians?”

“Oh yes. It’s simple enough. You may not know it but there are extensive caves under the Martian surface, perhaps several miles under. So much is known from earthquake data, or, rather, Marsquake data. Some investigators claim they are merely the result of natural water action in the days when Mars still had oceans, but then radiation has been picked up that has its source beneath the soil and

which can't have a human source but must have some intelligent source. The signals are too orderly to be anything else.

"It makes sense, really, if you stop to think about it. In the youth of the planet there was sufficient water and oxygen to support life, but with a gravity only two fifths that of Earth, both substances leaked slowly away into space. If there were intelligent Martians, they must have been able to foresee that. They might have built huge caverns well underneath their soil, into which they could retire with enough water and air to continue indefinitely, if they kept their population stable. Now suppose these Martians found that their planet's surface was harboring intelligent life once more—life from another planet. Suppose they resented it or feared our eventual interference with them. What we call food poisoning might be bacteriological warfare."

David said thoughtfully, "Yes, I see your point."

"But would the Syndicate? Or the Council of Science? Well, never mind. I'll have you working for me soon, and perhaps we'll be able to convince them yet."

He smiled and held out a soft hand which was swallowed up in David Starr's large one.

"I think they'll be letting you out now," Benson said.

They did let him out, and for the first time David had the chance to observe the heart of a Martian farm. It was domed, of course, as the city had been. David had been sure of that from the instant he had regained consciousness. You couldn't expect to be breathing free air and living under Earth-strength gravity unless you were within a powered dome.

Naturally the dome was much smaller than that of a city. At its highest it was only about one hundred feet, its translucent structure visible in all its details, strings of white fluorescent lights outdoing the translucent glimmer of the sunlight. The whole structure covered about half a square mile.

After the first evening, however, David had little time to extend his observations. The farm dome seemed full of men and they all had to be fed three times a day. In the evenings particularly, with the day's work done, there seemed no end to them. Stolidly he would stand behind the chow table while farmboys with plastic platters moved past him. The platters, David found out eventually, were manufactured especially for Martian farm use. Under the heat of human hands they could be molded and closed about the food at such times as it was necessary to carry meals out to the desert. Molded so, they kept the sand out and the heat in. Within the farm dome they could be flattened out again and used in the usual way.

The farmboys paid David little attention. Only Bigman, whose lithe frame slipped among the tables replacing sauce bottles and spice containers, waved to him. It was a terrible drop in social position for the little fellow, but he was philosophical about it.

"It's only for a month," he had explained one time in the kitchen, when they were preparing the day's stew and the head cook had left on his own business for a few minutes, "and most of the fellows know the score and are making it easy for me. Of course there's Griswold, Zukis, and that bunch: the rats that try to get somewhere by licking Hennes's boots. But what in Space do I care? It's only a few weeks."

Another time he said, "Don't let it bother you about the boys not cottoning to you. They know you're an Earthman, see, and they don't know you're pretty good for an Earthman, like I do. Hennes is always poking about after me, or else Griswold is, to make sure I don't talk to them, or else they would have heard the facts from me. But they'll get wise."

But the process was taking time. For David, it remained the same: a farmboy and his platter; a dollop of mashed potatoes, a ladle of peas, and a small steak (animal food was much scarcer on Mars than plant food, since meat had to be imported from Earth). The farmboy then helped himself to a sliver of cake and a cup of coffee. Then another farmboy with another platter; another dollop of mashed potatoes, another ladle of peas, and so on. To them, it seemed, David Starr was just an Earthman with a ladle in one hand and a large-tined fork in the other. He wasn't even a face; just a ladle and a fork.

The cook stuck his head through the door, his little eyes peering piggily over the sagging pouches beneath. "Hey, Williams. Rattle your legs and get some food into the special mess."

Makian, Benson, Hennes, and any others who were considered especially worthy in point of view of position or of length of service dined in a room by themselves. They sat at tables and had the food brought to them. David had been through this before. He prepared special platters and brought them into the room on a wheeled service table.

He threaded his way quietly through the tables, beginning with the one at which Makian, Hennes, and two others sat. At Benson's table he lingered. Benson accepted his platter with a smile and a "How are you?" and proceeded to eat with relish. David, with an air of conscientiousness, brushed at invisible crumbs. His mouth managed to get itself close to Benson's ears and his lips scarcely moved as he said, "Anyone ever get poisoned here at the farm?"

Benson started at the sudden sound of words and looked quickly at David. As quickly he looked away, tried to appear indifferent. He shook his head in a sharp negative.

"The vegetables are Martian, aren't they?" murmured David.

A new voice sounded in the room. It was a rough yell from the other end of the room.

"By Space, you long Earth jackass, get a move on!"

It was Griswold, his face still stubbled. He must shave sometimes, David thought, since the stubble never grew longer, but no one ever seemed to see it shorter, either.

Griswold was at the last table to be visited. He was still mumbling, his anger boiling over.

His lips drew back. "Bring over that platter, dish-jockey. Faster. Faster."

David did so, but without hurry, and Griswold's hand, with the fork in it, jabbed quickly. David moved more quickly, and the fork clanged sharply against the hard plastic of the tray.

Balancing the tray in one hand, David caught Griswold's fist with the other. His grip grew tight. The other three at the table pushed back their chairs and rose.

David's voice, low, icy, and dead level, sounded just high enough to be heard by Griswold. "Drop it and ask for your ration decently, or you'll have it all at once."

Griswold writhed, but David maintained his hold. David's knee in the back of Griswold's chair prevented the farmboy from pushing away from the table.

"Ask nicely," said David. He smiled, deceptively gentle. "Like a man with breeding."

Griswold was panting harshly. The fork dropped from between his numbed fingers. He growled, "Let me have the tray."

"Is that all?"

"Please." He spat it out.

David lowered the tray and released the other's fist from which the blood had been crushed, leaving it white. Griswold massaged it with his other hand and reached for his fork. He looked about him, mad with fury, but there was only amusement or indifference in the eyes that met his. The farms on Mars were hard; each man had to care for himself.

Makian was standing. "Williams," he called.

David approached. "Sir?"

Makian made no direct reference to what had just occurred, but he stood there for a moment, looking carefully at David, as though



he were seeing him for the first time and liked what he saw. He said, "Would you like to join the checkup tomorrow?"

"The checkup, sir? What is that?" Unobtrusively he surveyed the table. Makian's steak was gone, but his peas remained behind and the mashed potatoes were scarcely touched. He had not the grit, apparently, of Hennes, who had left a clean platter.

"The checkup is the monthly drive through all the farm to check on the plant rows. It's an old farm custom. We check on possible accidental breaks in the glass, on the condition and workings of the irrigation pipes and farm machinery, also on possible poaching. We need as many good men as possible out on the checkup."

"I'd like to go, sir."

"Good! I think you'll do." Makian turned to Hennes, who had been listening throughout with cold and unemotional eyes. "I like the boy's style, Hennes. We may be able to make a farmboy out of him. And, Hennes——" His voice sank and David, moving away, could no longer catch it, but from the quick hooded glance Makian cast in the direction of Griswold's table, it could not have been very complimentary to the veteran farmboy.

David Starr caught the footstep inside his own partitioning and acted even before he was fully awake. He slipped off the far side of the bed and underneath. He caught the glimpse of bare feet glimmering whitely in the pale light of the residual fluorescents shining through the window. The residuals were allowed to burn in the farm dome during the sleeping period to avoid darkness too inconveniently black.

David waited, heard the rustle of the sheets as hands probed uselessly through the bed, then a whisper. "Earthman! Earthman! Where in Space——"

David touched one of the feet and was rewarded by a sudden withdrawal and a sharp intake of breath.

There was a pause and then a head, shapeless in the dusk, was near his. "Earthman? You there?"

"Where else would I be sleeping, Bigman? I like it here under the bed."

The little fellow fumed and whispered peevishly, "You might have squeezed a yell out of me and then I would have been in the stew to my ears. I've got to talk to you."

"Now's your chance." David chuckled softly and crawled back into bed.

Bigman said, "You're a suspicious space bug for an Earthman."

"You bet," said David. "I intend living a long life."

"If you're not careful, you won't."

"No?"

"No. I'm foolish to be here. If I'm caught, I'll never get my reference papers. It's just that you helped me when I could use it, and it's my turn to pay back. What was it you did to this louse, Griswold?"

"Just a little mixup in the special mess."

"A little mixup? He was raving mad. It was all Hennes could do to hold him back."

"Is this what you came to tell me, Bigman?"

"Part of it. They were behind the garage just after lights-out. They didn't know I was around, and I didn't tell them. Anyway, Hennes was yanking the stuffings out of Griswold; first for starting something with you when the Old Man was watching; and second, for not having the sand to finish once he had started it. Griswold was too mad to talk sense. Near as I could judge, he was just gargling something about how he would have your gizzard. Hennes said—" He broke off. "Listen, didn't you tell me that Hennes was all clear as far as you were concerned?"

"He seems so."

"Those midnight trips——"

"You only saw him once."

"Once is enough. If it was legitimate, why can't you give me the straight stuff?"

"It's not mine to give, Bigman, but it all seems legitimate."

"If that's the case, what's he got against you? Why doesn't he call off his dogs?"

"What do you mean?"

"Well, when Griswold finished talking, Hennes said he was to hold off. He said you would be out on checkup tomorrow and that would be the time. So I thought I'd come and warn you, Earthman. Better stay off checkup."

David's voice remained unflurried. "Checkup would be time for what? Did Hennes say?"

"I didn't hear past that. They moved away and I couldn't follow, or I would have been out in the open. But I assume it's pretty plain."

"Maybe. But suppose we try to find out for sure exactly what they're after."

Bigman leaned close, as though he were trying to extract a reading from David's face despite the gloom. "How do you mean?"

David said, "How do you suppose. I'll be at the checkup and give the boys a chance to show me."

"You can't do that," gasped Bigman. "You couldn't handle yourself on a checkup against them. You don't know anything about Mars, you poor Earthman you."

"Then," said David phlegmatically, "it could mean suicide, I suppose. Let's wait and see." He patted Bigman on the shoulder, turned over, and went to sleep again.

# 6

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## “Sand Away!”

Checkup excitement began within the farm dome as soon as the main fluorescents were turned on. There was a wild noise and a mad scurry. Sand-cars were brought out in rows, each farmboy tending his own.

Makian was here and there, never too long at any one point. Hennes, in his flat, efficient voice, assigned the parties and set the routes across the farm's vast expanse. He looked up as he passed David and stopped.

“Williams,” he said, “are you still of a mind to be on the checkup?”

“I wouldn't miss it.”

“All right then. Since you haven't any car of your own, I'll assign you one out of general stock. Once it's assigned, it's yours to take care of and keep in working condition. Any repairs or damage which we consider avoidable will come out of your pay. Understood?”

“Fair enough.”

“I'll put you on Griswold's team. I know that you and he don't get along, but he's our best man in the fields and you're an Earthie without experience. I wouldn't care to load you onto a lesser man. Can you drive a sand-car?”

“I think I can handle any moving vehicle with a little practice.”

“You can, eh? We'll give you your chance to make good on that.” He was about to step away when his eyes caught something. He barked, “And where do you think you're going?”

Bigman had just stepped into the assembly room. He was in a new outfit and his boots had been polished to mirror-shine. His hair was slicked down and his face was scrubbed and pink. He drawled, “On the checkup, Hennes—*Mister* Hennes. I'm not on detention and

I still have my rating as licensed farmboy even though you have put me on chow detail. That means I can go on checkup. It also means I have a right to my old car and my old squad.”

Hennes shrugged. “You read the rule books a lot, and that’s what they say, I suppose. But one more week, Bigman, one more week. After that, if you ever show your nose anywhere on Makian territory I’ll have a real man step on you and squash you.”

Bigman made a threatening gesture at Hennes’s retreating back and then turned to David. “Ever used a nosepiece, Earthman?”

“Never actually. I’ve heard about them, of course.”

“Hearing isn’t using. I’ve checked an extra one out for you. Look, let me show you how to get it on. No, no, get your thumbs out of there. Now watch how I hold my hands. That’s right. Now over the head and make sure the straps aren’t twisted in the back of the neck, or you’ll end with a headache. Now can you see through them?”

The upper part of David’s face was transformed into a plastic-encased monstrosity, and the double hose leading from the oxygen cylinders up each side of his chin subtracted further from any appearance of humanity.

“Do you have trouble breathing?” asked Bigman.

David was struggling, fighting to suck in air. He yanked the nose-piece off. “How do you turn it on? There’s no gauge.”

Bigman was laughing. “That’s the return for the scare you gave me last night. You don’t need a gauge. The cylinders automatically feed oxygen as soon as the warmth and pressure of your face trip a contact; and it automatically closes off when you take it off.”

“Then there’s something wrong with it. I——”

“Nothing wrong with it. It feeds at a gas pressure of one fifth normal to match the pressure of the Mars atmosphere, and you can’t suck it in out here when you’re fighting the pressure of a normal Earth atmosphere. Out there in the desert it will be fine. And it will be enough, too, because even though it’s one fifth normal, it’s all oxygen. You’ll have as much oxygen as you always had. Just remember one thing: breathe in through your nose but breathe out through your mouth. If you breathe out through your nose, you’ll fog up your eyepieces, and that won’t be good.”

He strutted about David’s tall, straight body and shook his head. “Don’t know what to do about your boots. Black and white! You look like a garbage detail or something.” He glanced down at his own chartreuse-and-vermilion creations with more than a little complacency.

David said, "I'll manage. You'd better get to your car. It looks as though they're getting ready to move."

"You're right. Well, take it easy. Watch out for the gravity change. That's hard to take if you're not used to it. And, Earthman——"

"Well."

"Keep your eyes open. You know what I mean."

"Thanks. I shall."

The sand-cars were lining up now in squares of nine. There were more than a hundred all told, each with its farmboy peering over its tires and controls. Each vehicle had its handmade signs intended as humor. The sand-car trundled out for David was speckled with such signs from half-a-dozen previous owners, beginning with a "Watch Out, Girls" circling the bullet-like prow of the car and ending with a "This Ain't No Dust Storm, This Is Me," on the rear bumper.

David climbed in and closed the door. It fit tightly. Not even a seam showed. Immediately above his head there was the filtered and refiltered vent that allowed equalization of air pressure within and without the car. The glass was not quite clear. It had a faint misting that was proof of dozens of dust storms met and weathered. David found the controls familiar enough. They were standard for ground cars, for the most part. The few unfamiliar buttons explained themselves upon manipulation.

Griswold came past, gesturing at him furiously. He opened his door.

Griswold yelled, "Get your front flaps down, you jerk. We're not heading into any storm."

David searched for the proper button and found it on the steering-wheel shaft. The windshields, which looked as though they were welded to metal, disengaged themselves and sank down into sockets. Visibility improved. Of course, he thought. Mars's atmosphere would scarcely raise wind enough to disturb them, and this was Martian summer. It would not be too cold.

A voice called, "Hey, Earthman!" He looked up. Bigman was waving at him. He was in Griswold's group of nine also. David waved back.

A section of the dome lifted up. Nine cars trundled in, moving sluggishly. The section closed behind them. Minutes passed, then it opened, empty, and nine more moved in.

Griswold's voice sounded suddenly and loudly next to David's ear. David turned and saw the small receiver in the car top just behind his head. The small grilled opening at the head of the steering-wheel shaft was a mouthpiece.

“Squad eight, ready?”

The voices sounded consecutively: “Number one, ready.” “Number two, ready.” “Number three, ready.” There was a pause after number six. Just a few seconds. David then called, “Number seven, ready.” There followed “Number eight, ready.” Bigman’s reedy tones came last. “Number nine, ready.”

The dome section was raising again and the cars ahead of David began moving. David slowly stepped on the resistor, cutting the coils, allowing electricity to pour into the motor. His sand-car leaped ahead, all but crashing into the rear of the one in front. He let out the resistor with a jerk and felt the car tremble beneath him. Gently he babied it along. The section enclosed them like a small tunnel, shutting off behind.

He became conscious of the hiss of air being pumped out of the section back into the dome proper. He felt his heart begin to pound, but his hands were steady upon the wheel.

His clothing bellied away from him and the air was seeping out along the cylindrical line where boots met thigh. There was a tingling in his hands and chin, a feeling of puffiness, of distention. He swallowed repeatedly, to relieve the gathering pain in his ears. After five minutes he found himself panting in an effort to gather enough oxygen for his needs.

The others were slipping on their nosepieces. He did the same, and this time oxygen slid smoothly up his nostrils. He breathed deeply, puffing it out through his mouth. His arms and feet still tingled, but the feeling was beginning to die away.

And now the section was opening ahead of them, and the flat, ruddy sands of Mars glittered in the sun’s feeble light. There was a yell in unison from eight farmboy throats as the section lifted.

“Sand awa-a-a-ay!” and the first cars in line began to move.

It was the traditional farmboy cry, made thin and almost soprano in the thin air of Mars.

David let in the resistor and crawled across the line that marked the boundary between dome metal and Martian soil.

And it hit him!

The sudden gravity change was like a sharp fall of a thousand feet. One hundred and twenty pounds of his two hundred disappeared as he crossed the line, and it left him by way of the pit of his stomach. He clutched at the wheel as the sensation of fall, fall, *fall* persisted. The sand-car veered wildly.

There was the sound of Griswold's voice, which maintained its hoarseness even in the incongruous hollowness forced upon it by the thin air which carried sound waves so poorly. "Number seven! Back in line!"

David fought with the wheel, fought with his own sensations, fought to make himself see clearly. He dragged at the oxygen through his nosepiece and slowly the worst passed.

He could see Bigman looking anxiously in his direction. He took one hand away from the wheel momentarily to wave, then concentrated on the road.

The Martian desert was almost flat, flat and bare. Not even a scrub of vegetation existed here. This particular area had been dead and deserted for who knew how many thousands or millions of years. The thought suddenly struck him that perhaps he was wrong. Perhaps the desert sands had been coated with blue-green microorganisms until Earthmen had come and burned them away to make room for their farms.

The cars ahead trailed faint dust that rose slowly, as if it were part of a motion-picture film that had been slowed down. It settled as slowly.

David's car was trailing badly. He added speed and still more speed, and found that something was going wrong. The others, ahead of him, were hugging the ground but he, himself, was bounding like a jackrabbit. At every trifling imperfection in the ground surface, at every projecting line of rock, his car took off. It drifted lazily up into the air, inches high, its wheels whining against nothing. It came down as gently, then lurched forward with a jerk as the straining wheels caught hold.

It caused him to lose ground, and when he poured the juice in to gain again, the jumping grew worse. It was the low gravity that did it, of course, but the others managed to compensate for it. He wondered how.

It was getting cold. Even at Martian summer, he guessed the temperature to be barely above freezing. He could look directly at the sun in the sky. It was a dwarfed sun in a purple sky in which he could make out three or four stars. The air was too thin to blank them out or to scatter light in such a manner as to form the sky-blue of Earth.

Griswold's voice was sounding again: "Cars one, four, and seven to the left. Cars two, five, and eight to the center. Cars three, six, and nine to the right. Cars two and three will be in charge of their subsections."



Griswold's car, number one, was beginning to curl to the left, and David, following it with his eyes, noticed the dark line on the leftward horizon. Number four was following one, and David turned his wheel sharply left to match the angle of veer.

What followed caught him by surprise. His car went into a rapid skid, scarcely allowing him time to realize it. He yanked desperately at the wheel, spinning it in the direction of skid. He shut off all power and felt the wheels rasp as the car whirled onward. The desert circled before him, so that only its redness could make any impression.

And then there was Bigman's thin cry through the receiver, "Stamp on the emergency traction. It's just to the right of the resistors."

David probed desperately for the emergency traction, whatever it was, but his aching feet found nothing. The dark line on the horizon appeared before him and then vanished. It was much sharper now, and broader. Even in that rapid flash, its nature became appallingly evident. It was one of the fissures of Mars, long and straight. Like the far more numerous ones on Earth's Moon, they were cracks in the planetary surface, made as the world dried through millions of years. They were up to a hundred feet across and no man had plumbed their depth.

"It's a pink, stubby button," yelled Bigman. "Stamp everywhere."

David did so, and there was a sudden slight yielding beneath his toes. The swift motion of his sand-car became a rebellious grinding that tore at him. The dust came up in clouds, choking him and obscuring everything.

He bent over the wheel and waited. The car was definitely slowing. And then, finally, it stopped.

He sat back and breathed quietly for a moment. Then he withdrew his nosepiece, wiped the inner surfaces while the cold air stung at nose and eyes, and replaced it. His clothes were ruddy gray with dust and his chin was caked with it. He could feel its dryness upon his lips, and the interior of his car was filthy with it.

The two other cars of his sub-section had pulled up next to him. Griswold was climbing out of one, his stubbled face made monstrously ugly by the nosepiece. David was suddenly aware of the reason for the popularity of beards and stubble among the farmboys. They were protection against the cold, thin wind of Mars.

Griswold was snarling, showing yellowed and broken teeth. He said, "Earthman, the repairs for this sand-car will come right out of your wages. You had Hennes's warning."

David opened the door and climbed out. From outside, the car was a worse wreck still, if that were possible. The tires were torn and from them projected the huge teeth which were obviously the "emergency traction."

He said, "Not one cent comes out of my wages, Griswold. There was something wrong with the car."

"That's for sure. The driver. A stupid, dumb-lug driver, that's what's wrong with the car."

Another car came squealing up, and Griswold turned to it.

His stubble seemed to bristle. "Get the blast out of here, you cinch-bug. Get on with your job."

Bigman jumped out of his car. "Not till I take a look at the Earthman's car."

Bigman weighed less than fifty pounds on Mars, and in one long, flat leap he was at David's side. He bent for a moment, then straightened. He said, "Where are the weight-rods, Griswold?"

David said, "What are the weight-rods, Bigman?"

The little fellow spoke rapidly. "When you take these sand-cars out into low gravity, you put foot-thick beams over each of the axles. You take them out when you're on high grav. I'm sorry, fella, but I never once thought that this might be what——"

David stopped him. His lips drew back. It would explain why his car had floated upward at each bump while the others were glued to the soil. He turned to Griswold. "Did you know they were gone?"

Griswold swore. "Each man is responsible for his own car. If you didn't notice they were gone, that's your negligence."

All the cars were now on the scene. A circle of hairy men were forming around the three, quiet, attentive, not interfering.

Bigman stormed. "You big hunk of silica, the man's a tenderfoot. He can't be expected to——"

"Quiet, Bigman," said David. "This is my job. I ask you again, Griswold. Did you know about this in advance?"

"And I told you, Earthie. In the desert a man has to watch himself. I'm not going to mother you."

"All right. In that case I'll watch myself right now." David looked about. They were almost at the edge of the fissure. Another ten feet and he would have been a dead man. "However, you'll have to watch yourself, too, because I'm taking your car. You can drive mine back to the farm dome or you can stay here for all I care."

"By Mars!" Griswold's hand shot to his hip and there was a sudden rough cry from the circle of watching men.

“Fair fight! Fair fight!”

The code of the Martian deserts was a hard one, but it drew the line at advantages considered unfair. That was understood and *enforced*. Only by such mutual precautions could any man be protected from an eventual force-knife in the back or blast-gun in the belly.

Griswold looked at the hard faces about him. He said, “We’ll have it out back in the dome. On your jobs, men.”

David said, “I’ll see you in the dome if you wish. Meanwhile, step aside.”

He walked forward unhurriedly, and Griswold stepped back. “You stupid greenhorn. We can’t have a fist-fight with nosepieces on. Do you have anything but bone inside your skull?”

“Take your nosepiece off, then,” said David, “and I’ll take mine off. Stop me in fair fight, if you can.”

“Fair fight!” came the approving shout from the crowd, and Bigman yelled, “Put up or back down, Griswold.” He leaped forward, ripping Griswold’s blaster from his hip.

David put his hand on his nosepiece. “Ready?”

Bigman called, “I’ll count three.”

The men yelled confusedly. They were waiting now, in keen anticipation. Griswold glanced wildly about him.

Bigman was counting, “One——”

And at the count of “Three” David quietly removed his nose-piece, and tossed it, with the attached cylinders, to one side. He stood there, unprotected, holding his breath against the unbreathable atmosphere of Mars.

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## Bigman Makes a Discovery

Griswold did not stir, and his nosepiece remained in place. There was a threatening growl from the spectators.

David moved as quickly as he dared, gauging his steps against the light gravity. He lunged clumsily (it was almost as though water were holding him up) and caught Griswold about the shoulder. He twisted sideways, avoiding the farmboy's knee. One hand reached to Griswold's chin, caught the nosepiece and yanked it up and off.

Griswold grabbed for it with the beginning of a thin yell, but caught himself and clamped his mouth shut against the loss of any air. He broke away, staggering a bit. Slowly he circled David.

Nearly a minute had passed since David had drawn his last breath. His lungs felt the strain. Griswold, eyes bloodshot, crouched and sidled toward David. His legs were springy, his motions graceful. He was used to low gravity and could handle himself. David realized grimly that he himself probably could not. One quick, injudicious move and he might find himself sprawling.

Each second took its strain. David kept out of reach and watched the twisting grimace on Griswold's face tauten and grow tortured. He would have to outwait the farmboy. He himself had an athlete's lungs. Griswold ate too much and drank too much to be in proper shape. The fissure caught his eye. It was some four feet behind him now, a sheer cliff, dropping perpendicularly. It was toward it that Griswold was maneuvering him.

He halted his retreat. In ten seconds Griswold would have to charge. He would have to.

And Griswold did.

David let himself drop to one side, and caught the other with his

shoulder. He whirled under the impact and allowed the force of the whirl to add itself to his own thrusting fist which caught Griswold's jawbone at its socket.

Griswold staggered blindly. He let out his breath in a huge puff and filled his lungs with a mixture of argon, neon, and carbon dioxide. Slowly, dreadfully, he crumpled. With a last effort he tried to raise himself, half succeeded, started falling again, tottered forward in an attempt to maintain his balance——

There was a confused yelling in David's ears. On trembling legs, deaf and blind to everything but his nosepiece on the ground, he walked back to the car. Forcing his tortured, oxygen-craving body to work slowly and with dignity, he buckled on his cylinders with care and adjusted his nosepiece. Then, finally, he took a shuddering drag of oxygen that poured into his lungs like the rush of cold water into a desiccated stomach.

It was a full minute before he could do anything but breathe, his huge chest rising and falling, in large, rapid sweeps. He opened his eyes.

"Where's Griswold?"

They were around him, all of them; Bigman in the very fore. Bigman looked surprised. "Didn't you see?"

"I knocked him down." David looked about sharply. Griswold was nowhere.

Bigman made a down-sweeping motion with his hand. "Into the fissure."

"What?" David frowned beneath the nosepiece. "This is a bad joke."

"No, no." "Over the edge like a diver." "By Space, it was his own fault." "Clear case of self-defense for you, Earthie." They were all talking at once.

David said, "Wait, what happened? Did I throw him over?"

"No, Earthie," Bigman clamored. "It wasn't your doing. You hit him and the bug went down. Then he tried to get up. He started going down again, and when he tried to keep his balance, he sort of hopped forward, too blind to see what lay ahead of him. We tried to get him, but there wasn't enough time, and over he went. If he hadn't been so busy maneuvering you to the edge of the fissure so he could throw you over, it wouldn't have happened."

David looked at the men. They looked at him.

Finally one of the farmboys thrust out a hard hand. "Good show, farmboy."

It was calmly said, but it meant acceptance, and it broke the log jam.

Bigman yelled a triumph, jumped six feet into the air, and sank slowly down, with legs twiddling under him in a maneuver no ballet dancer, however expert, could have duplicated under Earth gravity. The others were crowding close now. Men who had addressed David only as "Earthie" or "You," or not at all, were clapping him on the back and telling him he was a man Mars could be proud of.

Bigman shouted, "Men, let's continue the checkup. Do we need Griswold to show us how?"

They howled back, "No!"

"Then how about it?" He vaulted into his car.

"Come on, farmboy," they yelled at David, who jumped into what had been Griswold's car fifteen minutes before and set it in motion.

Once again the call of "Sand awa-a-a-ay!" shrilled and ululated through the Martian wisps.

The news spread by sand-car radio, leaping across the empty spaces between the glass-enclosed stretches of farm lands. While David maneuvered his vehicle up and down the corridors between the glass walls, word of Griswold's end made its way across all the expanse of the farm.

The eight remaining farmboys of what had been Griswold's subsection gathered together once again in the dying ruddy light of Mars's sinking sun and retraced the early-morning drive back to the farm dome. When David returned, he found himself already notorious.

There was no formal evening meal that day. It had been eaten out in the desert before the return, so in less than half an hour of the completion of the checkup, men had gathered before the Main House, waiting.

There was no doubt that by now Hennes and the Old Man himself had heard of the fight. There were enough of the "Hennes crowd," that is, men who had been hired since Hennes had become foreman and whose interests were tied thoroughly to those of Hennes, to insure the fact that the news had spread in that direction. So the men waited with pleased anticipation.

It was not that they had any great hate for Hennes. He was efficient and no brute. But he was not liked. He was cold and aloof, lacked the quality of easy mixing which had marked earlier foremen. On Mars, with its lack of social distinctions, that was a serious short-

coming and one which the men could not help but resent. And Griswold himself had been anything but popular.

All in all, it was more excitement than the Makian farm had seen in three Martian years, and a Martian year is just one month short of being two Earth-years long.

When David appeared, a considerable cheer went up and way was made for him, though a small group well to one side looked glum and hostile.

Inside, the cheers must have been heard, for Makian, Hennes, Benson, and a few others stepped out. David walked up the foot of the ramp which led to the doorway and Hennes moved forward to the head of the ramp, where he stood, looking down.

David said, "Sir, I have come to explain today's incident."

Hennes said evenly, "A valuable employee of the Makian farms died today as the result of a quarrel with you. Can your explanation remove that fact?"

"No, sir, but the man Griswold was beaten in fair fight."

A voice called out from the crowd, "Griswold tried to kill the boy. He forgot to have the weight-rods included in the boy's car by *accident*." There were several scattered squawks of laughter at the final sarcastic word.

Hennes paled. His fist clenched. "Who said that?"

There was silence, and then from the very front of the crowd a small, subdued voice said, "Please, teacher, it wasn't I." Bigman was standing there, hands clasped before him, eyes looking modestly down.

The laughter came again, and this time it was a roar.

Hennes suppressed fury with an effort. He said to David, "Do you claim an attempt on your life?"

David said, "No, sir. I claim only a fair fight, witnessed by seven farmboys. A man who enters a fair fight must be willing to come out as best he can. Do you intend to set up new rules?"

A yell of approval went up from the audience. Hennes looked about him. He cried, "I am sorry that you men are being misled and agitated into actions you will regret. Now get back to your work, all of you, and be assured that your attitude this evening will not be forgotten. As for you, Williams, we will consider the case. This is not the end."

He slammed back into Main House and, after a moment's hesitation, the rest followed him.

David was called to Benson's office early the next day. It had been a long night of celebration, which David could neither avoid nor break away from, and he yawned prodigiously as he stooped to avoid hitting the lintel.

Benson said, "Come in, Williams." He was dressed in a white smock and the air in the office had a characteristic animal odor that came from the cages of rats and hamsters. He smiled. "You look sleepy. Sit down."

"Thanks," said David. "I *am* sleepy. What can I do for you?"

"It's what I can do for you, Williams. You're in trouble and you could be in worse trouble. I'm afraid you don't know what conditions on Mars are like. Mr. Makian has the full legal authority to order you blasted if he believes the death of Griswold can be considered murder."

"Without a trial?"

"No, but Hennes could find twelve farmboys who would think his way easily enough."

"He'd have trouble with the rest of the farmboys if he tried to do that, wouldn't he?"

"I know. I told Hennes that over and over again last night. Don't think that Hennes and I get along. He's too dictatorial for me; too fond, by far, of his own ideas, such as that private detective work of his which I mentioned to you the other time. And Mr. Makian agreed with me completely. He must let Hennes take charge of all direct dealings with the men, of course, which is why he didn't interfere yesterday, but he told Hennes afterward, to his face, that he wasn't going to sit by and see his farm destroyed over a stupid rascal such as Griswold, and Hennes had to promise to let the matter stew for a while. Just the same, he won't forget this in a hurry, and Hennes is a bad enemy to have here."

"I'll have to risk it, won't I?"

"We can run the risk to a minimum. I've asked Makian if I may use you here. You could be quite useful, you know, even without scientific training. You can help feed the animals and clean the cages. I could teach you how to anesthetize them and make injections. It won't be much, but it will keep you out of Hennes's way and prevent disruption of farm morale which is something we can't afford now, as you should know. Are you willing?"

With the utmost gravity David said, "It would be rather a social comedown for a man who's been told he's an honest-to-goodness farmboy now."

The scientist frowned. "Oh, come now, Williams. Don't take se-



riously what those fools tell you. Farmboy! Huh! It's a fancy name for a semi-skilled agricultural laborer and nothing more. You'd be silly to listen to their upside-down notions of social status. Look, if you work with me you might be helping to work out the mystery of the poisonings; help avenge your sister. That's why you came to Mars, wasn't it?"

"I'll work for you," said David.

"Good." Benson's round face stretched in a smile of relief.

Bigman looked through the door cautiously. He half whispered, "Hey!"

David turned around and closed the cage door. "Hello, Bigman."

"Is Benson around?"

"No. He's gone for the day."

"Okay." Bigman entered, walking carefully, as though to prevent even an accidental contact between his clothing and any object in the laboratories.

"Don't tell me you have something against Benson."

"Who, me? No. He's just a bit—you know." He tapped his temple a few times. "What kind of a grown man would come to Mars to fool around with little animals? And then he's always telling us how to run the planting and harvesting. What does he know? You can't learn anything about Mars farming in some Earth college. At that, he tries to make himself seem better than we are. You know what I mean? We have to slap him down sometimes."

He looked gloomily at David. "And now look at you. He's got you all spiffed out in a nightgown, too, playing nursemaid to a mouse. Why do you let him?"

"It's just for a while," said David.

"Well." Bigman pondered a moment, then thrust out his hand awkwardly. "I want to say good-by."

David took it. "Leaving?"

"My month's up. I have my papers so now I'll be getting a job somewhere else. I'm glad I met up with you, Earthie. Maybe when your own time's up we can meet again. You won't want to stay under Hennes."

"Hold on." David did not release the little fellow's hand. "You'll be going to Wingrad City now, won't you?"

"Till I find a job. Yes."

"Good. I've been waiting for this for a week. I can't leave the farm, Bigman, so will you do an errand for me?"

"You bet. Just name it."

"It's a little risky. You'd have to come back here."

"All right. I'm not afraid of Hennes. Besides, there are ways for us to meet he doesn't know a thing about. I've been on Makian farms a lot longer than he has."

David forced Bigman into a seat. He squatted next to him, and his voice was a whisper. "Look, there's a library at the corner of Canal and Phobos streets in Wingrad City. I want you to get some book films for me along with a viewer. The information that will get you the proper films is in this sealed——"

Bigman's hand clawed out sharply, seizing David's right sleeve, forcing it upward.

"Here, what are you doing?" demanded David.

"I want to see something," panted Bigman. He had bared David's wrist now, holding it, inner surface upward, watching it breathlessly.

David made no move to withdraw it. He watched his own wrist without concern. "Well, what's the idea?"

"Wrong one," muttered Bigman.

"Really?" David took his wrist away from Bigman's clutch effortlessly and exposed the other wrist. He held them both before him. "What are you looking for?"

"You know what I'm looking for. I thought your face was familiar ever since you came here. Couldn't place it. I could kick myself. What kind of an Earthman would come here and be rated as good as any native farmboy in less than a month? And I have to wait for you to send me to the library at the Council of Science before I tumble."

"I still don't understand you, Bigman."

"I think you do, David Starr." He nearly shouted the name in his triumph.

# 8

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## Night Meeting

David said, "Quiet, man!"

Bigman's voice sank. "I've seen you in video reels often enough. But why don't your wrists show the mark? I've heard all the members of the Council were marked."

"Where did you hear this? And who told you the library at Canal and Phobos is the Council of Science?"

Bigman flushed. "Don't look down at the farmboy, mister. I've lived in the city. I've even had schooling."

"My apologies. I didn't mean it that way. Will you still help me?"

"Not until I understand about your wrists."

"That's not hard. It's a colorless tattoo that will turn dark in air, but only if I want it to."

"How's that?"

"It's a matter of emotion. Each human emotion is accompanied by a particular hormone pattern in the blood. One and only one such pattern activates the tattoo. I happen to know the emotion that fits."

David did nothing visibly, but slowly a patch on the inner surface of his right wrist appeared and darkened. The golden dots of the Big Dipper and Orion glowed momentarily and then the whole faded rapidly.

Bigman's face glowed and his hands came down for that automatic smack against his boots. David caught his arms roughly.

"Hey," said Bigman.

"No excitement, please. Are you with me?"

"Sure I'm with you. I'll be back tonight with the stuff you want

and I'll tell you where we can meet. There's a place outside, near the Second Section——” He went on, whispering directions.

David nodded. “Good. Here's the envelope.”

Bigman took it and inserted it between his hip boot and thigh. He said, “There's a pocket on the inside top of the better-quality hip boots, Mr. Starr. Do you know that?”

“I do. Don't look down at this farmboy, either. And my name, Bigman, is still Williams. That leaves just one last statement. The Council librarians will be the only ones who will be able to open that envelope safely. If anyone else tries, he'll be hurt.”

Bigman drew himself up. “No one else will open it. There are people who are bigger than I am. Maybe you think I don't know that, but I do. Just the same, bigger or not, nobody, and I mean nobody, will take this from me without killing me. What's more, I wasn't thinking of opening it myself, either, if you've given that any thought.”

“I have,” said David. “I try to give all possibilities some thought, but I didn't give that one very much.”

Bigman smiled, made a mock pass with his fist at David's chin, and was gone.

It was almost dinnertime when Benson returned. He looked unhappy and his plump cheeks were drooping.

He said listlessly, “How are you, Williams?”

David was washing his hands by dipping them into the special detergent solution which was universally used on Mars for this purpose. He withdrew his hands into the stream of warm air for drying, while the wash water flushed away into the tanks where it could be purified and returned to the central supply. Water was expensive on Mars and was used and reused wherever possible.

David said, “You look tired, Mr. Benson.”

Benson closed the door carefully behind him. He blurted it out. “Six people died yesterday of the poisoning. That's the highest number yet for a single day. It's getting worse all the time and there's nothing we seem to be able to do.”

He glowered at the lines of animal cages. “All alive, I suppose.”

“All alive,” said David.

“Well, what can I do? Every day Makian asks me if I have discovered anything. Does he think I can find discoveries under my pillow in the morning? I was in the grain bins today, Williams. It was an ocean of wheat, thousands and thousands of tons all set for shipment to Earth. I dipped into it a hundred times. Fifty grains here; fifty grains there. I tried every corner of every bin. I had them dip

twenty feet down for samples. But what good is it? Under present conditions it would be a generous estimate to suppose that one out of a billion grains is infected."

He nudged at the suitcase he had brought with him. "Do you think the fifty thousand grains I've got here have the one in a billion among them? One chance in twenty thousand!"

David said, "Mr. Benson, you told me that no one ever died on the farm here, even though we eat Martian food almost exclusively."

"Not as far as I know."

"How about Mars as a whole?"

Benson frowned. "I don't know. I suppose not or I would have heard of it. Of course life isn't as tightly organized here on Mars as it is on Earth. A farmboy dies and usually he is simply buried without formality. There are few questions." Then, sharply, "Why do you ask?"

"I was just thinking that if it were a Martian germ, people on Mars might be more accustomed to it than Earth people. They might be immune."

"Well! Not a bad thought for a non-scientist. In fact, it's a good idea. I'll keep it in mind." He reached up to pat David's shoulder. "You go on and eat. We'll begin feeding the new samples tomorrow."

As David left, Benson turned to his suitcase and was lifting out the carefully labeled little packets, one of which might hold the all-important poisoned kernel. By tomorrow those samples would be ground, each little pile of powder carefully mixed and painstakingly divided into twenty sub-samples, some for feeding and some for testing.

By tomorrow! David smiled tightly to himself. He wondered where he would be tomorrow. He even wondered if he would be alive tomorrow.

The farm dome lay asleep like a giant prehistoric monster curled upon the surface of Mars. The residual fluorescents were pale glimmers against the dome roof. Amid the silence the ordinarily unheard vibrations of the dome's atmospherics, which compressed Martian atmosphere to the normal Earth level and added moisture and oxygen from the quantities supplied by the growing plants of the vast greenhouses, sounded in a low grumble.

David was moving quickly from shadow to shadow with a caution that was, to a large extent, not necessary. There was no one watching. The hard composition of the dome was low overhead,

bending rapidly to the ground, when he reached Lock 17. His hair brushed it.

The inner door was open and he stepped inside. His pencil flashlight swept the walls within and found the controls. They weren't labeled, but Bigman's directions had been clear enough. He depressed the yellow button. There was a faint click, a pause, and then the sighing of air. It was much louder than it had been on the day of the checkup, and since the lock was a small one designed for three or four men rather than a giant one designed for nine sand-cars, the air pressure dropped much more quickly.

He adjusted his nosepiece, waited for the hissing to die away, the silence indicating pressure equilibrium. Only then did he depress the red button. The outer section lifted and he stepped out.

This time he was not trying to control a car. He lowered himself to the hard, cold sands and waited for the stomach-turning sensations to pass as he accustomed himself to the gravity change. It took scarcely two minutes for that to happen. A few more gravity-change passages, David thought grimly, and he would have what the farm-boys called "gravity legs."

He rose, turned to get his bearings, and then found himself, quite involuntarily, frozen in fascination!

It was the first time he had ever seen the Martian night sky. The stars themselves were the old familiar ones of Earth, arranged in all the familiar constellations. The distance from Mars to Earth, great though it was, was insufficient to alter perceptibly the relative positions of the distant stars. But though the stars were unchanged in position, how vastly they were changed in brilliance.

The thinner air of Mars scarcely softened them, but left them hard and gem-bright. There was no moon, of course, not one such as Earth knew. Mars's two satellites, Phobos and Deimos, were tiny things only five or ten miles across, simply mountains flying loose in space. Even though they were much closer to Mars than the Moon was to Earth, they would show no disk and be only two more stars.

He searched for them, even though he realized they might easily both be on the other side of Mars. Low on the western horizon he caught something else. Slowly he turned to it. It was by far the brightest object in the sky, with a faint blue-green tinge to it that was matched for beauty by nothing else in the heavens he watched. Separated from it by about the width of Mars's shrunken sun was another object, yellower, bright in itself but dwarfed by the much greater brilliance of its neighbor.

David needed no star map to identify the double object. They were the Earth and the Moon, the double "evening star" of Mars.

He tore his eyes away, turned toward the low outcropping of rock visible in the light of his pencil flash, and began walking. Bigman had told him to use those rocks as a guide. It was cold in the Martian night, and David was regretfully aware of the heating powers of even the Martian sun, one hundred and thirty million miles away.

The sand-car was invisible, or nearly so, in the weak starlight, and he heard the low, even purr of its engines long before he saw it.

He called, "Bigman!" and the little fellow popped out of it.

"Space!" said Bigman. "I was beginning to think you were lost."

"Why is the engine running?"

"That's easy. How else do I keep from freezing to death? We won't be heard, though. I know this place."

"Do you have the films?"

"Do I? Listen, I don't know what you had in the message you sent but they had five or six scholars circling me like satellites. It was 'Mr. Jones this' and 'Mr. Jones that.' I said, 'My name's Bigman,' I said. And then it was 'Mr. Bigman, if you please.' Anyway"—Bigman ticked items off on his fingers—"before the day was gone, they had four films for me, two viewers, a box as big as myself which I haven't opened, and the loan (or maybe the gift for all I know) of a sand-car to carry it all in."

David smiled but made no answer. He entered into the welcome warmth of the car and quickly, in a race to outrun the fleet night, adjusted the viewers for projection and inserted a film in each. Direct viewing would have been quicker, more preferable, but even in the warm interior of the sand-car his nose-piece was still a necessity, and the bulbous transparent covering of his eyes made direct viewing impossible.

Slowly the sand-car lurched forward through the night, repeating almost exactly the route of Griswold's subsection on the day of the checkup.

"I don't get it," said Bigman. He had been muttering under his breath uselessly for fifteen minutes and now he had to repeat his louder statement twice before the brooding David would respond.

"Don't get what?"

"What you're doing. Where you're going. I figure this is my business because I'm going to stay with you from here on. I've been thinking today, Mr. St—Williams, thinking a lot. Mr. Makian's been in a kind of biting temper for months now, and he wasn't a bad joe

at all before that. Hennes came in at that time, with a new shuffle for all hands. And Schoolboy Benson gets *his* licks in all of a sudden. Before it all started he was nobody, and now he's real pally with the big shots. Then, to top it off, you're here, with the Council of Science ready to put up anything you want. It's something big, I know, and I want to be in on it."

"Do you?" said David. "Did you see the maps I was viewing?"

"Sure. Just old maps of Mars. I've seen them a million times."

"How about the ones with the crosshatched areas? Do you know what those areas stood for?"

"Any farmboy can tell you that. There are supposed to be caverns underneath, except that I don't believe it. My point is this. How in Space can anyone tell there are holes two miles underneath the ground if no one's been down there to see? Tell me that."

David did not bother to describe the science of seismography to Bigman. Instead, he said, "Ever hear of Martians?"

Bigman began, "Sure. What kind of a question——" and then the sand-car screeched and trembled as the little fellow's hands moved convulsively on the wheels. "You mean *real* Martians? *Mars* Martians; not *people* Martians like us? Martians living here before people came?"

His thin laugh rattled piercingly inside the car and when he caught his breath again (it is difficult to laugh and breathe at the same time with a nosepiece on), he said, "You've been talking to that guy Benson."

David remained gravely unruffled at the other's glee. "Why do you say that, Bigman?"

"We once caught him reading some kind of book about it, and we ribbed the pants off him. Jumping Asteroids, he got sore. He called us all ignorant peasants, and I looked up the word in the dictionary and told the boys what it meant. There was talk of mayhem for a while, and he got shoved around sort of by accident, if you know what I mean, for a while after that. He never mentioned anything about Martians to *us* after that; wouldn't have had the nerve. I guess, though, he figured you were an Earthman and would fall for that kind of comet gas."

"Are you sure it's comet gas?"

"Sure. What else can it be? People have been on Mars for hundreds and hundreds of years. No one's ever seen Martians."

"Suppose they're down in the caverns two miles underneath."

"No one's seen the caverns either. Besides, how would the Martians get there in the first place? People have been over every inch



of Mars and there sure aren't staircases going down anywhere. Or elevators, either."

"Are you certain? I saw one the other day."

"What?" Bigman looked back over his shoulder. He said, "Kidding me?"

"It wasn't a staircase, but it was a hole. And it was at *least* two miles deep."

"Oh, you mean the *fissure*. Nuts, that doesn't mean anything. Mars is full of fissures."

"Exactly, Bigman. And I've got detailed maps of the fissures on Mars too. Right here. There's a funny thing about them which, as nearly as I can tell from the geography you brought me, hasn't been noticed before. Not a single fissure crosses a single cavern."

"What does that prove?"

"It makes sense. If you were building airtight caverns, would you want a hole in the roof? And there's another coincidence. Each fissure cuts close to a cavern, but without ever touching, as though the Martians used them as points of entrance into the caverns they were building."

The sand-car stopped suddenly. In the dim light of the viewers, which were still focused on two maps projected simultaneously upon the flat white surface of the built-in screens, Bigman's face blinked somberly at David in the back seat.

He said, "Wait a minute. Wait a jumping minute. Where are we going?"

"To the fissure, Bigman. About two miles past the place where Griswold went over. That's where it gets nearest the cavern under the Makian farms."

"And once we get there?"

David said calmly, "Once we get there, why, I'll climb down into it."

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## Into the Fissure

“Are you serious?” asked Bigman.

“Quite serious,” said David.

“You mean”—he tried to smile—“there really *are* Martians?”

“Would you believe me if I said there were?”

“No.” He came to a sudden decision. “But that doesn’t matter. I said I wanted to be in this, and I don’t back out.” Once again the car moved forward.

The feeble dawn of the Martian heavens was beginning to light the grim landscape when the car approached the fissure. It had been creeping for half an hour previous, its powerful headlights probing the darkness, lest, as Bigman had put it, they find the fissure a little too quickly.

David climbed out of the car and approached the giant crack. No light penetrated it as yet. It was a black and ominous hole in the ground, stretching out of sight in either direction, with the opposing lip a featureless gray prominence. He pointed his flash downward and the beam of light faded into nothing.

Bigman came up behind him. “Are you sure this is the right place?”

David looked about him. “According to the maps, this is the closest approach to a cavern. How far are we from the nearest farm section?”

“Two miles easy.”

The Earthman nodded. Farmboys were unlikely to touch this spot except possibly during checkup.

He said, “No use waiting then.”

Bigman said, “How are you going to do it, anyway?”

David had already lifted the box which Bigman had obtained in Wingrad City out of the car. He tore it open and took out the contents. "Ever see one of these?" he asked.

Bigman shook his head. He twiddled a piece of it between gloved thumb and forefinger. It consisted of a pair of long ropes with a silky sheen connected at twelve-inch intervals by crosspieces.

"It's a rope ladder, I suppose," he said.

"Yes," said David, "but not rope. This is spun silicone, lighter than magnesium, stronger than steel, and barely affected by any temperatures we're likely to meet on Mars. Mostly, it's used on the Moon, where the gravity is really low and the mountains really high. On Mars, there's not much use for it because it's a rather flat world. In fact, it was a stroke of luck that the Council could locate one in the city."

"What good will this do you?" Bigman was running the length of it through his hands until the ladder ended in a thick bulb of metal.

"Careful," said David. "If the safety catch isn't on, you can damage yourself pretty badly."

He took it gently out of Bigman's hand, encircled the metal bulb with his own strong hands, and twisted each hand in opposing directions. There was a sharp little click, but when he released his hold, the bulb seemed unchanged.

"Now look." The soil of Mars thinned and vanished at the approaches of the fissure, and the cliff edge was naked rock. David bent and, with a light pressure, touched the bulb end of the ladder to the crag, faintly ruddy in the flushing sky of morning. He took his hand away, and it remained there, balanced at an odd angle.

"Lift it up," he said.

Bigman looked at him, bent, and lifted. For a moment he looked puzzled as the bulb remained where it was; then he yanked with all his might and still nothing happened.

He looked up angrily. "What did you do?"

David smiled. "When the safety is released, any pressure at the tip of the bulb releases a thin force-field about twelve inches long that cuts right into the rock. The end of the field then expands outward in each direction about six inches, to make a 'T' of force. The limits of the field are blunt, not sharp, so you can't loosen it by yanking it from side to side. The only way you can pull out the bulb is to break the rock clean off."

"How do you release it?"

David ran the hundred-foot length of ladder through his hands and came up with a similar bulb at the other end. He twisted it, then

pushed it at the rock. It remained there, and after some fifteen seconds the first bulb fell on its side.

"If you activate one bulb," he said, "the other is automatically deactivated. Or, of course, if you adjust the safety catch of an activated bulb"—he bent down and did so—"it is deactivated"—he lifted it up—"and the other remains unaffected."

Bigman squatted. Where the two bulbs had been there were now narrow cuts about four inches long in the living rock. They were too narrow for him to insert his fingernail.

David Starr was speaking. He said, "I've got water and food for a week. I'm afraid my oxygen won't last more than two days, but you wait a week anyway. If I'm not back then, this is the letter you're to deliver to the Council headquarters."

"Hold on. You don't really think these fairy-tale Martians——"

"I mean lots of things. I mean I may slip. The rope ladder may be faulty. I may accidentally anchor it to a point at which there is a fault in the rock. Anything. So can I rely on you?"

Bigman looked disappointed. "But that's a fine situation. Am I supposed to sit around up here while you take all the risks?"

"It's the way a team works, Bigman. You know that."

He was stooping at the lip of the fissure. The sun was edging over the horizon before them and the sky had faded from black to purple. The fissure, however, remained a forbidding dusky abyss. The sparse atmosphere of Mars did not scatter light very well, and only when the sun was directly overhead was the eternal night of the fissure dispelled.

Stolidly David tossed the ladder into the fissure. Its fiber made no noise as it swung against the rock, upheld by the knob which held tightly to the stony lip. A hundred feet below they could hear the other knob thump once or twice.

David yanked at the rope to test its hold, then, seizing the top-most rung with his hands, he vaulted into the abyss himself. It was a feathery feeling floating down at less than half the speed one would have on Earth, but there it ended. His actual weight was not far below Earth normal, considering the two oxygen cylinders he carried, each the largest size available at the farm.

His head projected above surface. Bigman was staring at him, wide-eyed. David said, "Now get away and take the car with you. Return the films and viewers to the Council and leave the scooter."

"Right," said Bigman. All cars carried emergency four-wheeled platforms that could travel fifty miles under their own power. They were uncomfortable and no protection at all against cold or, worse

still, against dust storms. Still, when a sand-car broke down miles from home, scooters were better than waiting to be found.

David Starr looked downward. It was too dark to see the end of the ladder, the sheen of which glimmered into grayness. Allowing his legs to dangle free, he scrambled down the face of the cliff rung by rung, counting as he did so. At the eightieth rung he reached for the free end of the ladder and reeled it in after hooking an arm about and through a rung, leaving both hands free.

When the lower bulb was in his hand, he reached to the right and thrust it at the face of the cliff. It remained there. He yanked hard at it, and it held. Quickly he swung himself from his previous position to the branch of the rope ladder now dangling from the new anchor. One hand remained on the portion of the ladder he had left, waiting for it to give. When it did so, he swung it outward, so that the bulb from above would swing wide of himself as it fell.

He felt a slight pendulum effect upon himself as the bulb, which had been at the lip of the fissure thirty seconds before, now lashed back and forth some one hundred and eighty feet below the surface of Mars. He looked up. There was a broad swath of purple sky to be seen, but he knew it would get narrower with each rung he descended.

Down he went, and at every eighty rungs he set himself a new anchor, first to the right of the old one and then to the left, maintaining in general a straight passage downward.

Six hours had passed, and once again David paused for a bite of concentrated ration and a swig of water from his canteen. Catching his feet in rungs and relaxing the pressure on his arms was all he could do in the way of resting. Nowhere in all the descent had there been a horizontal ledge large enough for him to catch his breath upon. At least nowhere within the reach of his flashlight.

That was bad in other ways. It meant that the trip upward, supposing that there ever was to be a trip upward, would have to be made by the slow method of jabbing each bulb, in turn, at a spot as high as one could reach. It could be done and had been—on the Moon. On Mars the gravity was more than twice what it was on the Moon, and progress would be horribly slow, far slower than the journey down was. And that, David realized grimly, was slow enough. He could not be much more than a mile below surface.

Downward there was only black. Above, the now narrow streak of sky had brightened. David decided to wait. It was past eleven by his Earth-time watch, and that had fair significance on Mars, where the period of rotation was only half an hour longer than on Earth. The sun would soon be overhead.

He thought soberly that the maps of the Martian caverns were at best only rough approximations from the action of vibration waves under the planet's surface. With very slight errors existing he could be miles away from the true entrance into the caverns.

And then, too, there might be no entrances at all. The caverns might be purely natural phenomena, like the Carlsbad Caverns on Earth. Except, of course, that these Martian caverns were hundreds of miles across.

He waited, almost drowsily, hanging loosely over nothing, in darkness and silence. He flexed his numbed fingers. Even under the gloves, the Martian cold nipped. When he was descending, the activity kept him warm; when he waited, the cold burrowed in.

He had almost decided to renew his climbing to keep from freezing when he caught the first approach of dim light. He looked up and saw the slowly descending dim yellow of sunlight. Over the lip of the fissure, into the small streak of sky that remained to his vision, the sun came. It took ten minutes for the light to increase to maximum, when the entire burning globe had become visible. Small though it was to an Earthman's eyes, its width was one quarter that of the fissure opening. David knew the light would last half an hour or less and that the darkness would return for twenty-four hours thereafter.

He looked about rapidly, swinging as he did so. The wall of the fissure was by no means straight. It was jagged, but it was everywhere vertical. It was as though a cut had been made into the Martian soil with a badly crimped knife, but one which cut straight down. The opposite wall was considerably closer than it had been at the surface, but David estimated that there would be at least another mile or two of descent before it would be close enough to touch.

Still, it all amounted to nothing. Nothing!

And then he saw the patch of blackness. David's breath whistled sharply. There was considerable blackness elsewhere. Wherever an outcropping of rock cast a shadow, there was blackness. It was just that this particular patch was rectangular. It had perfect, or what seemed to be perfect, right angles. It *had* to be artificial. It was like a door of some sort set into the rock.

Quickly he caught up the lower knob of the ladder, set it as far out in the direction of the patch as he could reach, gathered in the other knob as it fell, and set it still farther out in the same direction. He alternated them as rapidly as he could, hoping savagely that the sun would hold out, that the patch itself was not, somehow, an illusion.

The sun had crossed the fissure and now touched the lip of the wall from which he dangled. The rock he faced, which had been yellow-red, turned gray again. But there was still light upon the other wall, and he could see well enough. He was less than a hundred feet away, and each alternation of ladder knobs brought him a yard closer.

Glimmering, the sunlight traveled up the opposite wall, and the dusk was closing in when he reached the edge of the patch. His gloved fingers closed upon the edge of a cavity set into the rock. *It was smooth.* The line had neither fault nor flaw. *It had* to be made by intelligence.

He needed sunlight no longer. The small beam of the flashlight would be enough. He swung his ladder into the inset, and when he dropped a knob he felt it clunk sharply on rock beneath. A horizontal ledge!

He descended quickly, and in a few minutes found himself standing on rock. For the first time in more than six hours he was standing on something solid. He found the inactive bulb, thrust it into rock at waist level, brought down the ladder, then adjusted the safety latch and pulled out the bulb. For the first time in more than six hours both ends of the ladder were free.

David looped the ladder around his waist and arm and looked about. The cavity in the face of the cliff was about ten feet high and six across. With his flashlight pointing the way, he walked inward and came face to face with a smooth and quite solid stone slab that barred farther progress.

It, too, was the work of intelligence. It had to be. But it remained an effective barrier to further exploration just the same.

There was a sudden pain in his ears, and he spun sharply. There could be only one explanation. Somehow the air pressure about himself was increasing. He moved back toward the face of the cliff and was not surprised to find that the opening through which he had come was barred by rock which had not previously been there. It had slid into place without a sound.

His heart beat quickly. He was obviously in an air lock of some sort. Carefully he removed his nose-piece and sampled the new air. It felt good in his lungs, and it was warm.

He advanced to the inner slab of rock and waited confidently for it to lift up and away.

It did exactly that, but a full minute before it did so David felt his arms compressed suddenly against his body as though a steel lasso had been thrown about him and tightened. He had time for one star-

tled cry, and then his legs pushed one against the other under similar pressure.

And so it was that when the inner door opened and the way to enter the cavern was clear before him, David Starr could move neither hand nor foot.



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## Birth of the Space Ranger

David waited. There was no use in speaking to empty air. Presumably the entities who had built the caverns and who could so immobilize him in so immaterial a fashion would be perfectly capable of playing all the cards.

He felt himself lift from the ground and slowly tip backward until the line of his body was parallel with the floor. He tried to crane his head upward but found it to be nearly immovable. The bonds were not so strong as those which had tightened about his limbs. It was rather like a harness of velvety rubber that gave, but only so far.

He moved inward smoothly. It was like entering warm, fragrant, breathable water. As his head left the air lock, the last portion of his body to do so, a dreamless sleep closed over him.

David Starr opened his eyes with no sensation of any passage of time but, with the sensation of life near by. Exactly what form that sensation took he could not say. He was first conscious of the heat. It was that of a hot summer day on Earth. Second, there was the dim red light that surrounded him and that scarcely sufficed for vision. By it he could barely make out the walls of a small room as he turned his head. Nowhere was there motion; nowhere life.

And yet somewhere near there must be the working of a powerful intelligence. David felt that in a way he could not explain.

Cautiously he tried to move a hand, and it lifted without hindrance. Wonderingly he sat upright and found himself on a surface that yielded and gave but whose nature he could not make out in the dimness.

The voice came suddenly. "The creature is aware of its surroundings . . ." The last part of the statement was a jumble of meaningless

sound. David could not identify the direction from which the voice came. It was from all directions and no direction.

A second voice sounded. It was different, though the difference was a subtle one. It was gentler, smoother, more feminine, somehow. "Are you well, creature?"

David said, "I cannot see you."

The first voice (David thought of it as a man's) sounded again. "It is then as I told . . ." Again the jumble. "You are not equipped to see mind."

The last phrase was blurred, but to David it sounded like "see mind."

"I can see matter," he said, "but there is scarcely light to see by."

There was a silence, as though the two were conferring apart, and then there was the gentle thrusting of an object into David's hand. It was his flashlight.

"Has this," came the masculine voice, "any significance to you with regard to light?"

"Why, certainly. Don't you see?" He flashed it on and quickly splashed the light beam about himself. The room *was* empty of life, and quite bare. The surface he rested upon was transparent to light and some four feet off the floor.

"It is as I said," said the feminine voice excitedly. "The creature's sight sense is activated by short-wave radiation."

"But most of the radiation of the instrument is in the infrared. It was that I judged by," protested the other. The light was brightening even as the voice sounded, turning first orange, then yellow, and finally white.

David said, "Can you cool the room too?"

"But it has been carefully adjusted to the temperature of your body."

"Nevertheless, I would have it cooler."

They were co-operative, at least. A cool wind swept over David, welcome and refreshing. He let the temperature drop to seventy before he stopped them.

David thought, "I think you are communicating directly with my mind. Presumably that is why I seem to hear you speaking International English."

The masculine voice said, "The last phrase is a jumble, but certainly we are communicating. How else would that be done?"

David nodded to himself. That accounted for the occasional noisy blur. When a proper name was used that had no accompanying pic-

ture for his own mind to interpret, it could only be received as a blur. Mental static.

The feminine voice said, "In the early history of our race there are legends that our minds were closed to one another and that we communicated by means of symbols for the eye and ear. From your question I cannot help but wonder if this is the case with your own people, creature."

David said, "That is so. How long is it since I was brought into the cavern?"

The masculine voice said, "Not quite a planetary rotation. We apologize for any inconvenience we caused you, but it was our first opportunity to study one of the new surface creatures alive. We have salvaged several before this, one only a short while ago, but none were functional, and the amount of information obtained from such is, of necessity, limited."

David wondered if Griswold had been the recently salvaged corpse. He said cautiously, "Is your examination of myself over?"

The feminine voice responded quickly. "You fear harm. There is a distinct impression in your mind that we may be so savage as to interfere with your life functions in order to gain knowledge. How horrible!"

"I'm sorry if I have offended you. It is merely that I am unacquainted with your methods."

The masculine voice said, "We know all we need. We are quite capable of making a molecule-by-molecule investigation of your body without the need of physical contact at all. The evidence of our psycho-mechanisms is quite sufficient."

"What are these psycho-mechanisms you mention?"

"Are you acquainted with matter-mind transformations?"

"I am afraid not."

There was a pause, and then the masculine voice said curtly, "I have just investigated your mind. I am afraid, judging by its texture, that your grasp of scientific principles is insufficient for you to understand my explanations."

David felt put in his place. He said, "My apologies."

The masculine voice went on. "I would ask you some questions."

"Proceed, sir."

"What was the last part of your statement?"

"It was merely a manner of honorable address."

A pause. "Oh yes, I see. You complicate your communication symbols in accordance with the person you address. An odd custom.

But I delay. Tell me, creature, you radiate an enormous heat. Are you ill or can this be normal?"

"It is quite normal. The dead bodies you examined were undoubtedly at the temperature of their environment, whatever it was. But while functioning, our bodies maintain a constant temperature that best suits us."

"Then you are not natives of this planet?"

David said, "Before I answer this question, may I ask you what your attitude would be toward creatures like myself if we originated from another planet?"

"I assure you that you and your fellow creatures are a matter of indifference to us except in so far as you arouse our curiosity. I see from your mind that you are uneasy with regard to our motives. I see that you fear our hostility. Remove such thoughts."

"Can you not read in my mind, then, the answer to your questions? Why do you question me specifically?"

"I can only read emotions and general attitudes in absence of precise communication. But, then, you are a creature and would not understand. For precise information, communication must involve an effort of will. If it will help to ease your mind, I will inform you that we have every reason to believe you to be a member of a race not native to this planet. For one thing, the composition of your tissues is utterly different from that of any living thing ever known to have existed on the face of the world. Your body heat indicates also that you come from another world, a warmer one."

"You are correct. We come from Earth."

"I do not understand the last word."

"From the planet next nearer the sun than this one."

"So! That is most interesting. At the time our race retired to the caverns some half a million revolutions ago we knew your planet to possess life, though probably not intelligence. Was your race intelligent then?"

"Scarcely," said David. One million Earth-years had passed since the Martians had left the surface of their planet.

"It is indeed interesting. I must carry this report to the Central Mind directly. Come, ——."

"Let me remain behind, ——. I would like to communicate further with this creature."

"As you please."

The feminine voice said, "Tell me of your world."

David spoke freely. He felt a pleasant, almost delicious, languor.

Suspicion departed and there was no reason he could not answer truthfully and in full. These beings were kind and friendly. He bubbled with information.

And then she released her hold on his mind and he stopped abruptly. Angrily he said, "What have I been saying?"

"Nothing of harm," the feminine voice assured him. "I have merely repressed the inhibitions of your mind. It is unlawful to do so, and I would not have dared do it if ——— were here. But you are only a creature and I am so curious. I knew that your suspicion was too deep to let you talk without a little help from me and your suspicion is so misplaced. We would never harm you creatures as long as you do not intrude upon us."

"We have already done so, have we not?" asked David. "We occupy your planet from end to end."

"You are still testing me. You mistrust me. The surface of the planet is of no interest to us. *This* is home. And yet," the feminine voice seemed almost wistful, "there must be a certain thrill in traveling from world to world. We are well aware that there are many planets in space and many suns. To think that creatures like yourself are inheriting all that. It is all so interesting that I am thankful again and again that we sensed you making your clumsy way down toward us in time to make an opening for you."

"What!" David could not help but shout, although he knew that the sound waves his vocal cords created went unheeded and that only the thoughts of his mind were sensed. "You *made* that opening?"

"Not I alone. ——— helped. That is why we were given the chance to investigate you."

"But how did you do it?"

"Why, by willing it."

"I don't understand."

"But it is simple. Can you not see it in my mind? But I forget. You are a creature. You see, when we retired to the caverns we were forced to destroy many thousands of cubic miles of matter to make space for ourselves under the surface. There was nowhere to store the matter as such, so we converted it to energy and ——— ——— ——— ———."

"No, no, I don't follow you."

"You don't understand? In that case, all I can say is that the energy was stored in such a way that it could be tapped by an effort of the mind."

"But if all the matter that was once in these vast caverns were converted into energy——"

"There would be a great deal. Certainly. We have lived on that energy for half a million revolutions, and it is calculated that we have enough for twenty million more revolutions. Even before we left the surface we had studied the relation of mind and matter and since we have come to the caverns we have perfected the science to such a degree that we have abandoned matter entirely as far as our personal use is concerned. We are creatures of pure mind and energy, who never die and are no longer born. I am here with you, but since you cannot sense mind, you are not aware of me except with your mind."

"But surely people such as yourselves can make themselves heir to all the universe."

"You fear that we shall contest the universe with poor material creatures such as yourself? That we shall fight for a place among the stars? That is silly. All the universe is here with us. We are sufficient to ourselves."

David was silent. Then slowly he put his hands to his head as he had the sensation of fine, very fine tendrils gently touching his mind. It was the first time the feeling had come, and he shrank from its intimacy.

She said, "My apologies again. But you are such an interesting creature. Your mind tells me that your fellow creatures are in great danger and you suspect that we might be the cause. I assure you, creature, it is not so."

She said it simply. David had no course but to believe.

He said, "Your companion said my tissue chemistry was entirely different from that of any life on Mars. May I ask how?"

"It is composed of a nitrogenous material."

"Protein," explained David.

"I do not understand that word."

"What are your tissues composed of?"

"Of ————. It is entirely different. There is practically no nitrogen in it."

"You could offer me no food, then?"

"I am afraid not. ———— says any organic matter of our planet would be quickly poisonous to you. We could manufacture simple compounds of your life type that you might feed on, but the complex nitrogenous material that forms the bulk of your tissue is quite beyond us without much study. Are you hungry, creature?" There was no mistaking the sympathy and concern in her thoughts. (David persisted in thinking of it as a voice.)

He said, "For the moment I have still my own food."

The feminine voice said, "It seems unpleasant for me to think of

you simply as a creature. What is your name?" Then, as though she feared she might not be understood, "How do your fellow creatures identify you?"

"I am called David Starr."

"I do not understand that except that there seems a reference to the suns of the universe. Do they call you that because you are a traveler through space?"

"No. Many of my people travel through space. 'Starr' has no particular meaning at present. It is simply a sound to identify me, as your names are simply sounds. At least they make no picture; I cannot understand them."

"What a pity. You should have a name which would indicate your travels through space; the way in which you range from one end of the universe to the other. If I were a creature such as yourself, it seems to me that it would be fitting I should be called 'Space Ranger.'"

And so it was that from the lips of a living creature he did not see and could never see in its true form David Starr heard, for the first time, the name by which, eventually, all the Galaxy would know him.

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## The Storm

A deeper, slower voice now took form in David's mind. It said gravely, "I greet you, creature. It is a good name ——— has just given you."

The feminine voice said, "I make way for you ——— ———."

By the loss of a faint touch upon his mind David became unmistakably aware that the owner of the feminine voice was no longer in mental contact. He turned warily, laboring once more under the illusion that there was direction to these voices and finding his untried mind still attempting to interpret in the old inadequate ways something with which it had never before come in contact. The voice came from no direction, of course. It was within his mind.

The creature of the deep voice gauged the difficulty. It said, "You are disturbed by the failure of your sense equipment to detect me and I do not wish you to be disturbed. I could adopt the outward physical appearance of a creature such as yourself but that would be a poor and undignified imposture. Will this suffice?"

David Starr watched the glimmer appear in the air before him. It was a soft streak of blue-green light about seven feet high and a foot wide.

He said calmly, "That is quite sufficient."

The deep voice said, "Good! And now let me explain who I am. I am the Administrator of ——— ———. The report of the capture of a live specimen of the new surface life came to me as a matter of course. I will examine your mind."

The office of the new being had been a jumble of sound, and nothing more, to David, but he had caught the unmistakable sense of



dignity and responsibility that accompanied it. Nevertheless he said firmly, "I would much prefer that you remained outside my mind."

"Your modesty," said the deep voice, "is quite understandable and praiseworthy. I should explain that my inspection would be confined most carefully to the outer fringes only. I would avoid very scrupulously any intrusion on your inner privacy."

David tensed his muscles uselessly. For long minutes there was nothing. Even the illusive feathery touch upon his mind, that had been present when the owner of the feminine voice had probed it, was absent from this new and more experienced inspection. And yet David was aware, without knowing how he could possibly be aware, of the compartments of his mind being delicately opened, then closed, without pain or disturbance.

The deep voice said, "I thank you. You will be released very shortly and returned to the surface."

David said defiantly, "What have you found in my mind?"

"Enough to pity your fellows. We of the Inner Life were once like yourselves so we have some comprehension of it. Your people are out of balance with the universe. You have a questioning mind that seeks to understand what it dimly senses, without possessing the truer, deeper senses that alone can reveal reality to you. In your futile seeking after the shadows that encompass you, you drive through space to the outermost limits of the Galaxy. It is as I have said; ——— has named you well. You are a race of Space Rangers indeed.

"Yet of what use is your ranging? The true victory is within. To understand the material universe, you must first become divorced from it as we are. We have turned away from the stars and toward ourselves. We have retreated to the caverns of our one world and abandoned our bodies. With us there is no longer death, except when a mind would rest; or birth, except when a mind gone to rest must be replaced."

David said, "Yet you are not all-sufficient to yourselves. Some of you suffer from curiosity. The being who spoke to me before wished to know of Earth."

"——— is recently born. Her days are not equal to a hundred revolutions of the planet about the sun. Her control of thought patterns is imperfect. We who are mature can easily conceive all the various designs into which your Earth history could have been woven. Few of them would be comprehensible to yourself, and not in an infinity of years could we have exhausted the thoughts possible in the consideration of your one world, and each thought would have been as fascinating and stimulating as the one thought which happens to represent reality. In time ——— will learn that this is so."

"Yet you yourself take the trouble to examine my mind."

"In order that I may make certain of that which I previously merely suspected. Your race has the capacity for growth. Under the best circumstances a million revolutions of our planet—a moment in the life of the Galaxy—may see it achieve the Inner Life. That would be good. My race would have a companion in eternity and companionship would benefit us mutually."

"You say we *may* achieve it," said David cautiously.

"Your species have certain tendencies my people never had. From your mind I can see easily that there are tendencies against the welfare of the whole."

"If you speak of such things as crime and war, then see in my mind that the vast majority of humans fights the anti-social tendencies and that though our progress against them is slow, it is certain."

"I see that. I see more. I see that you yourself are eager for the welfare of the whole. You have a strong and healthy mind, the essence of which I would not be sorry to see made into one of ours. I would like to help you in your strivings."

"How?" demanded David.

"Your mind is full of suspicion again. Relieve your tension. My help would not be through personal interference in the activities of your people, I assure you. Such interference would be incomprehensible to yourselves and undignified for myself. Let me suggest instead the two inadequacies which you are most aware of in yourself.

"First, since you are composed of unstable ingredients, you are a creature of no permanence. Not only will you decompose and dissolve in a few revolutions of the planet, but if before then you are subjected to any of a thousand different stresses, you will die. Secondly, you feel that you can work best in secrecy, yet not long ago a fellow creature recognized your true identity although you had pretended to a different identity altogether. Is what I have said true?"

David said, "It is true. But what can you do about it?"

The deep voice said, "It is already done and in your hand."

And there was a soft-textured something in David Starr's hand. His fingers almost let it drop before they realized they were holding it. It was a nearly weightless strip of ——— Well, of what?

The deep voice answered the unspoken thought placidly. "It is neither gauze, nor fiber, nor plastic, nor metal. It is not matter at all as your mind understands matter. It is ———. Put it over your eyes."

David did as he was told, and it sprang from his hands as though it had a primitive life of its own, folding softly and warmly against

every fold of structure of his forehead, eyes, and nose; yet it did not prevent him from breathing or from blinking his eyes.

“What has been accomplished?” he asked.

Before the words were out of his mouth there was a mirror before him, manufactured out of energy as silently and quickly as thought itself. In it he could see himself but dimly. His farmboy costume, from hip boots to wide lapels, appeared out of focus through a shadowy mist that changed continuously, as though it were a thin smoke that drifted yet never vanished. From his upper lip to the top of his head all was lost in a shimmer of light that blazed without blinding and through which nothing could be seen. As he stared, the mirror vanished, returning to the store of energy from which it had been momentarily withdrawn.

David asked wonderingly, “Is that how I would appear to others?”

“Yes, if those others had only the sensory equipment you yourself have.”

“Yet I can see perfectly. That means that light rays enter the shield. Why may they not leave then and reveal my face?”

“They do leave, as you say, but they are changed in the passage and reveal only what you see in the mirror. To explain that properly, I must use concepts lacking in your mind’s understanding.”

“And the rest?” David’s hands moved slowly over the smoke that encircled him. He felt nothing.

The deep voice again answered the voiceless thought. “*You* feel nothing. Yet what appears to you as smoke is a barrier which is resistant to short-wave radiation and impassable to material objects of larger than molecular size.”

“You mean it is a personal force-shield?”

“That is a crude description, yes.”

David said, “Great Galaxy, it’s impossible! It has been definitely proven that no force-field small enough to protect a man from radiation and from material inertia can be generated by any machine capable of being carried by a man.”

“And so it is to any science of which your fellows are capable of evolving. But the mask you wear is not a power source. It is instead a storage device of energy which, for instance, can be derived from a few moments’ exposure to a sun radiating as strongly as ours is from the distance of this planet. It is, further, a mechanism for releasing that energy at mental demand. Since your own mind is incapable of controlling the power, it has been adjusted to the char-

acteristics of your mind and will operate automatically as needed. Remove the mask now."

David lifted his hand to his eyes and, again responsive to his will, the mask fell away and was only a strip of gauze in his hand.

The deep voice spoke for a last time. "And now you must leave us, Space Ranger."

And as gently as can be imagined, consciousness left David Starr.

Nor was there any transition in his return to consciousness. It came back in its entirety. There wasn't even a moment's uncertainty as to his whereabouts; none of the "Where am I?" attitude.

He knew with surety that he was standing on his good two legs upon the surface of Mars; that he was wearing the nosepiece again and breathing through it; that behind him was the exact place at the lip of the fissure where he had thrust the rope ladder's anchor for the beginning of the descent; that to his left, half-hidden among the rocks, was the scooter which Bigman had left behind.

He even knew the exact manner in which he had been returned to the surface. It was not memory; it was information deliberately inserted in his mind, probably as a final device to impress him with the power of the Martians over matter-energy interconversions. They had dissolved a tunnel to the surface for him. They had lifted him against gravity at almost rocket speed, turning the solid rock to energy before him and congealing the energy to rock once more behind him, until he was standing on the planet's outer skin once more.

There were even words in his mind that he had never consciously heard. They were in the feminine voice of the caverns, and the words were simply these: "Have no fear, Space Ranger!"

He stepped forward and was aware that the warm, Earth-like surroundings that had been prepared for him in the cavern below no longer existed. He felt the cold the more for the contrast and the wind was stronger than any he had felt yet on Mars. The sun was low in the east as it had been when he first descended the fissure. Was that the previous dawn? He had no way of judging the passage of time during his unconscious intervals, but he felt certain his descent had not been more than two dawns before anyway.

There was a difference to the sky. It seemed bluer and the sun was redder. David frowned thoughtfully for a moment, then shrugged. He was becoming accustomed to the Martian landscape, that was all. It was beginning to seem more familiar and, through habit, he was interpreting it in the old Earthly patterns.

Meanwhile it would be better to begin the return to the farm

dome immediately. The scooter was by no means so quick as a sand-car nor as comfortable. The less time spent on it the better.

He took approximate sightings among the rock formations and felt like an old hand because of it. The farmboys found their way across what seemed trackless desert by just this method. They would sight along a rock that "looked like a watermelon on a hat," proceed in that direction until level with one that "looked like a spaceship with two off-center jets" and head between it and a farther rock that "looked like a box with its top stove in." It was a crude method but it required no instruments other than a retentive memory and a picturesque imagination, and the farmboys had those in plenty.

David was following the route Bigman had recommended for speediest return with the least chance of going wrong among the less spectacular formations. The scooter jounced along, leaping crazily when it struck ridges and kicking up the dust when it turned. David rode with it, digging his heels firmly into the sockets provided for them and holding a metal steering leash tightly in each hand. He made no effort to cut his speed. Even if the vehicle turned over, there would be little chance for much harm to himself under Martian gravity.

It was another consideration that stopped him: the queer taste in his mouth and the itch along the side of his jawbone and down the line of his backbone. There was a faint grittiness in his mouth, and he looked back with distaste at the plume of dust that jetted out behind him like rocket exhaust. Strange that it should work its way forward and around him to fill his mouth as it did.

Forward and around! *Great Galaxy!* The thought that came to him at that moment clamped a cold, stifling hand upon his heart and throat.

He slowed the scooter and headed for a rocky ridge where it could stir up no dust. There he stopped it and waited for the air to grow clear. But it didn't. His tongue worked about, tasting the inside of his mouth and shrinking from the increasing roughness that came of fine grit. He looked at the redder sun and bluer sky with new understanding. It was the general dust in the air that was scattering more light, taking the blue from the sun and adding it to the sky in general. His lips were growing dry and the itching was spreading.

There was no longer doubt about it, and with a grim intensity of purpose he flung himself upon his scooter and dashed at top speed across the rocks, gravel, and dust.

Dust!

Dust!

Even on Earth men knew intimately of the Martian dust storm, which resembled only in sound the sandstorm of the Earthly deserts. It was the deadliest storm known to the inhabited Solar System. No man, caught as David Starr was now, without a sand-car as protection, miles from the nearest shelter, had ever, in all the history of Mars, survived a dust storm. Men had rolled in death throes within fifty feet of a dome, unable to make the distance while observers within neither dared nor could sally to the rescue without a sand-car.

David Starr knew that only minutes separated him from the same agonizing death. Already the dust was creeping remorselessly between his nosepiece and the skin of his face. He could feel it in his watering, blinking eyes.

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## The Missing Piece

The nature of the Martian dust storm is not well understood. Like Earth's Moon, the surface of Mars is, to a large extent, covered by fine dust. Unlike the Moon, Mars possesses an atmosphere capable of stirring up that dust. Usually this is not a serious matter. The Martian atmosphere is thin and winds are not long-sustained.

But occasionally, for reasons unknown, though possibly connected with electron bombardments from space, the dust becomes electrically charged and each particle repels its neighbors. Even without wind they would tend to lift upward. Each step would raise a cloud that would refuse to settle, but would drift and wisp out through the air.

When to this a wind is added, a fully developed dust storm might be said to exist. The dust is never thick enough to obscure vision; that isn't its danger. It is rather the pervasiveness of the dust that kills.

The dust particles are extremely fine and penetrate everywhere. Clothes cannot keep them out; the shelter of a rocky ledge means nothing; even the nosepiece with its broad gasket fitting against the face is helpless to prevent the individual particle from working its way through.

At the height of a storm two minutes would suffice to arouse an unbearable itching, five minutes would virtually blind a man, and fifteen minutes would kill him. Even a mild storm, so gentle that it may not even be noticed by the people exposed, is sufficient to redden exposed skin in what are called dust burns.

David Starr knew all this and more. He knew that his own skin was reddening. He was coughing without its having any effect on

clearing his caking throat. He had tried clamping his mouth shut, blowing his breath out during exhalations through the smallest opening he could manage. It didn't help. The dust crept in, working its way past his lips. The scooter was jerking irregularly now as the dust did to its motor what it was doing to David.

His eyes were swollen nearly closed now. The tears that streamed out were accumulating against the gasket at the bottom of the nose-piece and were fogging the eyepieces, through which he could see nothing anyway.

*Nothing* could stop those tiny dust particles but the elaborately machined seams of a dome or a sand-car. *Nothing*.

Nothing?

Through the maddening itch and the racking cough he was thinking desperately of the Martians. Would they have known that a dust storm was brewing? *Could* they have? Would they have sent him to the surface if they had known? From his mind they must have gleaned the information that he had only a scooter to carry him back to the dome. They might have as easily transported him to the surface just outside the farm dome, or, for that matter, even inside the dome.

They *must* have known conditions were right for a dust storm. He remembered how the being with the deep voice had been so abrupt in his decision to return David to the surface, as though he hurried in order that time might be allowed for David to be caught in the storm.

And yet the last words of the feminine voice, the words he had not consciously heard and which, therefore, he was certain had been inserted in his mind while he was being borne through rock to the surface, were: "Have no fear, Space Ranger."

Even as he thought all this he knew the answer. One hand was fumbling in his pocket, the other at his nose-piece. As the nose-piece lifted off, the partially protected nose and eyes received a fresh surge of dust, burning and irritating.

He had the irresistible desire to sneeze, but fought it back. The involuntary intake of breath would fill his lungs with quantities of the dust. That in itself might be fatal.

But he was brining up the strip of gauze he had taken from his pocket, letting it wrap about his eyes and nose, and then over it he slapped the nose-piece again.

Only then did he sneeze. It meant he drew in vast quantities of Mars's useless atmospheric gases, but no dust was coming. He followed that by force-breathing, gasping in as much oxygen as he could and puffing it out, flinging the dust of his mouth away; alternating



that with deliberate inhalations through the mouth to prevent any oncoming of oxygen drunkenness.

Gradually, as the tears washed the dust out of his eyes and no new dust entered, he found he could see again. His limbs and body were obscured by the smokiness of the force-shield that surrounded him, and he knew the upper part of his head to be invisible in the glow of his mask.

Air molecules could penetrate the shield freely, but, small though they were, the dust particles were large enough to be stopped. David could see the process with the naked eye. As each dust particle struck the shield, it was halted and the energy of its motion converted into light, so that at its point of attempted penetration a tiny sparkle showed. David found his body an ocean of such sparkles crowding one another, all the brighter as the Martian sun, red and smokily dim through the dust, allowed the ground below to remain in semi-darkness.

David slapped and brushed at his clothing. Dust clouds arose, too fine to see even if the cloudiness of the shield had not prevented sight in any case. The dust left but could not return. Gradually he became almost clear of the particles. He looked dubiously at the scooter and attempted to start its motor. He was rewarded only by a short, grating noise and then silence. It was to be expected. Unlike the sand-cars, scooters did not, *could* not, have enclosed motors.

He would have to walk. The thought was not a particularly frightening one. The farm dome was little more than two miles away and he had plenty of oxygen. His cylinders were full. The Martians had seen to that before sending him back.

He thought he understood them now. They *did* know the dust storm was coming. They might even have helped it along. It would be strange if, with their long experience with Martian weather and their advanced science, they had not learned the fundamental causes and mechanisms of dust storms. But in sending him out to face the storm, they knew he had the perfect defense in his pocket. They had not warned him of either the ordeal that awaited him or of the defense he carried. It made sense. If he were the man who deserved the gift of the force-shield, he would, or should, think of it himself. If he did not, he was the wrong man for the job.

David smiled grimly even as he winced at the touch of his clothing against inflamed skin as he stretched his legs across the Martian terrain. The Martians were coldly unemotional in risking his life, but he could almost sympathize with them. He had thought quickly

enough to save himself, but he denied himself any pride in that. He should have thought of the mask much sooner.

The force-shield that surrounded him was making it easier to travel. He noted that the shield covered the soles of his boots so that they never made contact with the Martian surface but came to rest some quarter inch above it. The repulsion between himself and the planet was an elastic one, as though he were on many steel springs. That, combined with the low gravity, enabled him to devour the distance between himself and the dome in swinging giant strides.

He was in a hurry. More than anything else at the moment he felt the need of a hot bath.

By the time David reached one of the outer locks of the farm dome the worst of the storm was over and the light flashes on his force-shield had thinned to occasional sparks. It was safe to remove the mask from his eyes.

When the locks had opened for him, there were first of all stares, and then cries, as the farmboys on duty swarmed about him.

“Jumping Jupiter, it’s Williams!”

“Where’ve you been, boy?”

“What happened?”

And above the confused cries and simultaneous questioning there came the shrill cry, “How did you get through the dust storm?”

The question penetrated, and there was a short silence.

Someone said, “Look at his face. It’s like a peeled tomato.”

That was an exaggeration, but there was enough truth to it to impress all who were there. Hands were yanking at his collar which had been tightly bound about his neck in the fight against the Martian cold. They shuffled him into a seat and put in a call for Hennes.

Hennes arrived in ten minutes, hopping off a scooter and approaching with a look that was compounded of annoyance and anger. There were no visible signs of any relief at the safe return of a man in his employ.

He barked, “What’s this all about, Williams?”

David lifted his eyes and said coolly, “I was lost.”

“Oh, is that what you call it? Gone for two days and you were just lost. How did you manage it?”

“I thought I’d take a walk and I walked too far.”

“You thought you needed a breath of air, so you’ve been walking through two Martian nights? Do you expect me to believe that?”

“Are any sand-cars missing?”

One of the farmboys interposed hastily as Hennes reddened further. "He's knocked out, Mr. Hennes. He was out in the dust storm."

Hennes said, "Don't be a fool. If he were out in the dust storm, he wouldn't be sitting here alive."

"Well, I know," the farmboy said, "but look at him."

Hennes looked at him. The redness of his exposed neck and shoulders was a fact that could not be easily argued away.

He said, "Were you in the storm?"

"I'm afraid so," said David.

"How did you get through?"

"There was a man," said David. "A man in smoke and light. The dust didn't bother him. He called himself the Space Ranger."

The men were gathering close. Hennes turned on them furiously, his plump face working.

"Get the Space out of here!" he yelled. "Back to your work. And you, Jonnitel, get a sand-car out here."

It was nearly an hour before the hot bath he craved was allowed David. Hennes permitted no one else to approach him. Over and over again, as he paced the floor of his private office, he would stop in midstride, whirl in sudden fury, and demand of David, "What about this Space Ranger? Where did you meet him? What did he say? What did he do? What's this smoke and light you speak of?"

To all of which David would only shake his head slightly and say, "I took a walk. I got lost. A man calling himself the Space Ranger brought me back."

Hennes gave up eventually. The dome doctor took charge. David got his hot bath. His body was anointed with creams and injected with the proper hormones. He could not avoid the injection of Soporite as well. He was asleep almost before the needle was withdrawn.

He woke to find himself between clean, cool sheets in the sick bay. The reddening of the skin had subsided considerably. They would be at him again, he knew, but he would have to fight them off but a little while longer.

He was sure he had the answer to the food-poisoning mystery now; almost the whole answer. He needed only a missing piece or two, and, of course, legal proof.

He heard the light footstep beyond the head of his bed and stiffened slightly. Was it going to begin again so soon? But it was only Benson who moved into his line of vision. Benson, with his plump

lips pursed, his thin hair in disarray, his whole face a picture of worry. He carried something that looked like an old-fashioned clumsy gun.

He said, "Williams, are you awake?"

David said, "You see I am."

Benson passed the back of his hand across a perspiring forehead. "They don't know I'm here. I shouldn't be, I suppose."

"Why not?"

"Hennes is convinced you're involved with this food poisoning. He's been raving to Makian and myself about it. He claims you've been out somewhere and have nothing to say about it now other than ridiculous stories. Despite anything I can do, I'm afraid you're in terrible trouble."

"Despite anything you can do? You don't believe Hennes's theory about my complicity in all this?"

Benson leaned forward, and David could feel his breath warm on his face as he whispered, "No, I don't. I don't because I think your story is true. That's why I've come here. I must ask you about this creature you speak of, the one you claim was covered with smoke and light. Are you sure it wasn't a hallucination, Williams?"

"I saw him," said David.

"How do you know he was human? Did he speak English?"

"He didn't speak, but he was shaped like a human." David's eyes fastened upon Benson. "Do you think it was a Martian?"

"Ah"—Benson's lips drew back in a spasmodic smile—"you remember my theory. Yes, I think it was a Martian. Think, man, *think!* They're coming out in the open now and every piece of information may be vital. We have so little time."

"Why so little time?" David raised himself to one elbow.

"Of course you don't know what's happened since you've been gone, but frankly, Williams, we are all of us in despair now." He held up the gun-like affair in his hand and said bitterly, "Do you know what this is?"

"I've seen you with it before."

"It's my sampling harpoon; it's my own invention. I take it with me when I'm at the storage bins in the city. It shoots a little hollow pellet attached to it by a metal-mesh cord into a bin of, let us say, grain. At a certain time after shooting an opening appears in the front of the pellet long enough to allow the hollow within to become packed with grain. After that the pellet closes again. I drag it back and empty out the random sample it has accumulated. By varying the time after shooting in which the pellet opens, samples can be taken at various depths in the bin."

David said, "That's ingenious, but why are you carrying it now?"

"Because I'm wondering if I oughtn't to throw it into the disposal unit after I leave you. It was my only weapon for fighting the poisoners. It has done me no good so far, and can certainly do me no good in the future."

"What has happened?" David seized the other's shoulder and gripped it hard. "Tell me."

Benson winced at the pain. He said, "Every member of the farming syndicates has received a new letter from whoever is behind the poisoning. There's no doubt that the letters and the poisonings are caused by the same men, or rather, entities. The letters admit it now."

"What do they say?"

Benson shrugged. "What difference do the details make? What it amounts to is a demand for complete surrender on our part or the food-poisoning attacks will be multiplied a thousandfold. I believe it can and will be done, and if that happens, Earth and Mars, the whole system, in fact, will panic."

He rose to his feet. "I've told Makian and Hennes that I believe you, that your Space Ranger is the clue to the whole thing, but they won't believe me. Hennes, I think, even suspects that I'm in it with you."

He seemed absorbed in his own wrongs.

David said, "How long do we have, Benson?"

"Two days. No, that was yesterday. We have thirty-six hours now."

Thirty-six hours!

David would have to work quickly. Very quickly. But maybe there would yet be time. Without knowing it Benson had given him the missing piece to the mystery.

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## The Council Takes Over

Benson left some ten minutes later. Nothing that David told him satisfied him with regard to his theories connecting Martians and poisoning, and his uneasiness grew rapidly.

He said, "I don't want Hennes catching me. We've had—words."  
"What about Makian? He's on our side, isn't he?"

"I don't know. He stands to be ruined by day after tomorrow. I don't think he has enough spine left to stand up to the fellow. Look, I'd better go. If you think of anything, anything at all, get it to me somehow, will you?"

He held out a hand. David took it briefly, and then Benson was gone.

David sat up in bed. His own uneasiness had grown since he had awakened. His clothes were thrown over a chair at the other end of the room. His boots stood upright by the side of the bed. He had not dared inspect them in Benson's presence; had scarcely dared look at them.

Perhaps, he thought pessimistically, they had not tampered with them. A farmboy's hip boots are inviolate. Stealing from a farmboy's hip boots, next to stealing his sand-car in the open desert, was the unforgivable crime. Even in death, a farmboy's boots were buried with him, with the contents unremoved.

David groped inside the inner pocket of each boot in turn, and his fingers met nothingness. There had been a handkerchief in one, a few odd coins in the other. Undoubtedly they had gone through his clothing; he had expected that. But apparently they had not drawn the line at his boots. He held his breath as his arm dived into the

recesses of one boot. The soft leather reached to his armpit and crumpled down as his fingers stretched out to the toes. A surge of pure gladness filled him as he felt the soft gauze-like material of the Martian mask.

He had hidden it there on general principles before the bath, but he had not anticipated the Soporite. It was luck, purely, that they had not searched the toes of his boots. He would have to be more careful hence-forward.

He put the mask into a boot pocket and clipped it shut. He picked up the boots; they had been polished while he slept, which was good of someone, and showed the almost instinctive respect which the farmboy had for boots, anyone's boots.

His clothes had been put through the Refresher Spray as well. The shining plastic fibers of which they were composed had a brand-new smell about them. The pockets were all empty, of course, but underneath the chair all the contents were in a careless heap. He sorted them out. Nothing seemed to be missing. Even the handkerchief and coins from his boot pockets were there.

He put on underclothes and socks, the one-piece overall, and then the boots. He was buckling his belt when a brown-bearded farmboy stepped in.

David looked up. He said coldly, "What do you want, Zukis?"

The farmboy said, "Where do you think you're going, Earthie?" His little eyes were glaring viciously, and to David the other's expression was much the same as it had been the first day he had laid eyes on him. David could recall Hennes's sand-car outside the Farm Employment Office, himself just settling into the seat, and the bearded angry face glowering at him, while a weapon fired before he could move to defend himself.

"Nowhere," said David, "that I need ask your permission."

"That so? You're wrong, mister, because you're staying right here. Hennes's orders." Zukis blocked the door with his body. Two blasters were conspicuously displayed at either side of his drooping belt.

Zukis waited. Then, his greasy beard splitting in two as he smiled yellowly, he said, "Think maybe you've changed your mind, Earthie?"

"Maybe," said David. He added, "Someone got in to see me just now. How come? Weren't you watching?"

"Shut up," snarled Zukis.

"Or were you paid off to look the other way for a while? Hennes might not like that."

Zukis spat, missing David's boots by half an inch.

David said, "You want to toss out your blasters and try that again?"

Zukis said, "Just watch out if you want any feeding, Earthie."

He closed and locked the door behind him as he left. A few minutes passed and there was the sound of clattering metal against it as it opened again. Zukis carried a tray. There was the yellow of squash on it and the green of something leafy.

"Vegetable salad," said Zukis. "Good enough for you."

A blackened thumb showed over one end of the tray. The other end balanced upon the back of his wrist so that the farmboy's hand was not visible.

David straightened, leaping to one side, bending his legs under him and bringing them down upon the mattress of the bed. Zukis, caught by surprise, turned in alarm, but David, using the springs of the mattress as extra leverage, launched into the air.

He collided heavily with the farmboy, brought down one hand flatly on the tray, ripping it out of the other's grasp and hurling it to the ground while twining his other hand in the farmboy's beard.

Zukis dropped, yelling hoarsely. David's booted foot came down on the farmboy's hand, the one that had been hidden under the tray. The other's yell became an agonized scream as the smashed fingers flew open, releasing the cocked blaster they had been holding.

David's hand whipped away from the beard and caught the other's unharmed wrist as it groped for the second blaster. He brought it up roughly, across the prone chest, under the head and out again. He pulled.

"Quiet," he said, "or I'll tear your arm loose from its socket."

Zukis subsided, his eyes rolling, his breath puffing out wetly. He said, "What are you after?"

"Why were you hiding the blaster under the tray?"

"I had to protect myself, didn't I? In case you jumped me while my hands were full of tray?"

"Then why didn't you send someone else with the tray and cover him?"

"I didn't think of that," whined Zukis.

David tightened pressure a bit and Zukis's mouth twisted in agony. "Suppose you tell the truth, Zukis."

"I—I was going to kill you."

"And what would you have told Makian?"

"You were—trying to escape."



“Was that your own idea?”

“No. It was Hennes’s. Get Hennes. I’m just following orders.”

David released him. He picked up one blaster and flicked the other out of its holster. “Get up.”

Zukis rolled over on one side. He groaned as he tried to lift his weight on a mashed right hand and nearly torn left shoulder.

“What are you going to do? You wouldn’t shoot an unarmed man, would you?”

“Wouldn’t you?” asked David.

A new voice broke in. “Drop those guns, Williams,” it said crisply.

David moved his head quickly. Hennes was in the doorway, blaster leveled. Behind him was Makian, face gray and etched with lines. Hennes’s eyes showed his intentions plainly enough and his blaster was ready.

David dropped the blasters he had just torn from Zukis.

“Kick them over,” said Hennes.

David did so.

“Now. What happened?”

David said, “You know what happened. Zukis tried a little assassination at your orders and I didn’t sit still and take it.”

Zukis was gabbling. “No, sir, Mr. Hennes. No, sir. It was no such thing. I was bringing in his lunch when he jumped me. My hands were full of tray; I had no chance to defend myself.”

“Shut up,” said Hennes contemptuously. “We’ll have a talk about that later. Get out of here and be back with a couple of pinions in less than no time.”

Zukis scrambled out.

Makian said mildly, “Why the pinions, Hennes?”

“Because this man is a dangerous impostor, Mr. Makian. You remember I brought him in because he seemed to know something about the food poisoning.”

“Yes. Yes, of course.”

“He told us a story about a younger sister being poisoned by Martian jam, remember? I checked on that. There haven’t been too many deaths by poisoning that have reached the authorities the way this man claimed his sister’s death had. Less than two hundred and fifty, in fact. It was easy to check them all and I had that done. None on record involved a twelve-year-old girl, with a brother of Williams’ age, who died over a jar of jam.”

Makian was startled. “How long have you known this, Hennes?”

"Almost since he came here. But I let it go. I wanted to see what he was after. I set Griswold to watching him——"

"To trying to kill me, you mean," interrupted David.

"Yes, you would say that, considering that you killed him because he was fool enough to let you suspect him." He turned back to Makian. "Then he managed to wiggle himself in with that soft-headed sap, Benson, where he could keep close check on our progress in investigating the poisoning. Then, as the last straw, he slipped out of the dome three nights ago for a reason he won't explain. You want to know why? He was reporting to the men who hired him—the ones who are behind all this. It's more than just a coincidence that the ultimatum came while he was gone."

"And where were you?" demanded David suddenly. "Did you stop keeping tabs on me after Griswold died? If you knew I was gone on the kind of deal you suspected, why wasn't a party sent out after me?"

Makian looked puzzled, and began, "Well——"

But David interrupted. "Let me finish, Mr. Makian. I think that maybe Hennes wasn't in the dome the night I left and even the day and night after I left. Where were you, Hennes?"

Hennes stepped forward, his mouth twisting. David's cupped hand was near his face. He did not believe Hennes would shoot, but he was ready to use the shield-mask if he had to.

Makian placed a nervous hand on Hennes's shoulder. "I suggest we leave him for the Council."

David said quickly, "What is this about the Council?"

"None of your business," snarled Hennes.

Zukis was back with the pinions. They were flexible plastic rods that could be bent in any way and then frozen in position. They were infinitely stronger than ropes or even metal handcuffs.

"Hold out your hands," ordered Hennes.

David did so without a word. The pinion was wrapped twice about his wrists. Zukis, leering, drew them savagely tight then drew out the pin, which action resulted in an automatic molecular rearrangement that hardened the plastic. The energy developed in that rearrangement made the plastic warm to the touch. Another pinion went about David's ankles.

David sat quietly down upon the bed. In one hand he still had the shield-mask. Makian's remark about the Council was proof enough to David that he would not remain pinioned long. Meanwhile he was content to allow matters to develop further.

He said again, "What's this about the Council?"

But he need not have asked. There was a yell from outside, and a catapulting figure hurled itself through the door with the cry of, "Where's Williams?"

It was Bigman himself, as large as life, which wasn't very large. He was paying no attention to anything but David's seated figure. He was speaking rapidly and breathlessly. "I didn't hear you were through a dust storm till I landed inside the dome. Sizzling Ceres, you must have been fried. How did you get through it? I—I——"

He noticed David's position for the first time, and turned furiously. "Who in Space has the boy tied up like this?"

Hennes had caught his breath by now. One of his hands shot out and caught Bigman's overall collar in a brutal grip that lifted his slight body off the floor. "I told you what would happen, slug, if I caught you here again."

Bigman yelled, "Let go, you pulp-mouth jerk! I've got a right in here. I give you a second and a half to let me go or you'll answer to the Council of Science."

Makian said, "For Mars' sake, Hennes, let him go."

Hennes let him drop. "Get out of here."

"Not on your life. I'm an accredited employee of the Council. I came here with Dr. Silvers. Ask him."

He nodded at the tall, thin man just outside the door. His name suited him. His hair was silver-white and he had a mustache of the same shade.

"If you'll pardon me," said Dr. Silvers, "I would like to take charge of matters. The government at International City on Earth has declared a state of System Emergency and all the farms will be under the control of the Council of Science henceforward. I have been assigned to take over the Makian Farms."

"I expected something like this," muttered Makian unhappily.

"Remove this man's pinions," order Dr. Silvers.

Hennes said, "He's dangerous."

"I will take full responsibility."

Bigman jumped and clicked his heels. "On your way, Hennes."

Hennes paled in anger, but no words came.

Three hours had passed when Dr. Silvers met Makian and Hennes again in Makian's private quarters.

He said, "I'll want to go over all the production records of this farm for the last six months. I will have to see your Dr. Benson with regard to whatever advances he has made in connection with solving

this food-poisoning problem. We have six weeks to break this matter. No more."

"Six weeks," exploded Hennes. "You mean one day."

"No, sir. If we haven't the answer by the time the ultimatum expires, all exports of food from Mars will be stopped. We will not give in while a single chance remains."

"By Space," said Hennes. "Earth will starve."

"Not for six weeks," said Dr. Silvers. "Food supplies will last that long, with rationing."

"There'll be panic and rioting," said Hennes.

"True," said Dr. Silvers grimly. "It will be most unpleasant."

"You'll ruin the farm syndicates," groaned Makian.

"It will be ruined anyway. Now, I intend to see Dr. Benson this evening. We will have a four-way conference tomorrow at noon. Tomorrow midnight, if nothing breaks anywhere on Mars or at the Moon's Central Laboratories, the embargo goes into effect and arrangements will be made for an all-Mars conference of the various syndicate members."

"Why?" asked Hennes.

"Because," said Dr. Silvers, "there is reason to think that whoever is behind this mad crime must be connected with the farms closely. They know too much about the farms for any other conclusion to be arrived at."

"What about Williams?"

"I've questioned him. He sticks to his story, which is, I'll admit, queer enough. I've sent him to the city, where he'll be questioned further; under hypnosis, if necessary."

The door signal flashed.

Dr. Silvers said, "Open the door, Mr. Makian."

Makian did so, as though he were not owner of one of the largest farms on Mars and, by virtue of that fact, one of the richest and most powerful men in the Solar System.

Bigman stepped in. He looked at Hennes challengingly. He said, "Williams is on a sand-car heading back for the city under guard."

"Good," said Dr. Silvers, his thin lips set tightly.

A mile outside the farm dome the sand-car stopped. David Starr, nose-piece in place, stepped out. He waved to the driver, who leaned out and said, "Remember! Lock 7! We'll have one of our men there to let you in."

David smiled and nodded. He watched the sand-car continue its trip toward the city and then turned back on foot to the farm dome.

The men of the Council co-operated, of course. They had helped him in his desire to leave openly and to return secretly, but none of them, not even Dr. Silvers, knew the purpose of his request.

He had the pieces to the puzzle, but he still needed the proof.

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## “I Am the Space Ranger!”

Hennes entered his bedroom in a haze compounded equally of weariness and anger. The weariness was simple. It was nearing 3 A.M. He had not had too much rest the last two nights or, for that matter, much relief of tension in the last six months. Yet he had felt it necessary to sit through the session this Dr. Silvers of the Council had had with Benson.

Dr. Silvers had not liked that, and that accounted for one bit of the anger that drenched and drowned him. Dr. Silvers! An old incompetent who came bustling down from the city thinking he could get to the bottom of the trouble in a day and a night when all the science of Earth and Mars had been exerting itself for months to no avail. And Hennes was angry at Makian as well for becoming as limp as well-oiled boots and nothing more than the simple lackey of the white-headed fool. Makian! Two decades ago he had been almost a legend as the toughest owner of the toughest farm on Mars.

There was Benson, too, and his interference with Hennes's plans for settling the interfering greenhorn, this Williams, in the quickest and easiest way. And Griswold and Zukis, who were too stupid to carry through the necessary steps that would have won over the weakness of Makian and the sentimentality of Benson.

He pondered briefly the advisability of a Soporite pill. On this night he wanted rest for the necessary keenness of the next day and yet his anger might keep sleep away.

He shook his head. No. He could not risk drugged helplessness in the event of some crucial turn of events in the night.

He compromised by throwing the toggle switch that magnetically bound the door in place. He even tested the door briefly to make sure

the electromagnetic circuits worked. Personal doors, in the totally masculine and informal life of a farm dome, were so infrequently locked that it was not uncommon to have insulation wear through, wires fall loose, without anyone being the wiser over the years. His own door had not been locked, to his knowledge, since he had first taken the job.

The circuit was in order. The door did not even tremble as he pulled at it. So much for that.

He sighed heavily, sat down upon the bed, and removed his boots, first one, then the other. He rubbed his feet wearily, sighed again, then stiffened; stiffened so suddenly that he shot off the bed without really being aware of moving.

His stare was one of complete bewilderment. It couldn't be. *It couldn't be!* It would mean that Williams' foolish story was true. It would mean that Benson's ridiculous mouthings about Martians might, after all, turn out to be——

No, he refused to believe that. It would be easier to believe that his lack-sleep mind was having a private joke.

Yet the dark of the room was alight with the cold blue-white brilliance that carried no glare with it. By it he could see the bed, the walls, the chair, the dresser, even his boots, standing where he had just placed them. And he could see the man creature with only a blaze of light where a head ought to be and no distinct feature elsewhere; rather a kind of smoke instead.

He felt the wall against his back. He had not been conscious of his retreat backward.

The object spoke, and the words were hollow and booming as though they carried an echo with them.

The object said, "I am the Space Ranger!"

Hennes drew himself up. First surprise over, he forced himself into calmness. In a steady voice he said, "What do you want?"

The Space Ranger did not move or speak, and Hennes found his eyes fastened upon the apparition.

The foreman waited, his chest pumping, and still the thing of smoke and light did not move. It might have been a robot geared to make the one statement of identity. For a moment Hennes wondered if that might be the case, and surrendered the thought as soon as it was born. He was standing next to the chest of drawers, and not all his wonder allowed him to forget that fact. Slowly his hand was moving.

In the light of the thing itself his motion was not invisible, but it paid no attention. Hennes's hand was resting lightly on the surface

of the bureau in a pretense of innocent gesture. The robot, Martian, man, whatever it was, Hennes thought, would not know the secret of the bureau. It had hidden in the room, waiting, but it had not searched the room. Or if it had done so, it had been a most skillful job, since even now Hennes's flicking eye could note no single abnormal thing about the room; nothing misplaced; nothing where it should not be, except for the Space Ranger itself.

His fingers touched a little notch in the wood. It was a common mechanism and few farm managers on Mars, lacked one. In a way it was old-fashioned, as old-fashioned as the imported wooden bureau itself, a tradition dating back to the lawless old days of the farming pioneers, but tradition dies hard. The little notch moved slightly under his fingernail and a panel in the side of the chest dropped outward. Hennes was ready for it, and the hand was a blur of motion toward the blaster which the moving panel had revealed.

He held the blaster now, aimed dead center, and in all that time the creature had not moved. What passed for arms dangled emptily.

Hennes found confidence sweeping back. Robot, Martian, or man, the object could not withstand a blaster. It was a small weapon, and the projectile it hurled was almost contemptible in size. The old-fashioned "guns" of ancient days carried metal slugs that were rocks in comparison. But the small projectile of the blaster was far more deadly. Once set in motion, anything that stopped it tripped a tiny atomic trigger that converted a sub-microscopic fraction of its mass into energy, and in that conversion the object that stopped it, whether rock, metal, or human flesh, was consumed to the accompaniment of a tiny noise like the flick of a fingernail against rubber.

Hennes said in a tone that borrowed menace from the blaster he held, "Who are you? What do you want?"

Once again the object spoke, and once again it said slowly, "I am the Space Ranger!"

Hennes's lips curved in cold ferocity as he fired.

The projectile left the muzzle, raced squarely at the object of smoke, reached it, and stopped. It stopped instantaneously, without touching the body that was still one quarter of an inch beyond its final penetration. Even the concussion of collision was not carried beyond the force-shield barrier which absorbed all the projectile's momentum, converting it into a flare of light.

That flare of light was never seen. It was drowned out in the intense blaze that was the blaster projectile exploding into energy as it stopped with no surrounding matter to shield the blast of light. It



was as though a pin-sized sun existed in the room for a tiny fraction of a second.

Hennes, with a wild yell, threw his hands to his eyes as though to protect them against a physical blow. It was too late. Minutes later, when he dared open his eyelids, his aching, burning eyes could tell him nothing. Open or closed, he saw only red-studded blackness. He could not see the Space Ranger whirl into motion, pounce upon his boots, search their pockets with flying fingers, break the door's magnetic circuit, and slip out of the room seconds before the inevitable crowd of people with their confused cries of alarm had begun to gather.

Hennes's hand still covered his eyes when he heard them. He called, "Get the thing! Get him! He's in the room. Tackle him, you Mars-forsaken, black-booted cowards."

"There's no one in the room," half-a-dozen voices called, and someone added, "Smells like a blaster, though."

A firmer, more authoritative voice said, "What's wrong, Hennes?" It was Dr. Silvers.

"Intruders," said Hennes, shaking in frustration and wrath. "Doesn't anyone see him? What's the matter with all of you? Are you——" He couldn't say the word. His blinking eyes were watering and blurred light was just beginning to make its way into them again. He couldn't say "blind."

Silvers asked, "Who was the intruder? Can you describe him?"

And Hennes could only shake his head helplessly. How could he explain? Could he tell them of a nightmare of smoke that could speak and against which a blaster bullet could only explode prematurely and without damage except to the man who sped it on its way?

Dr. James Silvers made his way back to his room in dull gloom. This disturbance that had routed him out of his room before he had completed preparation for bed, this aimless running about of men, the tongue-tied lack of explanation on the part of Hennes, all were to him nothing but a series of pinpricks. His eyes were fixed on tomorrow.

He had no faith in victory, no faith in the efficacy of any embargo. Let the food shipments stop. Let even a few on Earth find out why, or, worse still, invent their own theories therefor, and the results might be more frightful than any mass poisoning.

This young David Starr expressed confidence, but so far his actions inspired none in himself. His story of a Space Ranger was a poorly calculated one, fit only to arouse the suspicions of men such as Hennes and bringing him almost to his death. It was fortunate for

the youngster that he, Silvers, had arrived at the proper time. Nor had he explained the reasons for such a story. He had merely expounded his plans for leaving the city and then secretly returning. Yet when Silvers had first received Starr's letter, brought by the little fellow, the one that called himself Bigman in tremendous defiance of the truth, he had quickly checked with Council headquarters on Earth. It had confirmed that David Starr was to be obeyed in all particulars.

Yet how could such a young man——

Dr. Silvers halted. That was strange! The door to his room, which he had left ajar in his haste, was still ajar, but no light shone out into the hall. Yet he had not put it out before leaving. He could remember its glow behind him as he had hastened down the hall toward the stairs.

Had someone put it out for him on some strange impulse toward economy? It seemed hardly likely.

There was no sound within the room. He drew his blaster, threw the door open, and stepped firmly to where he knew the light switch to be located.

A hand dropped over his mouth.

He squirmed, but the arm was a large and muscular one, and the voice in his ear was familiar.

"It's all right, Dr. Silvers. I just didn't want you to give me away by yelling in surprise."

The arm dropped away. Dr. Silvers said, "Starr?"

"Yes. Close the door. It seemed your room would be the best hiding place while the search goes on. In any case, I must speak to you. Did Hennes say what had happened?"

"No, not really. Were you involved in that?"

David's smile was lost in the darkness. "In a way, Dr. Silvers. Hennes was visited by the Space Ranger, and in the confusion I was able to reach your room with no one, I hope, having seen me."

The old scientist's voice rose despite himself. "What are you saying? I am in no mood for jokes."

"I am not joking. The Space Ranger exists."

"That will not do. The story did not impress Hennes and I deserve the truth."

"It impresses Hennes now, I am sure, and you will have the truth when tomorrow is done. Meanwhile, listen to me. The Space Ranger, as I say, exists, and he is our great hope. The game we play is a rickety one and though I know who is behind the poisoning, the knowledge may be useless. It is not a criminal or two, intending to

gain a few millions by colossal blackmail, that we face, but rather a well-organized group that intends to gain control of the entire Solar System. It can carry on, I am convinced, even if we pick off the leaders, unless we learn enough of the details of the conspiracy to stop its workings cold."

"Show me the leader," said Dr. Silvers grimly, "and the Council will learn all necessary details."

"Never quickly enough," said David, just as grimly. "We must have the answer, *all* the answer, in less than twenty-four hours. Victory after that will not stop the death of millions upon Earth."

Dr. Silvers said, "What do you plan then?"

"In theory," said David, "I know who the poisoner is and how the poisoning was accomplished. To be met with anything but a flat denial on the part of the poisoner I need a bit of material proof. That I will have before the evening is over. To gain from him, even then, the necessary information, we must break his morale completely. There we must use the Space Ranger. Indeed, he has begun the process of morale-cracking already."

"The Space Ranger again. You are bewitched by this thing. If he does exist, if this is not a trick of yours in which even I must be a victim, who is he and what is he? How do you know he is not deceiving you?"

"I can tell no one the details of that. I can only tell you that I know him to be on the side of humanity. I trust him as I would myself, and I will take full responsibility for him. You must do as I say, Dr. Silvers, in this matter, or I warn you we will have no choice but to proceed without you. The importance of the game is such that even you may not stand in my way."

There was no mistaking the firm resolution of the voice. Dr. Silvers could not see the expression of David's face in the darkness, but somehow he did not have to. "What is it you wish me to do?"

"Tomorrow noon you will meet with Makian, Hennes, and Benson. Bring Bigman with you as a personal bodyguard. He is small, but he is quick and knows no fear. Have the Central Building protected by Council men, and I would advise that you have them armed with repeater blasters and gas pellets just in case. Now remember this, between twelve-fifteen and twelve-thirty leave the rear entrance unguarded and unobserved. I will guarantee its safety. Show no surprise at whatever happens thereafter."

"Will you be there?"

"No. My presence will not be necessary."

"Then?"

“There will be a visit from the Space Ranger. He knows what I know, and from him the accusations will be more shattering to the criminal.”

Dr. Silvers felt hope arising in spite of himself. “Do you think, then, that we’ll succeed?”

There was a long silence. Then David Starr said, “How can I tell? I can only hope so.”

There was a longer silence. Dr. Silvers felt a tiny draft as though the door had opened. He turned to the light switch. The room flooded with light, and he found himself alone.

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## The Space Ranger Takes Over

David Starr worked as quickly as he dared. Not much was left of the night. Some of the excitement and tension were beginning to fade, and the utter weariness that he had been refusing to acknowledge for hours was soaking in just a bit.

His small pencil flash flickered here and there. He hoped earnestly that what he sought for would not be behind still additional locks. If it were, he would have to use force, and he was in no mood to attract attention just then. There was no safe that he could see; nothing equivalent to such an object. That was both good and bad. What he looked for would not be out of reach, but then again it might not be in the room at all.

That would be a pity after the carefully planned manner in which he had obtained the key to this room. Hennes would not recover quickly from the working out of that plan.

David smiled. He himself had been almost as surprised as Hennes at the very first. His words, "I am the Space Ranger," had been the first he had spoken through the force-shield since his emergence from the Martian caverns. He could not remember what his voice had sounded like there. Perhaps he had not truly heard it. Perhaps, under Martian influence, he had simply sensed his own thoughts as he did theirs.

Here on the surface, however, the sound of his own voice had left him thunderstruck. Its hollowness and booming depth had been entirely unexpected. He recovered, of course, and understood almost immediately. Although the shield let air molecules pass, it probably slowed them. Such interference would naturally affect sound waves.

David was not exactly sorry for that. The voice, as it was, would be helpful.

The shield had worked well against the blaster radiation. The flash had not been stopped entirely; he had seen it clearly. At least the effect upon himself had been nothing compared to that upon Hennes.

Methodically, even as his weary mind turned these things over, he was inspecting the contents of shelves and cabinets.

The light beam held steady for a moment. David reached past other gadgets to pick up a small metal object. He turned it over and over in the small light. He wound a little button which set at different positions and observed what happened afterward.

His heart bounded.

It was the final proof. The proof of all his speculations—the speculations that had been so reasonable and so complete and yet had rested upon nothing more than logic. Now the logic had been borne out by something made of molecules, something that could be touched and felt.

He put it in his hip-boot pocket to join his mask and the keys he had taken from Hennes's boots earlier in the night.

He locked the door behind him and stepped out into the open. The dome above was beginning to gray visibly. Soon the main fluorescents would go on and day would officially begin. The last day, either for the poisoners or for Earth civilization as it then was.

Meanwhile there would be a chance for sleep.

The Makian farm dome lay in a frozen quiet. Few of the farmboys could even guess at what was going on. That it was something serious was, of course, obvious, but further than that it was impossible to see. Some few whispered that Makian had been caught in serious financial irregularities, but no one could believe it. It wasn't even logical, since why would they send in an army just for that?

Certainly hard-faced men in uniform circled Central Building with repeater blasters cradled in their arms. On the roof of the building two artillery pieces had been set up. And the area around it was deserted. All farmboys, except those necessary for the maintenance of essential utilities, had been restricted to barracks. Those few excepted were ordered to remain strictly at their jobs.

At 12:15 P.M. exactly, the two men patrolling the rear of the building separated, moved away, leaving that area unguarded. At twelve-thirty they returned and took up their patrols. One of the artillerymen on the roof afterward stated that he had seen someone

enter the building in that interval. He admitted he had caught only a brief glimpse and his description did not make very much sense, since he said it seemed to be a man on fire.

Nobody believed him at the time.

Dr. Silvers was not certain of anything. Not at all certain. He scarcely knew how to begin the session. He looked at the other four that sat about the table.

Makian. He looked as if he hadn't slept in a week. Probably hadn't, either. He hadn't spoken a word so far. Silvers wondered if he was completely aware of his surroundings.

Hennes. He was wearing dark glasses. He took them off at one time and his eyes were bloodshot and angry. Now he sat there muttering to himself.

Benson. Quiet and unhappy. Dr. Silvers had spent several hours with him the night before and there was no doubt in his mind that the failures of his investigations were an embarrassment and a grief to him. He had spoken about Martians, native Martians, as causes of the poisonings, but Silvers had known better than to take that seriously.

Bigman. The only happy one of the lot. To be sure he understood only a fragment of the real crisis. He was leaning back in his chair, obviously pleased at being at the same table with important people, savoring his role to the full.

And there was one additional chair that Silvers had brought to the table. It stood there, empty and waiting. No one commented on the fact.

Dr. Silvers kept the conversation going somehow, making insubstantial remarks, trying to mask his own uncertainties. Like the empty chair, he was waiting.

At twelve-sixteen he looked up and rose slowly to his feet. No words came. Bigman pushed his chair back and it went over with a crash. Hennes's head turned sharply and he grasped the table with fingers that became white with strain. Benson looked about and whimpered. Only Makian seemed unmoved. His eyes lifted, then, apparently, took in the sight merely as another incomprehensible element in a world that had grown too large and strange for him.

The figure in the doorway said, "I am the Space Ranger!"

In the bright lights of the room the glow that surrounded his head was somewhat subdued, the smoke that concealed his body somewhat more substantial than Hennes had seen it the night before.

The Space Ranger moved in. Almost automatically the seated

men pushed their chairs away, clearing a place at the table, so that the one empty chair stood in lonely isolation.

The Space Ranger sat down, face invisible behind light, smoky arms extended before him, resting on the table, and yet not resting upon it. Between the table and the arms one quarter of an inch of empty space existed.

The Space Ranger said, "I have come to speak to criminals."

It was Hennes who broke the sticky silence that followed. He said, in a voice that dripped with husky venom, "You mean burglars?"

His hand went momentarily to his dark glasses but did not remove them. His fingers shook visibly.

The Space Ranger's voice was a monotone of slow, hollow words. "It is true I am a burglar. Here are the keys I abstracted from your boots. I need them no longer."

Slivers of metal flashed across the table toward Hennes, who did not pick them up.

The Space Ranger went on, "But the burglary took place in order to prevent a greater crime. There is the crime of the trusted foreman, for instance, who periodically spent nights in Wingrad City on a one-man search for poisoners."

Bigman's little face puckered in glee. "Hey, Hennes," he called, "sounds like you're being paged."

But Hennes had eyes and ears only for the apparition across the table. He said, "What is the crime in that?"

"The crime," said the Space Ranger, "of a fast trip out in the direction of the Asteroids."

"Why? What for?"

"Is it not from the Asteroids that the poisoners' ultimata have come?"

"Are you accusing me of being behind the food poisoning? I deny it. I demand your proof. That is, if you think you need any proof. Perhaps you think that your masquerade can force me to admit a lie."

"Where were you the two nights before the final ultimatum was received?"

"I will not answer. I deny your right to question me."

"I will answer the question for you then. The machinery of the vast poisoning combine is located in the Asteroids, where what is left of the old pirate bands have gathered. The brains of the combine is here at Makian Farms."

Here Makian rose unsteadily to his feet, his mouth working.



The Space Ranger waved him down with a firm motion of his smoky arm and continued, "You, Hennes, are the go-between."

Hennes did remove his glasses now. His plump, sleek face, somewhat marred by his red-rimmed eyes, was set into a hard mold.

He said, "You bore me, Space Ranger, or whatever you call yourself. This conference, as I understand it, was for the purpose of discussing means of combating the poisoners. If it is being converted into a forum for the stupid accusations of a play actor, I am leaving."

Dr. Silvers reached across Bigman to grasp Hennes's wrist. "Please stay, Hennes. I want to hear more of this. No one will convict you without ample proof."

Hennes dashed Silvers's hand away and rose from his chair.

Bigman said quietly, "I'd love to see you shot, Hennes, which is exactly what you will be if you go out the door."

"Bigman is right," said Silvers. "There are armed men outside, with instructions to allow no one to leave without orders from me."

Hennes's fists clenched and unclenched. He said, "I will not contribute another word to this illegal procedure. You are all witnesses that I am being detained by force." He sat down again and folded his arms across his chest.

The Space Ranger began again, "And yet Hennes is only the go-between. He is too great a villain to be the real villain."

Benson said faintly, "You speak in contradictions."

"Only apparently. Consider the crime. You can learn a great deal about a criminal from the nature of the crime he commits. First, there is the fact that few people, comparatively, have died so far. Presumably the criminals could have gained what they wanted more quickly by beginning with wholesale poisonings, instead of merely threatening for six months during which they risked capture and gained nothing. What does this mean? It would seem that the leader somehow hesitates to kill. That is certainly not in character for Hennes. I have obtained most of my information from Williams, who is not among us now, and from him I know that after his arrival at the farm Hennes tried several times to arrange his murder."

Hennes forgot his resolve. He shouted, "A lie!"

The Space Ranger went on, unheeding, "So Hennes would have no compunction against killing. We would have to find someone of gentler mold. Yet what would force an essentially gentle person to kill people he has never seen, who have done him no harm? After all, though an insignificant percentage of Earth's population has been poisoned, the dead number several hundred. Fifty of them were children. Presumably, then, there is a strong drive for wealth and power

which overcomes his gentleness. What lies behind that drive? A life of frustration, perhaps, which has driven him into a morbid hatred of humanity as a whole, a desire to show those who despised him how great a man he really is. We look for a man, then, who might be expected to have an advanced inferiority complex. Where can we find such a one?"

All were watching the Space Ranger now with an intentness that burned in every eye. Something of keenness had returned even to Makian's expression. Benson was frowning in thought, and Bigman had forgotten to grin.

The Space Ranger continued, "Most important as a clue is what followed the arrival of Williams at the farm. He was at once suspected of being a spy. His story of the poisoning of his sister was easily shown to be false. Hennes, as I have said, was for outright murder. The leader, with his softer conscience, would take another method. He tried to neutralize the dangerous Williams by developing a friendship for him and pretending to unfriendliness with Hennes.

"Let us summarize. What do we know about the leader of the poisoners? He is a man with a conscience who has *seemed* friendly to Williams and unfriendly to Hennes. A man with an inferiority complex resulting from a life of frustration because he was different from others, less of a man, smaller——"

There was a rapid movement. A chair was thrust from the table, and a figure backed rapidly away, a blaster in his hand.

Benson rose to his feet and yelled, "Great Space. *Bigman!*"

Dr. Silvers cried helplessly, "But—but I was to bring him here as a bodyguard. He's armed."

For a moment Bigman stood there, blaster ready, watching each of them out of his sharp little eyes.

# 16

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## Solution

Bigman said, his high voice firm, "Don't let's draw any quick conclusions now. It may sound as if the Space Ranger is describing me, but he hasn't said so yet."

They watched him. No one spoke.

Bigman flipped his blaster suddenly, caught it by the muzzle, and tossed it onto the table where it skimmed noisily across in the direction of the Space Ranger. "I say I'm not the man, and there's my weapon to show I mean it."

The Space Ranger's smoke-obscured fingers reached for it.

"I also say you're not the man," he said, and the blaster skimmed back to Bigman.

Bigman pounced upon it, shoved it back in his holster, and sat down once more. "Now suppose you keep on talking, Space Ranger."

The Space Ranger said, "It might have been Bigman, but there are many reasons why it could not have been. In the first place, the enmity between Bigman and Hennes arose long before Williams appeared on the scene."

Dr. Silvers protested. "But look here. If the leader was pretending to be on the outs with Hennes, it might not have been just for Williams' sake. It might have been a long-standing scheme."

The Space Ranger said, "Your point is well taken, Dr. Silvers. But consider this. The leader, whoever he is, must be in complete control of the gang's tactics. He must be able to enforce his own squeamishness about killing upon a group of what are probably the most desperate outlaws in the system. There is only one way he can do that, and that is by arranging it so that they cannot possibly con-

tinue without him. How? By controlling the supply of poison and the method of poisoning. Surely Bigman could do neither."

"How do you know that?" demanded Dr. Silvers.

"Because Bigman doesn't have the training that would enable him to develop and produce a new poison more virulent than any known. He doesn't have the laboratory or the botanical and bacteriological training. He doesn't have access to the food bins at Wingrad City. All of which, however, *does apply to Benson.*"

The agronomist, perspiring profusely, raised his voice in a weak yell. "What are you trying to do? Test me as you tested Bigman just now?"

"I didn't test Bigman," said the Space Ranger. "I never accused him. I do accuse you, Benson. You are the brains and leader of the food-poisoning combine."

"No. You're mad."

"Not at all. Quite sane. Williams first suspected you and passed his suspicions on to me."

"He had no reason to. I was perfectly frank with him."

"Too frank. You made the mistake of telling him that it was your opinion that Martian bacteria growing upon farm products were the source of the poison. As an agronomist, you must have known that was impossible. Martian life is not protein in nature and could no more feed on Earth plants than we could feed on rocks. So you told a deliberate lie, and that made everything else about you suspect. It made Williams wonder if perhaps you had yourself made an extract of Martian bacteria. The extract would be poisonous. Don't you think so?"

Benson cried wildly, "But how could I possibly spread the poison? You don't make sense."

"You had access to the Makian farm shipments. After the first few poisonings you could arrange to obtain samples from the storage bins at the city. You told Williams how you carefully took samples from different bins, from different levels of a single bin. You told him how you used a harpoon-like affair you invented yourself."

"But what is there wrong with that?"

"A good deal. Last night I obtained keys from Hennes. I used them to get into the one place in the farm dome which is consistently kept locked—your laboratory. There I found this." He held the small metal object up to the light.

Dr. Silvers said, "What is it, Space Ranger?"

"It is Benson's sample taker. It fits at the end of his food harpoon. Observe how it works."

The Space Ranger adjusted a small knob at one end. "Firing the harpoon," he said, "trips this safety catch. So! Now watch."

There was the faintest buzzing noise. It ended after five seconds, and the fore end of the sampler gaped open, remained so for a second, then closed.

"That's the way it's supposed to work," cried Benson. "I made no secret of it."

"No, you didn't," said the Space Ranger sternly. "You and Hennes had been quarreling for days over Williams. You hadn't the stomach to have him killed. At the very last you brought the harpoon with you to Williams' bedside to see if the sight of it would surprise him into some action that would give him away. It didn't, but Hennes would wait no longer, anyway. Zukis was sent in to kill him."

"But what's wrong with the sampler?" demanded Benson.

"Let me show its workings again. But this time, Dr. Silvers, please observe the side of the sampler toward yourself now."

Dr. Silvers leaned across the table, watching closely. Bigman, blaster out once more, divided his attention between Benson and Hennes. Makian was on his feet, leathery cheeks flushed.

Once again the sampler was set, once again the little mouth flew open, and this time, as they watched the neutral side indicated, a covering sliver of metal withdrew there as well, revealing a shallow depression that glistened gummily.

"There," said the Space Ranger, "you can see what happened. Each time Benson took a sample, a few grains of wheat, a piece of fruit, a leaf of lettuce was smeared with that colorless gum, a poisonous extract of Martian bacteria. It is a simple poison, no doubt, that is not affected by subsequent food processing and eventually turns up in a loaf of bread, a jar of jam, a can of baby food. It was a clever and diabolical trick."

Benson was beating on the table. "It's all a lie, a rotten lie!"

"Bigman," said the Space Ranger, "gag the man. Stand near him and don't let him move."

"Really," protested Dr. Silvers, "you're making a case, Space Ranger, but you must let the man defend himself."

"There is no time," said the Space Ranger, "and proof that will satisfy even you will be forthcoming quickly."

Bigman used his handkerchief as a gag. Benson struggled and then sat in sweating stillness as the butt of Bigman's blaster collided noisily with his skull.

"The next time," said Bigman, "it will be hard enough to knock you out; maybe fix you up with a concussion."

The Space Ranger rose. "You all suspected, or pretended to suspect, Bigman when I spoke of a man with an inferiority complex because he was small. There are more ways of being small than in size. Bigman compensates for his size by belligerence and loud assertion of his own opinions. The men here respect him because of this. Benson, however, living here on Mars among men of action finds himself despised as a 'college farmer,' ignored as a weakling, and looked down upon by men whom he considers much his inferiors. To be unable to compensate for this except by murder of the most cowardly sort is another and worse kind of smallness.

"But Benson is mentally sick. To get a confession out of him would be difficult; perhaps impossible. However, Hennes would do almost as well as a source of knowledge about the future activities of the poisoners. He could tell us exactly where in the Asteroids we could find his various henchmen. He could tell us where the supply of poison, for use at midnight tonight, is kept. He could tell us many things."

Hennes sneered. "I could tell you nothing, and I will tell you nothing. If you shoot Benson and myself right now, matters will proceed exactly as they would if we were alive. So do your worst."

"Would you talk," said the Space Ranger, "if we guaranteed your personal safety?"

"Who would believe in your guarantee?" said Hennes. "I'll stick to my story. I'm an innocent man. Killing us will do you no good."

"You realize that if you refuse to talk, millions of men, women, and children may die."

Hennes shrugged.

"Very well," said the Space Ranger. "I have been told something about the effects of the Martian poison Benson has developed. Once in the stomach, absorption is very quick; the nerves to the chest muscles are paralyzed; the victim can't breathe. It is painful strangulation stretched over five minutes. Of course that is when the poison has been introduced into the stomach."

The Space Ranger, as he spoke, drew from his pocket a small glass pellet. He opened the sampler and drew it across the gummed surface until the glitter of the glass had been obscured by a sticky coating.

"Now if," he said, "the poison were placed just within the lips, matters would be different. It would be absorbed much more slowly and would take effect much more gradually. Makian," he called suddenly, "there's the man who betrayed you, used your farm to organize

the poisoning of men and the ruin of the farm syndicates. Grab his arms and pinion them."

The Space Ranger tossed a pinion upon the table.

Makian, with a cry of long-pent rage, threw himself on Hennes. For a moment wrath restored to him some of the strength of his youth and Hennes struggled in vain against him.

When Makian stepped away, Hennes was strapped to his chair, his arms drawn painfully behind and around its back, his wrists pinioned tightly.

Makian said between rasping pants, "After you talk, it will be my pleasure to take you apart with my ten fingers."

The Space Ranger circled the table now, approaching Hennes slowly, the smeared glass pellet held in two fingers before him. Hennes shrank away. At the other end of the table Benson writhed desperately, and Bigman kicked him into stillness.

The Space Ranger pinched Hennes's lower lip and drew it out, exposing his teeth. Hennes tried to snap his head away, but the Space Ranger's fingers pinched together and Hennes let out a muffled scream.

The Space Ranger dropped the pellet in the space between lip and teeth.

"I believe it will take about ten minutes before you absorb enough poison through the mouth membranes to begin taking noticeable effect," said the Space Ranger. "If you agree to talk before then, we will remove the pellet and let you rinse your mouth. Otherwise, the poison will take effect slowly. Gradually it will become more and more difficult and painful to breathe, and finally, in about an hour, you will die of very slow strangulation. And if you do die, you will have accomplished nothing, because the demonstration will be very educational for Benson and we will proceed to sweat the truth out of him."

The perspiration trickled down Hennes's temples. He made choking noises in the back of his throat.

The Space Ranger waited patiently.

Hennes cried, "I'll talk. I'll talk. Take it out! *Take it out!*"

The words were muffled through his distorted lips, but their intent and the hideous terror in every line of his face were plain enough.

"Good! You had better take notes, Dr. Silvers."

It was three days before Dr. Silvers met David Starr again. He had had little sleep in that interval and he was tired, but not too tired

to greet David gladly. Bigman, who had not left Silvers in all that interval, was equally effusive in his greetings.

"It worked," said Silvers. "You've heard about it, I'm sure. It worked unbelievably well."

"I know," said David, smiling. "The Space Ranger told me all about it."

"Then you've see him since."

"Only for a moment or two."

"He disappeared almost immediately afterward. I mentioned him in my report; I had to, of course. But it certainly made me feel foolish. In any case, I have Bigman here and old Makian as witnesses."

"And myself," said David.

"Yes, of course. Well, it's over. We located the poison stores and cleaned out the Asteroids. There'll be two dozen men up for life sentences and Benson's work will actually be beneficial in the end. His experiments on Martian life were, in their way, revolutionary. It's possible a whole new series of antibiotics may be the final results of his attempts to poison Earth into submission. If the poor fool had aimed at scientific eminence, he would have ended a great man. Thank Hennes's confession for stopping him."

David said, "That confession was carefully planned for. The Space Ranger had been working on him since the night before."

"Oh, well, I doubt that any human could have withstood the danger of poisoning that Hennes was subject to. In fact, what would have happened if Hennes had been really innocent? The chance the Space Ranger took was a big one."

"Not really. There was no poison involved. Benson knew that. Do you suppose Benson would have left his sampler in his laboratory smeared with poison as evidence against himself? Do you suppose he kept any poison where it might be found by accident?"

"But the poison on the pellet."

". . . was simple gelatin, unflavored. Benson would have known it would be something like that. That's why the Space Ranger did not try to get a confession out of him. That's why he had him gagged, to prevent a warning. Hennes might have figured it out for himself, if he hadn't been in blind panic."

"Well, I'll be tossed out into Space," said Dr. Silvers blankly.

He was still rubbing his chin when he finally made his excuses and went off to bed.

David turned to Bigman.

"And what will you be doing now, Bigman?"



Bigman said, "Dr. Silvers has offered me a permanent job with the Council. But I don't think I'll take it."

"Why not?"

"Well, I'll tell you, Mr. Starr. I sort of figure on going with you, wherever you happen to be going after this."

"I'm just going to Earth," said David.

They were alone, yet Bigman looked cautiously over his shoulder before he spoke. "It seems to me you'll be going lots of places besides Earth—Space Ranger."

"What?"

"Sure. I knew that when I first saw you come in with all that light and smoke. That's why I didn't take you serious when it looked as if you were accusing me of being the poisoner." His face was broken out in a giant grin.

"Do you know what you're talking about?"

"I sure do. I couldn't see your face, or the details of your costume, but you were wearing hip boots and you were the right height and build."

"Coincidence."

"Maybe. I couldn't see the design on the hip boots but I made out a little of them, the colors, for instance. And you're the only farmboy I ever heard of that was willing to wear simple black and white."

David Starr threw his head back and laughed. "You win. Do you really want to join forces with me?"

"I'd be proud to," said Bigman.

David held out his hand and the two shook.

"Together then," said David, "wherever we go."



**LUCKY STARR AND THE  
PIRATES OF THE  
ASTEROIDS**

## DEDICATION

To Frederik Pohl,  
That contradiction in terms—  
A lovable agent.

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# 1

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## The Doomed Ship

*Fifteen minutes to zero time!* The *Atlas* waited to take off. The sleek, burnished lines of the space-ship glittered in the bright Earthlight that filled the Moon's night sky. Its blunt prow pointed upward into empty space. Vacuum surrounded it and the dead pumice of the Moon's surface was under it. The number of its crew was zero. There wasn't a living person aboard.

Dr. Hector Conway, Chief Councilor of Science, said, "What time is it, Gus?"

He felt uncomfortable in the Moon offices of the Council. On Earth he would have been at the very top of the stone and steel needle they called Science Tower. He would have been able to look out the window toward International City.

Here on the Moon they did their best. The offices had mock windows with brilliantly designed Earth scenes behind them. They were colored naturally, and lights within them brightened and softened during the day, simulating morning, noon, and evening. During the sleep periods they even shone a dim, dark blue.

It wasn't enough, though, for an Earthman like Conway. He knew that if he broke through the glass of the windows there would be only painted miniatures before his eyes, and if he got behind that, then there would be just another room, or maybe the solid rock of the Moon.

Dr. Augustus Henree, whom Conway had addressed, looked at his wrist. He said, between puffs at his pipe, "There's still fifteen minutes. There's no point in worrying. The *Atlas* is in perfect shape. I checked it myself yesterday."

"I know that." Conway's hair was pure white and he looked older than the lank, thin-faced Henree, though they were the same age. He said, "It's Lucky I'm worried about."

"Lucky?"

Conway smiled sheepishly. "I'm catching the habit, I'm afraid. I'm talking about David Starr. It's just that everyone calls him Lucky these days. Haven't you heard them?"

"Lucky Starr, eh? The name suits him. But what about him? This is all his idea, after all."

"Exactly. It's the sort of idea he gets. I think he'll tackle the Sirian Consulate on the Moon next."

"I wish he would."

"Don't joke. Sometimes I think you encourage him in his idea that he ought to do everything as a one-man job. It's why I came here to the Moon, to keep an eye on him, not to watch the ship."

"If that's what you came here for, Hector, you're not on the job."

"Oh well, I can't follow him about like a mother hen. But Bigman is with him. I told the little fellow I would skin him alive if Lucky decided to invade the Sirian Consulate singlehanded."

Henree laughed.

"I tell you he'd do it," grumbled Conway. "What's worse, he'd get away with it, of course."

"Well, then."

"It would just encourage him, and then someday he'll take one risk too many, and he's too valuable a man to lose!"

John Bigman Jones teetered across the packed clay flooring, carrying his stein of beer with the utmost care. They didn't extend the pseudo-gravity fields outside the city itself, so that out here at the spaceport you had to do the best you could under the Moon's own gravity field. Fortunately John Bigman Jones had been born and bred on Mars, where the gravity was only two fifths normal anyway, so it wasn't too bad. Right now he weighed twenty pounds. On Mars he would have weighed fifty, and on the Earth one hundred and twenty.

He got to the sentry, who had been watching him with amused eyes. The sentry was dressed in the uniform of the Lunar National Guard, and he was used to the gravity.

John Bigman Jones said, "Hey. Don't stand there so gloomylike. I brought you a beer. Have it on me."

The sentry looked surprised, then said regretfully, "I can't. Not when I'm on duty, you know."



"Oh well. I can handle it myself, I guess. I'm John Bigman Jones. Call me Bigman." He only came up to the sentry's chin and the sentry wasn't particularly tall, but Bigman held out his hand as though he were reaching down with it.

"I'm Bert Wilson. You from Mars?" The sentry looked at Bigman's scarlet and vermilion hip boots. Nobody but a Martian farmboy would let himself be caught dead in space with them.

Bigman looked down at them proudly. "You bet. I'm stuck here for about a week. Great space, what a rock the Moon is. Don't any of you guys ever go out on the surface?"

"Sometimes. When we have to. There isn't much to see there."

"I sure wish I could go. I hate being cooped up."

"There's a surface lock back there."

Bigman followed the thumb that had been jerked back across the sergeant's shoulder. The corridor (rather poorly lit at this distance from Luna City) narrowed into a recess in the wall.

Bigman said, "I don't have a suit."

"You couldn't go out even if you had one. No one's allowed out without a special pass for a while."

"How come?"

Wilson yawned. "They've got a ship out there that's getting set to go," he looked at his watch, "in about twelve minutes. Maybe the heat will be off after it's gone. I don't know the story on it."

The sentry rocked on the balls of his feet and watched the last of the beer drain down Bigman's throat. He said, "Say, did you get the beer at Patsy's Port Bar? Is it crowded?"

"It's empty. Listen, tell you what. It'll take you fifteen seconds to get in there and have one. I've got nothing to do. I'll stay right here and make sure nothing happens while you're gone."

Wilson looked longingly in the direction of the Port Bar. "I better not."

"It's up to you."

Neither one of them, apparently, was conscious of the figure that drifted past behind them along the corridor and into the recess where the space-lock's huge door barred the way to the surface.

Wilson's feet took him a few steps toward the Bar, as though they were dragging the rest of him. Then he said, "Nah! I better not."

*Ten minutes to zero time.*

It had been Lucky Starr's idea. He had been in Conway's home office the day the news arrived that the T.S.S. *Waltham Zachary* had been gutted by pirates, its cargo gone, its officers frozen corpses in space and most of the men captives. The ship itself had put up a

pitifully futile fight and had been too damaged to be worth the pirates' salvage. They had taken everything movable though, the instruments, of course, and even the motors.

Lucky said, "It's the asteroid belt that's the enemy. One hundred thousand rocks."

"More than that." Conway spat out his cigarette. "But what can we do? Ever since the Terrestrial Empire has been a going concern, the asteroids have been more than we could handle. A dozen times we've gone in there to clean out nests of them, and each time we've left enough to breed the troubles again. Twenty-five years ago, when—"

The white-haired scientist stopped short. Twenty-five years ago Lucky's parents had been killed in space and he himself, a little boy, had been cast adrift.

Lucky's calm brown eyes showed no emotion. He said, "The trouble is we don't even know where all the asteroids are."

"Naturally not. It would take a hundred ships a hundred years to get the necessary information for the sizable asteroids. And even then the pull of Jupiter would be forever changing asteroidal orbits here and there."

"We might still try. If we sent out one ship, the pirates might not know it was an impossible job and fear the consequences of a real mapping. If the word got out that we had started a mapping survey, the ship would be attacked."

"And then what?"

"Suppose we sent out an automatic ship, completely equipped, but with no human personnel."

"It would be an expensive thing to do."

"It might be worth it. Suppose we equipped it with lifeboats automatically designed to leave the ship when its instruments recorded the energy pattern of an approaching hyperatomic motor. What do you suppose the pirates would do?"

"Shoot the lifeboats into metal drift, board the ship, and take it to their base."

"Or one of their bases. Right. And if they see the lifeboats try to get away, they won't be surprised at finding no crew aboard. After all, it would be an unarmed survey ship. You wouldn't expect the crew to attempt resistance."

"Well, what are you getting at?"

"Suppose further that the ship is wired to explode once its temperature is raised to more than twenty degrees absolute, as it certainly would if it were brought into an asteroid hangar."

"You're proposing a booby trap, then?"

"A gigantic one. It would blow an asteroid apart. It might destroy dozens of pirate ships. Furthermore, the observatories at Ceres, Vesta, Juno, or Pallas might pick up the flash. Then, if we could locate surviving pirates, we might get information that would be very useful indeed."

"I see."

And so they started work on the *Atlas*.

The shadowy figure in the recess leading to the Moon's surface worked with sure quickness. The sealed controls of the air-lock gave under the needle beam of a micro-heatgun. The shielding metal disc swung open. Busy, black-gloved fingers flew for a moment. Then the disc was replaced and fused tightly back by a wider and cooler beam from the same heatgun.

The cave door of the lock yawned. The alarm that rang routinely whenever it did so was silent this time, its circuits behind the tampered disc disarranged. The figure entered the lock and the door closed behind him. Before he opened the surface door that faced out into the vacuum, he unrolled the pliant plastic he carried under his arm. He scrambled into it, the material covering him wholly and clinging to him, broken only by a strip of clear silicone plastic across his eyes. A small cylinder of liquid oxygen was clamped to a short hose that led to the headpiece and was hooked on to the belt. It was a semi-space-suit, designed for the quick trip across an airless surface, not guaranteed to be serviceable for stretches of more than half an hour.

Bert Wilson, startled, swiveled his head. "Did you hear that?"

Bigman gaped at the sentry. "I didn't hear anything."

"I could swear it was a lock door closing. There isn't any alarm, though."

"Is there supposed to be?"

"Sure. You've got to know when one door is open. It's a bell where there's air and a light where there isn't. Otherwise someone is liable to open the other door and blow all the air out of a ship or corridor."

"All right. If there's no alarm, there's nothing to worry about."

"I'm not so sure." With flat leaps, each one covering twenty feet in the Moon's baby gravity, the sentry passed up the corridor to the air-lock recess. He stopped at a wall panel on the way and activated

three separate banks of ceiling Floressoes, turning the area into a noonday of light.

Bigman followed, leaping clumsily and in perpetual danger of overbalancing into a slow nose landing.

Wilson had his blaster out. He inspected the door, then turned to look up the corridor again. "Are you sure you didn't hear anything?"

"Nothing," said Bigman. "Of course, I wasn't listening."

*Five minutes to zero time.*

Pumice kicked up as the space-suited figure moved slow-motion toward the *Atlas*. The space-ship glittered in the Earthlight, but on the Moon's airless surface the light did not carry even an inch into the shadow of the ridge that hemmed in the port.

In three long leaps the figure moved across the lighted portion and into the pitchy shadow of the ship itself.

He moved up the ladder hand over hand, flinging himself into an upward drift that carried him ten rungs at a time. He came to the ship's air-lock. A moment at the controls and it yawned open, then closed.

The *Atlas* had a passenger. One passenger!

The sentry stood before the corridor air-lock and considered its appearance dubiously.

Bigman was rattling on. He said, "I been here nearly a week. I'm supposed to follow my side-kick around and make sure he doesn't get into trouble. How's that for a space wrangler like me. I haven't had a chance to get away—"

The anguished sentry said, "Give it a rest, friend. Look, you're a nice kid and all that, but let's have it some other time."

For a moment he stared at the control seal. "That's funny," he said.

Bigman was swelling ominously. His little face had reddened. He seized the sentry by the elbow and swung him about, almost overbalancing himself as he did so.

"Hey, bud, who're you calling a kid?"

"Look, go away!"

"Just a minute. Let's get something straight. Don't think I let myself get pushed around because I'm not as tall as the next fellow. Put 'em up. Go ahead. Get your fists up or I'll splatter your nose all over your face."

He was sparring and slipping about.

Wilson looked at him with astonishment. "What's got into you? Stop being foolish."

"Scared?"

"I can't fight on duty. Besides, I didn't mean to hurt your feelings. I've just got a job to do and I haven't got any time for you."

Bigman lowered his fists. "Hey, I guess the ship's taking off."

There was no sound, of course, since sound would not travel through a vacuum, but the ground under their feet vibrated softly in response to the hammer blows of a rocket exhaust lifting a ship off a planet.

"That's it, all right." Wilson's forehead creased. "Guess there's no use making a report. It's too late anyway." He had forgotten about the control seal.

*Zero time!*

The ceramic-lined exhaust pit yawned under the *Atlas* and the main rockets blasted their fury into it. Slowly and majestically the ship lifted and moved upward ponderously. Its speed increased. It pierced the black sky, shrinking until it was only a star among stars, and then it was gone.

Dr. Henree looked at his watch for the fifth time and said, "Well, it's gone. It must be gone now." He pointed with the stem of his pipe to the dial.

Conway said, "Let's check with the port authorities."

Five seconds later they were looking at the empty space-port on the visiscreen. The exhaust pit was still open. Even in the near-ultimate frigidity of the Moon's dark side it was still steaming.

Conway shook his head. "It was a beautiful ship."

"Still is."

"I think of it in the past. In a few days it will be a rain of molten metal. It's a doomed ship."

"Let's hope that there's a pirate base somewhere that's also doomed."

Henree nodded somberly.

They both turned as the door opened. It was only Bigman.

He broke into a grin. "Oh, boy, it sure was nice coming in to Luna City. You could feel the pounds going back on with each step you took." He stamped his feet and hopped two or three times. "See," he said, "you try that out where I was and you hit the ceiling and look like one big fool."

Conway frowned. "Where's Lucky?"

Bigman said, "I know where he is. I know where he is every minute. Say, the *Atlas* has just taken off."

"I know that," said Conway. "And where is Lucky?"

"On the *Atlas*, of course. Where do you think he'd be?"

## 2

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### Vermin of Space

Dr. Henree dropped his pipe and it bounced on the linolite flooring. He paid it no attention.

“What!”

Conway reddened and his face stood out, plumply pink, against his snowy hair. “Is this a joke?”

“No. He got on five minutes before it blasted. I talked to the sentry, guy called Wilson, and kept him from interfering. I had to pick a fight with the fellow and I would have given him the old bingo-bango,” he demonstrated the one-two punch with quick, hard blows at the atmosphere, “but he backed off.”

“You let him? You didn’t warn us?”

“How could I? I’ve got to do what Lucky says. He said he had to get on at the last minute and without anyone knowing, or you and Dr. Henree would have stopped him.”

Conway groaned. “He did it. By space, Gus, I should have known better than to trust that pint-sized Martian. Bigman, you fool! You know that ship’s a booby trap.”

“Sure. Lucky knows it too. He says not to send out ships after him or things will be ruined.”

“They will, will they? There’ll be men after him within the hour just the same.”

Henree clutched his friend’s sleeve. “Maybe not, Hector. We don’t know what he’s planning to do, but we can trust him to scramble out safely whatever it is. Let’s not interfere.”

Conway fell back, trembling with anger and anxiety.

Bigman said, “He says we’re to meet him on Ceres, and also, Dr. Conway, he says you’re to control your temper.”

“You—” began Conway, and Bigman left the room in a hurry.

\* \* \*

The orbit of Mars lay behind and the sun was a shrunken thing.

Lucky Starr loved the silence of space. Since he had graduated and joined the Council of Science, space had been his home, rather than any planetary surface. And the *Atlas* was a comfortable ship. It had been provisioned for a full crew with only so much omitted as might be explained by consumption before reaching the asteroids. In every way the *Atlas* was intended to look as though, until the moment of the pirates' appearance, it had been fully manned.

So Lucky ate Syntho-steak from the yeast beds of Venus, Martian pastry, and boneless chicken from Earth.

I'll get fat, he thought, and watched the skies.

He was close enough to make out the larger asteroids. There was Ceres, the largest of all, nearly five hundred miles in diameter. Vesta was on the other side of the sun, but Juno and Pallas were in sight.

If he were to use the ship's telescope, he would have found more, thousands more, maybe tens of thousands. There was no end to them.

Once it had been thought that there had been a planet between Mars and Jupiter and that geologic ages earlier it had exploded into fragments, but that wasn't so. It was Jupiter that was the villain. Its giant gravitational influence had disrupted space for hundreds of millions of miles about it in the eons when the Solar System was being formed. The cosmic gravel between itself and Mars could never coalesce into a single planet with Jupiter pulling and pulling. Instead it coalesced into myriads of little worlds.

There were the four largest, each a hundred or more miles in diameter. There were fifteen hundred more that were between ten and a hundred miles in diameter. After that there were thousands (no one knew exactly how many) that were between one and ten miles in diameter and tens of thousands that were less than a mile in diameter but still as large or larger than the Great Pyramid.

They were so plentiful that astronomers called them "the vermin of space."

The asteroids were scattered over the entire region between Mars and Jupiter, each whirling in its own orbit. No other planetary system known to man in all the Galaxy had such an asteroid belt.

In a sense it was good. The asteroids had formed steppingstones out toward the major planets. In a sense it was bad. Any criminal who could escape to the asteroids was safe from capture by all but the most improbable chance. No police force could search every one of those flying mountains.

The smaller asteroids were no man's land. There were well-



manned astronomical observatories on the largest, notably on Ceres. There were beryllium mines on Pallas, while Vesta and Juno were important fueling stations. But that still left fifty thousand sizable asteroids over which the Terrestrial Empire had no control whatever. A few were large enough to harbor fleets. Some were too small for more than a single speed-cruiser with additional space, perhaps, for a six-month supply of fuel, food, and water.

And it was impossible to map them. Even in the ancient, pre-atomic times, before space travel, when only fifteen hundred or so were known, and those the largest, mapping had been impossible. Their orbits had been carefully calculated via telescopic observation and still asteroids were forever being "lost," then "found" again.

Lucky snapped out of his reverie. The sensitive Ergometer was picking up pulsations from the outer reaches. He was at the control board in a step.

The steady energy outpourings of the sun, whether direct or by way of the relatively tiny reflected dribbles from the planets, were canceled out on the meter. What was coming in now were the characteristically intermittent energy pulses of a hyperatomic motor.

Lucky threw in the Ergograph connection and the energy pattern traced itself out in a series of lines. He followed the graphed paper as it emerged and his jaw muscles hardened.

There had always been a chance that the *Atlas* might meet an ordinary trading ship or passenger liner, but the energy pattern was none of that. The approaching ship had motors of advanced design, and different from any of the Terrestrial fleet.

Five minutes passed before he had enough spread of measurement to be able to calculate the distance and direction of the energy source.

He adjusted the visiplate for telescopic viewing and the star field speckled enormously. Carefully he searched among the infinitely silent, infinitely distant, infinitely motionless stars until a flicker of movement caught his eyes and the Ergometer's reading dials lined up at multiple zero.

It was a pirate. No doubt! He could make out its outlines by the half that glittered in the sun and by the port lights in the shaded half. It was a thin, graceful vessel, having the look of speed and maneuverability. It had an alien look about it, too.

Sirian design, thought Lucky.

He watched the ship grow slowly larger on the screen. Was it

such a ship that his father and mother watched on the last day of their lives?

He scarcely remembered his father and mother, but he had seen pictures of them and had heard endless stories about Lawrence and Barbara Starr from Henree and Conway. They had been inseparable, the tall, grave Gus Henree, the choleric, persevering Hector Conway, and the quick, laughing Larry Starr. They had gone to school together, graduated simultaneously, entered the Council as one and done all their assignments as a team.

And then Lawrence Starr had been promoted and assigned to a tour of duty on Venus. He, his wife, and his four-year-old son were Venus-bound when the pirate ship attacked.

For years Lucky had unhappily imagined what that last hour upon the dying ship must have been like. First, the crippling of the main power drives at the stern of the ship while pirate and victim were still apart. Then the blasting of the air-locks and the boarding. The crew and passengers scrambling into space-suits against the loss of air when the air-locks caved in. The crew armed and waiting. The passengers huddling in the interior rooms without much hope. Women weeping. Children screaming.

His father wasn't among the hiders. His father was a Council member. He had been armed and fighting. Lucky was sure of that. He had one memory, a short one that had been burned into his mind. His father, a tall, strong man, was standing with blaster raised and face set in what must have been one of the few moments of cold rage in his life, as the door of the control room crashed inward in a cloud of black smoke. And his mother, face wet and smudged but clearly seen through the space-suit face-plate, was forcing him into a small lifeboat.

"Don't cry, David, it will be all right."

Those were the only words he remembered ever having heard his mother say. Then there was thunder behind him and he was pressed back against a wall.

They found him in the lifeboat two days later, when they followed its coldly automatic radio calls for help.

The government had launched a tremendous campaign against the asteroid pirates immediately afterward and the Council had lent that drive every last ounce of their own effort. For the pirates it turned out that to attack and kill key men of the Council of Science was bad business. Such asteroid hideouts as were located were blasted

into dust, and the pirate menace was reduced to the merest flicker for twenty years.

But often Lucky wondered if they had ever located the particular pirate ship that had carried the men who had killed his parents. There was no way of telling.

And now the menace had revived in a less spectacular but far more dangerous fashion. Piracy wasn't a matter of individual jabs any longer. It bore the appearance of an organized attack on Terrestrial commerce. There was more to it. From the nature of the warfare carried on Lucky felt certain that one mind, one strategic direction, lay behind it. That one mind, he knew, he would have to find.

He lifted his eyes to the Ergometer once more. The energy recordings were strong now. The other vessel was well within the distance at which space courtesy required routine messages of mutual identification. For that matter, it was well within the distance at which a pirate might have made its initial hostile move.

The floor shuddered under Lucky. It wasn't a blaster bolt from the other ship, but rather the recoil of a departing lifeboat. The energy pulses had become strong enough to activate their automatic controls.

Another shudder. And another. Five altogether.

He watched the oncoming ship closely. Often pirates shot up such lifeboats, partly out of the perverted fun of it and partly to prevent escapees from describing the vessel, assuming they had not done so already through the sub-ether.

This time, however, the ship ignored the lifeboats altogether. It approached within locking range. Its magnetic grapples shot out, clamped on the *Atlas's* hull, and the two vessels were suddenly welded together, their motions through space well matched.

Lucky waited.

He heard the air-lock open, then shut. He heard the clang of feet and the sound of helmets being unclipped, then the sound of voices.

He didn't move.

A figure appeared in the door. Helmet and gauntlets had been removed, but the rest of the man was still swathed in ice-coated space-suit. Space-suits had a habit of doing that when one entered from the near-absolute zero of space into the warm moist air of the interior of a ship. The ice was beginning to melt.

The pirate caught sight of Lucky only when he was two full steps into the control room. He stopped, his face frozen in an almost comical expression of surprise. Lucky had time to note the sparse black

hair, the long nose, and the dead white scar that ran from nostril to canine tooth splitting the upper lip into two unequal parts.

Lucky bore the pirate's astonished scrutiny calmly. He had no fear of recognition. Councilmen on active duty always worked without publicity with the very thought that a too-well-known face would diminish their usefulness. His own father's face had appeared over the sub-ether only after his death. With fleeting bitterness Lucky thought that perhaps better publicity during life might have prevented the pirate attack. But that was silly, he knew. By the time the pirates had seen Lawrence Starr the attack had proceeded too far to be stopped.

Lucky said, "I've got a blaster. I'll use it only if you reach for yours. Don't move."

The pirate had opened his mouth. He closed it again.

Lucky said, "If you want to call the rest, go ahead."

The pirate stared suspiciously, then, eyes firmly on Lucky's blaster, yelled, "Blinking space, there's a ripper with a gat here."

There was laughter at that, and a voice shouted, "Quiet!"

Another man stepped into the room. "Step aside, Dingo," he said.

His space-suit was off entirely and he was an incongruous sight aboard ship. His clothing might have come out of the most fashionable tailor shop in International City, and would have suited better a dinner party back on Earth. His shirt had a silken look you got only out of the best plastex. Its iridescence was subtle rather than garish, and his tight-ankled breeches blended in so well that, but for the ornamented belt, it would have seemed one garment. He wore a wristband that matched his belt and a fluffy, sky-blue neck sash. His crisp brown hair was curly and looked as though it received frequent attention.

He was half a head shorter than Lucky, but from the way he carried himself the young Councilman could see that any assumption of softness he might make on the basis of the man's dude costume would be quite wrong.

The newcomer said pleasantly, "Anton is my name. Would you put down your gun?"

Lucky said, "And be shot?"

"You may be shot eventually, but not at the moment. I would like to question you first."

Lucky held fast.

Anton said, "I keep my word." A tiny flush appeared on his cheekbones. "It is my only virtue as men count virtue, but I hold fast to it."

Lucky put down his blaster and Anton picked it up. He handed it to the other pirate.

"Put it away, Dingo, and get out of here." He turned to Lucky. "The other passengers got away in the lifeboats? Right?"

Lucky said, "That's an obvious trap, Anton—"

"Captain Anton, *please*." He smiled, but his nostrils flared.

"Well, then, it's a trap, Captain Anton. It was obvious that you knew there were no passengers or crew on this ship. You knew it long before you boarded."

"Indeed? How do you make that out?"

"You approached the ship without signaling and without a warning shot. You made no particular speed. You ignored the lifeboats when they shot out. Your men entered the ship carelessly, as though they expected no resistance. The man who first found me entered this room with his blaster well holstered. The conclusion follows."

"Very good. And what are you doing on a ship without crew or passengers?"

Lucky said grimly, "I came to see you, Captain Anton."

# 3

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## Duel in Word

Anton's expression did not change. "And now you see me."

"But not privately, Captain." Lucky's lips thinned and closed with great deliberation.

Anton looked quickly about. A dozen of his men in every stage of space-suit undress had crowded into the room, watching and listening with gaping interest.

He reddened slightly. His voice rose. "Get on your business, scum. I want a complete report on this ship. And keep your weapons ready. There may be more men on board and if anyone else gets caught as Dingo did, he'll be tossed out an air-lock."

There was slow, shuffling motion outward.

Anton's voice was a sudden scream. "Quickly! Quickly!" One snaking gesture, and a blaster was in his hand. "I'll count three and shoot. One . . . two . . ."

They were gone.

He faced Lucky again. His eyes glittered and his breath came and went quickly through pinched white nostrils.

"Discipline is a great thing," he breathed. "They must fear me. They must fear me more than they fear capture by the Terrestrial Navy. Then a ship is one mind and one arm."

Yes, thought Lucky, one mind and one arm, but whose? Yours?

Anton's smile had returned, boyish, friendly, and open. "Now tell me what you want."

Lucky jerked a thumb toward the other's blaster, still drawn and ready. He matched the other's smile. "Do you intend shooting? If so, get it over with."

Anton was shaken. "Space! You're a cool one. I'll shoot when I

please. I like it this way. What's your name?" The blaster held on its line with deadly steadiness.

"Williams, Captain."

"You're a tall man, Williams. You look strong. And yet here I sit and with just a pressure of my thumb you're dead. I think it's very instructive. Two men and one blaster is the whole secret of power. Did you ever think of power, Williams?"

"Sometimes."

"It's the only meaning to life, don't you think?"

"Maybe."

"I see you're anxious to do business. Let's begin. Why are you here?"

"I've heard of pirates."

"We're the men of the asteroids, Williams. No other name."

"That suits me. I've come to join the men of the asteroids."

"You flatter us, but my thumb is still on the blaster contact. Why do you want to join?"

"Life is closed on Earth, Captain. A man like myself could settle down to be an accountant or an engineer. I might even run a factory or sit behind a desk and vote at stockholders' meetings. It doesn't matter. Whatever it is, it would be routine. I would know my life from beginning to end. There would be no adventure, no uncertainty."

"You're a philosopher, Williams. Go on."

"There are the colonies, but I'm not attracted by a life as a farm boy on Mars or as a vat tender on Venus. What does attract me is the life on the asteroids. You live hard and dangerously. A man can rise to power as you have. As you say, power gives meaning to life."

"So you stow away on an empty ship?"

"I didn't know it was empty. I had to stow away somewhere. Legitimate space passage comes high and passports to the asteroids aren't being handed out these days. I knew this ship was part of a mapping expedition. The word had got around. It was headed for the asteroids. So I waited till just before it blasted off. That's when everybody would be busy getting ready for takeoff and yet the air-locks would still be open. I had a pal take a sentry out of circulation.

"I figured we'd stop at Ceres. It would be bound to be Prime Base for any asteroid expedition. Once there, it seemed to me I could get off without trouble. The crew would be astronomers and mathematicians. Snatch off their glasses and they'd be blind. Point a blaster at them and they'd die of fright. Once on Ceres I'd contact the pi—  
The men of the asteroids, somehow. Simple."

"Only you got a surprise when you boarded ship? Is that it?" asked Anton.

"I'll say. No one aboard and before I could get it straight in my mind that there *wasn't* anyone aboard, it blasted off."

"What's it all about, Williams? How do you figure it?"

"I don't. It beats me."

"Well, let's see if we can find out. You and I together." He gestured with his blaster and said sharply, "Come on."

The pirate chief led the way out of the control room into the long central corridor of the ship. A group of men came out of a door up ahead. They rumbled short comments at one another and stilled into silence when they caught Anton's eyes.

Anton said, "Come here."

They approached. One wiped a grizzled mustache with the back of his hand and said, "No one else on board this ship, Captain."

"All right. What do you think of the ship?"

There were four of them. The number increased as more men joined the group.

Anton's voice grew edgy. "What do any of you think of the ship?"

Dingo pushed his way forward. He had got rid of his space-suit and Lucky could see him as a man. It was not altogether a pleasant sight. He was broad and heavy and his arms were slightly bowed as they hung loosely from bulging shoulders. There were tufts of dark hair on the back of his fingers and the scar on his upper lip twitched. His eyes glared at Lucky.

He said, "I don't like it."

"You don't like the ship?" Anton asked sharply.

Dingo hesitated. He straightened his arms, threw back his shoulders. "It stinks."

"Why? Why do you say that?"

"I could take it apart with a can opener. Ask the rest and see if they don't agree with me. This crate is put together with toothpicks. It wouldn't hold together for three months."

There were murmurs of agreement. The man with the gray mustache said, "Beg your pardon, Captain, but the wiring is taped in place. It's a two-bit job. The insulation is almost burnt through already."

"All the welding was done in a real hurry," said another. "The seams stand out like that." He held out a thick and dirty thumb.

"What about repairs?" asked Anton.

Dingo said, "It would take a year and a Sunday. It isn't worth



it. Anyway, we couldn't do it here. We'd have to take it to one of the rocks."

Anton turned to Lucky, explaining suavely, "We always refer to the asteroids as 'rocks,' you understand."

Lucky nodded.

Anton said, "Apparently my men feel that they wouldn't care to ride this ship. Why do you suppose the Earth government would send out an empty ship and such a jerry-built job to boot?"

"It keeps getting more and more confusing," said Lucky.

"Let's complete our investigation, then."

Anton walked first. Lucky followed closely. The men tagged behind silently. The back of Lucky's neck prickled. Anton's back was straight and fearless, as though he expected no attack from Lucky. He might well feel so. Ten armed men were on Lucky's heels.

They glanced through the small rooms, each designed for utmost economy in space. There was the computation room, the small observatory, the photographic laboratory, the galley and the bunk rooms.

They slipped down to the lower level through a narrow curving tube within which the pseudo-grav field was neutralized so that either direction could be "up" or "down" at will. Lucky was motioned down first, Anton following so closely that Lucky barely had time to scramble out of the way (his legs buckling slightly with the sudden access of weight) before the pirate chief was upon him. Hard, heavy space-boots missed his face by inches.

Lucky regained his balance and whirled angrily, but Anton was standing there smiling pleasantly, his blaster lined up straight and true at Lucky's heart.

"A thousand apologies," he said. "Fortunately you are quite agile."

"Yes," muttered Lucky.

On the lower level were the engine room and the power plant; the empty berths where the lifeboats had been. There were the fuel stores, the food and water stores, the air fresheners, and the atomic shielding.

Anton murmured, "Well, what do you think of it all? Shoddy, perhaps, but I see nothing out of order."

"It's hard to tell like this," said Lucky.

"But you must have lived on this ship for days."

"Sure, but I didn't spend time looking it over. I just waited for it to get somewhere."

"I see. Well, back to upper level."

Lucky was first "down" the travel tube again. This time he landed lightly and sprang six feet to one side with the grace of a cat.

Seconds passed before Anton popped out of the tube. "Jumpy?" he asked.

Lucky flushed.

One by one the pirates appeared. Anton did not wait for all of them, but started down the corridor again.

"You know," he said, "you'd think we'd been all over this ship. Most people would say so. Wouldn't you say so?"

"No," said Lucky calmly, "I wouldn't. We haven't been in the washroom."

Anton scowled and for more than just a moment the pleasantness was gone from his face, and only a tight, white anger flashed in its place.

Then it passed. He adjusted a stray lock of hair on his head, then regarded the back of his hand with interest. "Well, let's look there."

Several of the men whistled and the rest exclaimed in a variety of ways when the appropriate door clicked open.

"Very nice," murmured Anton. "Very nice. Luxurious, I would say."

It was! There was no question of that. There were separate stall showers, three of them, with their plumbing arranged for sudsing water (luke-warm) and rinsing water (hot or cold). There were also half a dozen washbowls in ivory-chrome, with shampoo stands, hair driers and needle-jet skin stimulators. Nothing that was necessary was missing.

"There's certainly nothing shoddy about this," said Anton. "It's like a show on the sub-etherics, eh, Williams? What do you make of this?"

"I'm confused."

Anton's smile vanished like the fleeting flash of a speeding space-ship across a visiplat. "I'm not. Dingo, come in here."

The pirate chief said to Lucky, "It's a simple problem, you. We have a ship here with no one aboard, thrown together in the cheapest possible way, as though it were done in a hurry, but with a washroom that is the last word. Why? I think it's just in order to have as many pipes as possible *in* the washroom. And why that? So that we'd never suspect that one or two of them were dummies . . . Dingo, which pipe is it?"

Dingo kicked one.

"Well, don't kick it, you misbegotten fool. Take it apart."

Dingo did so, a micro-heatgun flashing briefly. He yanked out wires.

"What's that, Williams?" demanded Anton.

"Wires," said Lucky briefly.

"I know that, you lump." He was suddenly furious. "What else? I'll tell *you* what else. Those wires are set to explode every ounce of the atomite on board ship as soon as we take the ship back to base."

Lucky jumped. "How can you tell that?"

"You're surprised? You didn't know this was one big trap? You didn't know we were supposed to take this back to base for repairs? You didn't know we were supposed to explode ourselves and the base, too, into hot dust? Why, you're here as the bait to make sure we were properly fooled. Only I'm not a fool!"

His men were crowding close. Dingo licked his lips.

With a snap Anton brought up his blaster and there was no mercy, no dream of mercy, in his eyes.

"Wait! Great Galaxy, wait! I know nothing about this. You have no right to shoot me without cause." He tensed for a jump, one last fight before death.

"No right!" Anton, eyes glaring, lowered his blaster suddenly. "How dare you say no right. I have all rights on this ship."

"You can't kill a good man. The men of the asteroids need good men. Don't throw one away for nothing."

A sudden, unexpected murmur came from some of the pirates.

A voice said, "He's got guts, Cap'n. Maybe we could use—"

It died away as Anton turned.

He turned back. "What makes you a good man, Williams? Answer that and I'll consider."

"I'll hold my own against anyone here. Bare fists or any weapon."

"So?" Anton's teeth bared themselves. "You hear that, men?"

There was an affirmative roar.

"It's your challenge, Williams. Any weapon. Good! Come out of this alive and you won't be shot. You'll be considered for membership in my crew."

"I have your word, Captain?"

"You have my word, and I never break my word. The crew hears me. *If* you come out of this alive."

"Whom do I fight?" demanded Lucky.

"Dingo here. A good man. Anyone who can beat him is a *very* good man."

Lucky measured the huge lump of gristle and sinew standing

before him, its little eyes glittering with anticipation, and glumly agreed with the captain.

But he said firmly, "What weapons? Or is it bare fists?"

"Weapons! Push-tubes, to be exact. Push-tubes in open space."

For a moment Lucky found it difficult to maintain an appropriate stolidity.

Anton smiled. "Are you afraid it won't be a proper test for you? Don't be. Dingo is the best man with a push-gun in our entire fleet."

Lucky's heart plummeted. A push-gun duel required an expert. Notoriously so! Played as he had played it in college days, it was a sport. Fought by professionals, it was deadly!

And he was no professional!

# 4

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## Duel in Deed

Pirates crowded the outer skin of the *Atlas* and of their own Sirian-designed ship. Some were standing, held by the magnetic field of their boots. Others had cast themselves loose for better viewing, maintaining their place by means of a short magnetic cable attached to the ship's hull.

Fifty miles apart two metal-foil goal posts had been set. Not more than three feet square in their collapsed state aboard ship, they opened into a hundred feet either way of thin-beaten beryl-magnesium sheets. Undimmed and undamaged in the great emptiness of space, they were set spinning, and the flickering reflections of the sun on their gleaming surfaces sent beams that were visible for miles.

"You know the rules." Anton's voice was loud in Lucky's ears, and presumably in Dingo's ears as well.

Lucky could make out the other's space-suited shape as a sunlit speck half a mile away. The lifeboat that had brought them here was racing away now, back toward the pirate ship.

"You know the rules," said Anton's voice. "The one who gets pushed back to his own goal post is the loser. If neither gets pushed back, the one whose push-gun expires first is the loser. No time limit. No off-side. You have five minutes to get set. The push-gun can't be used till the word is given."

No off-side, thought Lucky. That was the giveaway. Push duels as a legal sport could not take place more than a hundred miles from an asteroid at least fifty miles in diameter. This would place a definite, though small, gravitational pull on the players. It would not be enough to affect mobility. It would be enough, however, to rescue a contestant who found himself miles out in space with an expired

push-gun. Even if not picked up by the rescue boat he had only to remain quiet and in a matter of hours or, at most, one or two days, he would drift back to the asteroid's surface.

Here, on the other hand, there was no sizable asteroid within hundreds of thousands of miles. A real push would continue indefinitely. It would end, as likely as not, in the sun, long after the unlucky contestant had smothered to death when his oxygen gave out. Under such conditions it was usually understood that, when one contestant or another passed outside certain set limits, time was called until their return.

Saying "no off-side" was saying "to the death."

Anton's voice came clear and sharp across the miles of space between himself and the radio receiver in Lucky's helmet. He said, "Two minutes to go. Adjust body signals."

Lucky brought his hand up and closed the switch set into his chest. The colored metal foil which had earlier been magnet-set into his helmet was spinning. It was a miniature goal post. Dingo's figure, a moment before merely a dim dot, now sprang into flickering ruddy life. His own signal, Lucky knew, was a flashing green. And the goal posts were pure white.

Even now a fraction of Lucky's mind was far away. He had tried to make one objection at the very beginning. He had said, "Look, this all suits me, you understand. But while we're fooling around, a government patrol ship might——"

Anton barked contemptuously, "Forget it. No patrol ship would have the guts to get this far into the rocks. We've a hundred ships within call, a thousand rocks to hold us if we had to make a getaway. Get into your suit."

A hundred ships! A thousand rocks! If true, the pirates had never yet shown their full hand. What was going on?

"One minute left!" said Anton's voice through space.

Grimly Lucky brought up his two push-guns. They were L-shaped objects connected by springy, gummed fabric tubing to the doughnut-like gas cylinders (containing carbon dioxide liquid under great pressure) that had been adjusted about his waist. In the old days the connecting tubing had been metal mesh. But that, though stronger, had also been more massive and had added to the momentum and inertia of the guns. In push duels rapid aiming and firing was essential. Once a fluorinated silicone had been invented which could remain a flexible gum at space temperatures and yet not become tacky in the direct rays of the sun, the lighter tubing material was universally used.

"Fire when ready!" cried Anton.

One of Dingo's push-guns triggered for an instant. The liquid carbon dioxide of his gas cylinder bubbled into violent gas and spurted out through the push-gun's needlelike orifice. The gas froze into a line of tiny crystals within six inches of its point of emersion. Even in the half second allowed for release a line of crystals, miles long, had been formed. As they pushed out one way, Dingo was pushed in the other. It was a spaceship and its rocket blast in miniature.

Three times the "crystal line" flashed and faded in the distance. It pointed into space directly away from Lucky, and each time Dingo gained speed toward Lucky. The actual state of affairs was deceptive. The only change visible to the eye was the slow brightening of Dingo's suit signal, but Lucky knew that the distance between them was closing with hurtling velocity.

What Lucky did not know was the proper strategy to expect; the appropriate defense. He waited to let the other's offensive moves unfold.

Dingo was large enough now to see as a humanoid shape with head and four limbs. He was passing to one side, and making no move to adjust his aim. He seemed content to bear far to Lucky's left.

Lucky still waited. The chorus of confused cries that rang in his helmet had died down. They came from the open transmitters of the audience. Though these were too far away to see the contestants, they could still follow the passage of the body signals and the flashes of the carbon dioxide streams. They were expecting something, Lucky thought.

It came suddenly.

A blast of carbon dioxide, then another appeared to Dingo's right, and his line of flight veered toward the young Councilman's position. Lucky brought his push-gun up, ready to flash downward and avoid close quarters. The safest strategy, he thought, was to do just that, and to move as slowly and as little as possible otherwise, in order to conserve carbon dioxide.

But Dingo's flight did not continue toward Lucky. He fired straight ahead of himself, a long streak, and began to recede. Lucky watched him, and only too late the streak of light met his eyes.

The line of carbon dioxide that Dingo had last fired traveled forward, yes, but he had been moving leftward at the time and so it did likewise. The two motions together moved it directly toward Lucky and it struck his left shoulder bull's-eye.

To Lucky it felt like a sharp blow pounding him. The crystals were tiny, but they extended for miles and they were traveling at miles per second. They all hit his suit in the space of what seemed a fraction of an eyelid's flicker. Lucky's suit trembled and the roar of the audience was in his ear.

"You got him, Dingo!"

"What a blast!"

"Straight toward goal post. Look at him!"

"It was beautiful. Beautiful!"

"Look at the joker spin!"

Underneath that there were murmurs that seemed, somehow, less exuberant.

Lucky was spinning or, rather, it seemed to his eyes that the heavens and all the stars in it were spinning. Across the face-plate of his helmet the stars were white streaks, as though they were sparkles of trillions of carbon dioxide crystals themselves.

He could see nothing but the numerous blurs. For a moment it was as though the blow had knocked the power of thinking out of him.

A blow in the midriff and one in the back sent him, still spinning, further on his hurtling way through space.

He had to do something or Dingo would make a football of him from one end of the Solar System to the other. The first thing was to stop the spin and get his bearings. He was tumbling diagonally, left shoulder over right hip. He pointed the push-gun in the direction counter to that twist, and in lightning releases pumped out streams of carbon dioxide.

The stars slowed until their turning was a stately march that left them sharply defined points. The sky became the familiar sky of space.

One star flickered and was too bright. Lucky knew it to be his own goal post. Almost diametrically opposed was the angry red of Dingo's body signal. Lucky could not fling himself backward beyond the goal post or the duel would be over and he would have lost. Beyond the goal post and within a mile of it was the standard rule for a goal ending. Nor, on the other hand, could he afford to get closer to his opponent.

He brought his push-gun straight up over his head, closed contact, and held it so. He counted a full minute before he released contact, and through all the sixty seconds he felt the pressure against the top of his helmet as he accelerated downward.



It was a desperate maneuver, for he threw away a half hour's supply of gas in that one minute.

Dingo, in outrage, yelled hoarsely, "You flumstered coward! You yellow mugger!"

The cries of the audience also rose to a crescendo.

"Look at him run."

"He got past Dingo. Dingo, get him."

"Hey, Williams. Put up a fight."

Lucky saw the crimson blur of his enemy again.

He had to keep on the move. There was nothing else he could do. Dingo was an expert and could hit a one-inch meteorite as it flashed by. He himself, Lucky thought ruefully, would do well to hit Ceres at a mile.

He used his push-guns alternately. To the left, to the right; then quickly, to the right, to the left and to the right again.

It made no difference. It was as though Dingo could foretell his moves, cut across the corners, move in inexorably.

Lucky felt the perspiration beading out upon his forehead, and suddenly he was aware of the silence. He could not remember the exact moment it had come, but it had come like the breaking of a thread. One moment there had been the yells and laughter of the pirates, and the next moment only the dead silence of space where sound could never be heard.

Had he passed beyond range of the ships? Impossible! Suit radios, even the simplest type, would carry thousands of miles in space. He pushed the sensitivity dial on his chest to maximum.

"Captain Anton!"

But it was Dingo's rough voice that answered. "Don't yell. I hear you."

Lucky said, "Call time! There's something wrong with my radio."

Dingo was close enough to be made out as a human figure again. A flashing line of crystals and he was closer. Lucky moved away, but the pirate followed on his heels.

"Nothing wrong," said Dingo. "Just a gimmicked radio. I've been waiting. I've been waiting. I could have knocked you past goal long ago, but I've been waiting for the radio to go. It's just a little transistor I gimmicked before you put on your suit. You can still talk to me, though. It'll still carry a mile or two. Or at least you can talk to me for a little while." He relished the joke and barked his laughter.

Lucky said, "I don't get it."

Dingo's voice turned harshly cruel. "You caught me on the ship

with my blaster in its holster. You trapped me there. You made me look like a fool. No one traps me and I don't let anyone make a fool out of me in front of the captain and live very long after that. I'm not goaling you for someone else to finish. I'm finishing you here! Myself!"

Dingo was much closer. Lucky could almost make out the face behind the thick glassite of the face-plate.

Lucky abandoned attempts at bobbing and weaving. That would lead, he decided, to being consistently out-manuevered. He considered straight flight, pushing outward at increasing velocity as long as his gas held out.

But then afterward? And was he going to be content to die while running away?

He would have to fight back. He aimed the push-gun at Dingo, and Dingo wasn't there when the line of crystals passed through the spot where a moment before he *had* been. He tried again and again, but Dingo was a flitting demon.

And then Lucky felt the hard impact of the other's push-gun blast and he was spinning again. Desperately he tried to come out of the spin and before he could do so, he felt the clanging force of a body's collision with his.

Dingo held his suit in tight embrace.

Helmet to helmet. Face-plate to face-plate. Lucky was staring at the white scar splitting Dingo's upper lip. It spread tightly as Dingo smiled.

"Hello, chum," he said. "Pleased to meet you."

For a moment Dingo floated away, or seemed to, as he loosened the grip of his arms. The pirate's thighs held firm about Lucky's knees, their apelike strength immobilizing him. Lucky's own whipcord muscles wrenched this way and that uselessly.

Dingo's partial retreat had been designed only to free his arms. One lifted high, push-gun held butt-first. It came down directly on the face-plate and Lucky's head snapped back with the sudden, shattering impact. The relentless arm swung up again, while the other curled about Lucky's neck.

"Hold your head still," the pirate snarled. "I'm finishing this."

Lucky knew that to be the literal truth unless he acted quickly. The glassite was strong and tough, but it would hold out only so long against the battering of metal.

He brought up the heel of his gauntleted hand against Dingo's helmet, straightening his arm and pushing the pirate's head back.

Dingo rocked his head to one side, disengaging Lucky's arm. He brought the butt of his push-gun down a second time.

Lucky dropped both push-guns, let them dangle from their connecting tubes, and with a sure movement snatched at the connecting tubes of Dingo's guns. He threaded them between the fingers of his steel gloves. The muscles of his arms lumped and tightened painfully. His jaws clenched and he felt the blood creep to his temples.

Dingo, his mouth twisted in fierce joyful anticipation, disregarded everything but the upturned face of his victim behind the transparent face-plate, contorted, as he thought, with fear. Once more the butt came down. A small cracking star appeared where the metal had struck.

Then something else gave and the universe seemed to go mad.

First one and, almost immediately afterward, the other of the connecting tubes of Dingo's two push-guns parted and an uncontrollable stream of carbon dioxide raveled out of each broken tube.

The tubes whipped like insane snakes, and Lucky was slammed against his suit first this way, then that, in violent reaction to the mad and uncontrolled acceleration.

Dingo yelled in jolted surprise and his grip loosened.

The two almost separated, but Lucky held on grimly to one of the pirate's ankles.

The carbon dioxide stream slackened and Lucky went up his opponent's leg hand over hand.

They were apparently motionless now. The chance whippings of the stream had left them even without any perceptible spin. Dingo's push-gun tubes, now dead and flaccid, stretched out in their last position. All seemed still, as still as death.

But that was a delusion. Lucky knew they were traveling at miles per second in whatever direction that last stroke of gas had sent them. They were alone and lost in space, the two of them.

# 5

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## The Hermit on the Rock

Lucky was on Dingo's back now and it was his thighs that gripped the other's waist. He spoke softly and grimly. "You can hear me, Dingo, can't you? I don't know where we are or where we're going, but neither do you. So we need each other now, Dingo. Are you ready to make a deal? You can find out where we are because your radio will reach the ships, but you can't get back without carbon dioxide. I have enough for both of us, but I'll need you to guide us back."

"To space with you, you scupper," yelled Dingo. "When I'm done with you, I'll *have* your push-tubes."

"I don't think you will," said Lucky coolly.

"You think you'll let them loose, too. Go ahead! Go ahead, you loshing ripper! What good will that do? The captain will come for me wherever I am while you're floating around with a busted helmet and frozen blood on your face."

"Not exactly, my friend. There is something in your back, you know. Maybe you can't feel it through the metal, but it's there, I assure you."

"A push-gun. So what. It doesn't mean a thing as long as we're held together." But his arms halted their writhing attempt to seize Lucky.

"I'm not a push-gun duelist." Lucky sounded cheerful about it. "But I still know more than you do about push-guns. Push-gun shots are exchanged miles apart. There's no air resistance to slow and mess up the gas stream, but there's internal resistance. There's always some turbulence in the stream. The crystals knock together, slow up. The line of gas widens. If it misses its mark, it finally spreads out in

space and vanishes, but if it finally hits, it still kicks like a mule after miles of travel."

"What in space are you talking about? What are you running off about?" The pirate twisted with bull strength, and Lucky grunted as he forced him back.

Lucky said, "Just this. What do you suppose happens when the carbon dioxide hits at two inches, before turbulence has done anything at all to cut down its velocity or to broaden the beam. Don't guess. I'll tell you. It would cut through your suit as though it were a blowtorch, and through your body, too."

"You're nuts! You're talking crazy!"

Dingo swore madly, but of a sudden he was holding his body stiffly motionless.

"Try it, then," said Lucky. "Move! My push-gun is hard against your suit and I'm squeezing the trigger. Try it out."

"You're fouling me," snarled Dingo. "This isn't a clean win."

"I've got a crack in my face plate," said Lucky. "The men will know where the foul is. You have half a minute to make up your mind."

The seconds passed in silence. Lucky caught the motion of Dingo's hand.

He said, "Good-by, Dingo!"

Dingo cried thickly, "Wait! *Wait!* I'm just extending my sending range." Then he called, "Captain Anton . . . Captain Anton . . ."

It took an hour and a half to get back to the ships.

The *Atlas* was moving through space again in the wake of its pirate captor. Its automatic circuits had been shifted to manual controls wherever necessary, and a prize crew of three controlled its power. As before, it had a passenger list of one—Lucky Starr.

Lucky was confined to a cabin and saw the crew only when they brought him his rations. The *Atlas's* own rations, thought Lucky. Or, at least, such as were left. Most of the food and such equipment that wasn't necessary for the immediate maneuvering of the ship had already been transferred to the pirate vessel.

All three pirates brought him his first meal. They were lean men, browned by the unsoftened rays of the sun of space.

They gave him his tray in silence, inspected the cabin cautiously, stood by while he opened the cans and let their contents warm up, then carried away the remains.

Lucky said, "Sit down, men. You don't have to stand while I eat."

They did not answer. One, the thinnest and lankest of the three, with a nose that had once been broken and was now bent sideways, and an Adam's-apple that jutted sharply outward, looked at the others as though he felt inclined to accept the invitation. He met with no response, however.

The next meal was brought by Broken Nose alone. He put down the tray, went back to the door, which he opened. He looked up and down the corridor, closed the door again, and said, "I'm Martin Maniu."

Lucky smiled. "I'm Bill Williams. The other two don't talk to me, eh?"

"They're Dingo's friends. But I'm not. Maybe you're a government man like the captain thinks, and maybe you're not. I don't know. But as far as I'm concerned, anyone who does what you did to that scupper, Dingo, is all right. He's a wise guy and he plays rough. He got me into a push fight once when I was new. He nearly pushed me into an asteroid. For no reason, either. He claimed it was a mistake, but listen, he doesn't make any mistakes with a pusher. You made quite a few friends, mister, when you dragged back that hyena by the seat of his pants."

"I'm glad of that, anyway."

"But watch out for him. He'll never forget it. Don't be alone with him even twenty years from now. I'm telling you. It isn't just beating him, you see. It's bluffing him with the story about cutting through an inch of metal with the carbon dioxide. Everyone's laughing at him and he's sick about it. Man, I mean sick! It's the best thing that's ever happened. Man, I sure hope the Boss gives you a clean bill."

"The Boss? Captain Anton?"

"No, the Boss. The big fellow. Say, the food you've got on board ship is good. Especially the meat." The pirate smacked his lips loudly. "You get tired of all these yeast mashes, especially when you're in charge of a vat yourself."

Lucky was brushing up the remainder of his meal. "Who *is* this guy?"

"Who?"

"The Boss."

Manui shrugged. "Space! I don't know. You don't think a guy like me would ever meet him. Just someone the fellows talk about. It stands to reason *someone's* boss."

"The organization is pretty complicated."

"Man, you never know till you join. Listen, I was dead broke

when I came out here. I didn't know what to do. I thought, well, we'll bang up a few ships and then I'll get mine and it'll be over. You know, it would be better than starving to death like I was doing."

"It wasn't that way?"

"No. I've never been on a raiding expedition. Hardly any of us have. Just a few like Dingo. *He* goes out all the time. He likes it, the scupper. Mostly we go out and pick up a few women sometimes." The pirate smiled. "I've got a wife and a kid. You wouldn't believe that now, would you? Sure, we've got a little project of our own. Have our own vats. Once in a while I draw space duty, like now, for instance. It's a soft life. You could do all right, if you join up. A good-looking fellow like you could get a wife in no time and settle down. Or there's plenty of excitement if that's what you want.

"Yes, sir, Bill. I hope the Boss takes you."

Lucky followed him to the door. "Where are we going, by the way? One of the bases?"

"Just to one of the rocks, I guess. Whichever is nearest. You'll stay there till the word comes through. It's what they usually do."

He added as he closed the door, "And don't tell the fellows, or anybody, I've been talking to you. Okay, pal?"

"Sure thing."

Alone again, Lucky pounded a fist slowly and softly into his palm. The Boss! Was that just talk? Scuttlebutt? Or did it mean something? And what about the rest of the conversation?

He had to wait. Galaxy! If only Conway and Henree had the good sense not to interfere for a while longer.

Lucky did not get a chance to view the "rock" as the *Atlas* approached. He did not see it until, preceded by Martin Maniu and followed by a second pirate, he stepped out of the air-lock into space and found it a hundred yards below.

The asteroid was quite typical. Lucky judged it to be two miles across the longest way. It was angular and craggy, as though a giant had torn off the top of a mountain and tossed it out into space. Its sunside glimmered gray-brown, and it was turning visibly, shadows shifting and changing.

He pushed downward toward the asteroid as he left the air-lock, flexing his leg muscles against the ship's hull. The crags floated up slowly toward himself. When his hands touched ground, his inertia forced the rest of his body on downward, tumbling him in slowest motion until he could grasp a projection and bring himself to a halt.

He stood up. There was almost the illusion of a planetary surface

about the rock. The nearest jags of matter, however, had nothing behind them, nothing but space. The stars, moving visibly as the rock turned, were hard, bright glitters. The ship, which had been put into an orbit about the rock, remained motionless overhead.

A pirate led the way, some fifty feet, to a rise in rock in no way distinguished from its surroundings. He made it in two long steps. As they waited a section of the rise slipped aside, and from the opening a space-suited figure stepped out.

"Okay, Herm," said one of the pirates, gruffly, "here he is. He's in your care now."

The voice that next sounded in Lucky's receiver was gentle and rather weary. "How long will he be with me, gentlemen?"

"Till we come to get him. And don't ask questions."

The pirates turned away and leaped upward. The rock's gravity could do nothing to stop them. They dwindled steadily and after a few minutes, Lucky saw a brief flash of crystals as one of them corrected his direction of travel by means of a push-gun; a small one, routinely used for such purposes, that was part of standard suit equipment. Its gas supply consisted of a built-in carbon dioxide cartridge.

Minutes passed and the ship's rear jets gleamed redly. It, too, began dwindling.

It was useless to try to check the direction in which it was leaving, Lucky knew, without some knowledge of his own location in space. And of that, except that he was somewhere in the asteroid belt, he knew nothing.

So intense was his absorption that he was almost startled at the soft voice of the other man on the asteroid.

He said, "It *is* beautiful out here. I come out so rarely that sometimes I forget. Look there!"

Lucky turned to his left. The small Sun was just poking above the sharp edge of the asteroid. In a moment it was too bright to look at. It was a gleaming twenty-credit gold piece. The sky, black before, remained black, and the stars shone undiminished. That was the way on an airless world where there was no dust to scatter sunlight and turn the heavens a deep, masking blue.

The man of the asteroid said, "In twenty-five minutes or so it will be setting again. Sometimes, when Jupiter is at its closest, you can see it, too, like a little marble, with its four satellites like sparks lined up in military formation. But that only happens every three and a half years. This isn't the time."

Lucky said bluntly, "Those men called you Herm. Is that your name? Are you one of them?"



"You mean am I a pirate? No. But I'll admit I may be an accessory after the fact. Nor is my name Herm. That's just a term they use for hermits in general. My name, sir, is Joseph Patrick Hansen, and since we are to be companions at close quarters for an indefinite period, I hope we shall be friends."

He held out a metal-sheathed hand, and Lucky grasped it.

"I'm Bill Williams," he said. "You say you're a hermit? Do you mean by that that you live here all the time?"

"That's right."

Lucky looked about the poor splinter of granite and silica and frowned. "It doesn't look very inviting."

"Nevertheless I'll try to do my best to make you comfortable."

The hermit touched a section of the slab or rock out of which he had come and a piece of it wheeled open once again. Lucky noted that the edges had been beveled and lined with lastium or some similar material to insure air tightness.

"Won't you step inside, Mr. Williams?" invited the hermit.

Lucky did so. The rock slab closed behind them. As it closed, a small Fluoro lit up and shone away the obscurity. It revealed a small air-lock, not much larger than was required to hold two men.

A small red signal light flickered, and the hermit said, "You can open your face-plate now. We've got air." He did so himself as he spoke.

Lucky followed suit, dragging in lungfuls of clear, fresh air. Not bad. Better than the air on shipboard. Definitely.

But it was when the inner door of the air-lock opened that the wind went out of Lucky in one big gasp.

# 6

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## What the Hermit Knew

Lucky had seen few such luxurious rooms even on Earth. It was thirty feet long, twenty wide, and thirty high. A balcony circled it. Above and below the walls were lined with book films. A wall projector was set on a pedestal, while on another was a gemlike model of the Galaxy. The lighting was entirely indirect.

As soon as he set foot within the room, he felt the tug of a pseudo-grav motor. It wasn't set at Earth normal. From the feel of it it seemed somewhere between Earth and Mars normal. There was a delightful sensation of lightness and yet enough pull to allow full muscular coordination.

The hermit had removed his space-suit and suspended it over a white plastic trough into which the frost that had collected thickly over it when they stepped out of frozen space and into the warm, moist air of the room might trickle as it melted.

He was tall and straight, his face was pink and unlined, but his hair was quite white, as were his bushy eyebrows, and the veins stood out on the back of his hands.

He said politely, "May I help you with your suit?"

Lucky came to life. "That's all right." He clambered out quickly. "This is an unusual place you have here."

"You like it?" Hansen smiled. "It took many years to make it look like this. Nor is this all there is to my little home." He seemed filled with a quiet pride.

"I imagine so," said Lucky. "There must be a powerplant for light and heat as well as to keep the pseudo-grav field alive. You must have an air purifier and replacer, water supplies, food stores, all that."

"That's right."

"A hermit's life is not bad."

The hermit was obviously both proud and pleased. "It doesn't have to be," he said. "Sit down, Williams, sit down. Would you like a drink?"

"No, thank you." Lucky lowered himself into an armchair. Its apparently normal seat and back masked a soft diamagnetic field that gave under his weight only so far, then achieved a balance that molded itself to every curve of his body. "Unless you can scare up a cup of coffee?"

"Easily!" The old man stepped into an alcove. In seconds he was back with a fragrant and steaming cup, plus a second for himself.

The arm of Lucky's chair unfolded into a narrow ledge at the proper touch of Hansen's toe and the hermit set down one cup into an appropriate recess. As he did so he paused to stare at the younger man.

Lucky looked up. "Yes?"

Hansen shook his head. "Nothing. Nothing."

They faced one another. The lights in the more distant parts of the large room faded until only the area immediately surrounding the two men was clear to vision.

"And now if you'll pardon an old man's curiosity," said the hermit, "I'd like to ask you why you've come here."

"I didn't come. I was brought," said Lucky.

"You mean you're not one of——" Hansen paused.

"No, I'm not a pirate. At least, not yet."

Hansen put down his cup and looked troubled. "I don't understand. Perhaps I've said things I shouldn't have."

"Don't worry about it. I'm going to be one of them soon enough."

Lucky finished his coffee and then, choosing his words carefully, began with his boarding of the *Atlas* on the Moon and carried through to the moment.

Hansen listened in absorption. "And are you sure this is what you want to do, young man, now that you've seen a little of what life is like?"

"I'm sure."

"Why, for Earth's sake?"

"Exactly. For the sake of Earth and what it did to me. It's no place to live. Why did *you* come out here?"

"It's a long story, I'm afraid. You needn't look alarmed. I won't tell it. I bought this asteroid long ago as a place for small vacations,

and I grew to like it. I kept enlarging the room space, brought furniture and book films from Earth little by little. Eventually I found I had all I needed here. So why not stay here permanently? I asked myself. And I did stay here permanently.”

“Sure. Why not? You’re smart. Back there it’s a mess. Too many people. Too many rut jobs. Next to impossible to get out to the planets, and if you do, it means a job of manual labor. No opportunity for a man any more unless he comes to the asteroids. I’m not old enough to settle down like you. But for a young fellow it’s a free life and an exciting one. There’s room to be boss.”

“The ones who are already boss don’t like young fellows with boss notions in their head. Anton, for instance. I’ve seen him and I know.”

“Maybe, but so far he’s kept his word,” said Lucky. “He said if I came out winner over this Dingo, I’d have my chance to join the men of the asteroids. It looks as though I’m getting the chance.”

“It looks as though you’re here, that’s all. What if he returns with proof, or what he calls proof, that you’re a government man?”

“He won’t.”

“And if he does? Just to get rid of you?”

Lucky’s face darkened and again Hansen looked at him curiously, frowning a bit.

Lucky said, “He wouldn’t. He can use a good man and he knows it. Besides, why are you preaching to me? You’re out here yourself playing ball with them.”

Hansen looked down. “It’s true. I shouldn’t interfere with you. It’s just that being alone here so long, I’m apt to talk too much when a person does come along, just to hear the sound of voices. Look, it’s about time for dinner. I would be glad to have you eat with me in silence, if you’d rather. Or else we’ll talk about anything you choose.”

“Well, thanks, Mr. Hansen. No hard feelings.”

“Good.”

Lucky followed Hansen through a door into a small pantry lined with canned food and concentrates of all sorts. None of the brand names familiar to Lucky were represented. Instead the contents of each can were described in brightly colored etchings that were themselves integral parts of the metal.

Hansen said, “I used to keep meat in a special freeze room. You can get the temperature down all the way on an asteroid, you know, but it’s been two years since I could get that kind of supplies.”

He chose half a dozen cans off the shelves, plus a container of

milk concentrate. At his suggestion Lucky took up a sealed gallon container of water from a lower shelf.

The hermit set the table quickly. The cans were of the self-heating type that opened up into dishes with enclosed cutlery.

Hansen said, with some amusement, indicating the cans, "I've got a whole valley on the outside brim-filled with these things. Discarded ones, that is. A twenty years' accumulation."

The food was good, but strange. It was yeast-base material, the kind only the Terrestrial Empire produced. Nowhere else in the Galaxy was the pressure of population so great, the billions of people so numerous, that yeast culture had been developed. On Venus, where most of the yeast products were grown, almost any variety of food imitation could be produced: steaks, nuts, butter, candy. It was as nourishing as the real thing, too. To Lucky, however, the flavor was not quite Venustian. There was a sharper tang to it.

"Pardon me for being nosy," he said, "but all this takes money, doesn't it?"

"Oh yes, and I have some. I have investments on Earth. Quite good ones. My checks are always honored, or at least they were until not quite two years ago."

"What happened then?"

"The supply ships stopped coming. Too risky on account of the pirates. It was a bad blow. I had a good backlog of supplies in most things, but I can imagine how it must have been for the others."

"The others?"

"The other hermits. There are hundreds of us. They're not all as lucky as I am. Very few can afford to make their worlds quite this comfortable, but they can manage the essentials. It's usually old people like myself, with wives dead, children grown up, the world strange and different, who go off by themselves. If they have a little nest egg, they can get a little asteroid started. The government doesn't charge. Any asteroid you want to settle on, if it's less than five miles in diameter, is yours. Then if they want they can invest in a sub-etheric receiver and keep up with the universe. If not, they can have book films, or can arrange to have news transcripts brought in by the supply ships once a year, or they can just eat, rest, sleep, and wait to die if they'd rather. I wish, sometimes, I'd got to know some of them."

"Why haven't you?"

"Sometimes I've felt willing, but they're not easy people to know. After all, they've come here to be alone, and for that matter, so have I."

"Well, what did you do when the supply ships stopped coming?"

"Nothing at first. I thought surely the government would clean up the situation and I had enough supplies for months. In fact, I could have skimped along a year, maybe. But then the pirate ships came."

"And you threw in with them?"

The hermit shrugged. His eyebrows drew together in a troubled frown and they finished their meal in silence.

At the end he gathered the can plates and cutlery and placed them in a wall container in the alcove that led to the pantry. Lucky heard a dim grating noise of metal on metal that diminished rapidly.

Hansen said, "The psuedo-grav field doesn't extend to the disposal tube. A puff of air and they sail out to the valley I told you of, even though it's nearly a mile away."

"It seems to me," said Lucky, "that if you'd try a little harder puff, you'd get rid of the cans altogether."

"So I would. I think most hermits do that. Maybe they all do. I don't like the idea, though. It's a waste of air, and of metal too. We might reclaim those cans someday. Who knows? Besides, even though most of the cans would scatter here and there, I'm sure that some would circle this asteroid like little moons and it's undignified to think of being accompanied on your orbit by your garbage. Care to smoke? No? Mind if I do?"

He lit a cigar and with a contented sigh went on. "The men of the asteroids can't supply tobacco regularly, so this is becoming a rare treat for me."

Lucky said, "Do they furnish you the rest of your supplies?"

"That's right. Water, machine parts and power-pack renewals. It's an arrangement."

"And what do you do for them?"

The hermit studied his cigar's lighted end. "Not much. They use this world. They land their ships on it and I don't report them. They don't come in here and what they do elsewhere on the rock isn't my business. I don't want to know. It's safer that way. Men are left here sometimes, like yourself, and are picked up later. I have an idea they stop for minor repairs sometimes. They bring me supplies in return."

"Do they supply all the hermits?"

"I wouldn't know. Maybe."

"It would take an awful lot of supplies. Where would they get them from?"

"They capture ships."

"Not enough to supply hundreds of hermits *and* themselves. I mean, it would take an awful lot of ships."

"I wouldn't know."

"Aren't you interested? It's a soft life you have here, but maybe the food we just ate came off a ship whose crew are frozen corpses circling some other asteroid like human garbage. Do you ever think of that?"

The hermit flushed painfully. "You're getting your revenge for my having preached to you earlier. You're right, but what can I do? I didn't abandon or betray the government. They abandoned and betrayed me. My estate on Earth pays taxes. Why am I not protected then? I registered this asteroid with the Terrestrial Outer World Bureau in good faith. It's part of the Terrestrial dominion. I have every right to expect protection against the pirates. If that's not forthcoming; if my source of supply coolly says that they can bring me nothing more at any price, what am I supposed to do?"

"You might say I could have returned to Earth, but how could I abandon all this? I have a world of my own here. My book films, the great classics that I love. I even have a copy of Shakespeare; a direct filming of the actual pages of an ancient printed book. I have food, drink, privacy; I could find nowhere as comfortable as this anywhere else in the Universe.

"Don't think it's been an easy choice, though. I have a sub-etheric transmitter. I could communicate with Earth. I've got a little ship that can make the short haul to Ceres. The men of the asteroids know that, but they trust me. They know I have no choice. As I told you when we first met, I'm an accessory after the fact.

"I've helped them. That makes me legally a pirate. It would be jail, execution, probably, if I return. If not, if they free me provided I turn state's evidence, the men of the asteroids won't forget. They would find me no matter where I went, unless I could be guaranteed complete government protection for life."

"It looks like you're in a bad way," said Lucky.

"Am I?" said the hermit. "I might be able to get that complete protection with the proper help."

It was Lucky's turn. "I wouldn't know," he said.

"I think you would."

"I don't get you."

"Look, I'll give you a word of warning in return for help."

"There's nothing I can do. What's your word?"

"Get off the asteroid before. Anton and his men come back."

"Not on your life. I came here to join them; not to go home."

"If you don't leave, you'll stay forever. You'll stay as a dead man. They won't let you on any crew. You won't qualify, mister."

Lucky's face twisted in anger. "What in space are you talking about, old-timer?"

"There it is again. When you get angry, I see it plainly. You're not Bill Williams, son. What's your relationship to Lawrence Starr of the Council of Science? Are you Starr's son?"



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## To Ceres

Lucky's eyes narrowed. He felt the muscles of his right arm tense as though to reach for a hip at which no blaster nestled. He made no actual motion.

His voice remained under strict control. He said, "Whose son? What are you talking about?"

"I'm sure of it." The hermit leaned forward, seizing Lucky's wrist earnestly. "I knew Lawrence Starr well. He was my friend. He helped me once when I needed help. And you're his image. I couldn't be wrong."

Lucky pulled his hand away. "You're not making sense."

"Listen, son, it may be important to you not to give away your identity. Maybe you don't trust me. All right, I'm not telling you to trust me. I've been working with the pirates and I've admitted it. But listen to me anyway. The men of the asteroids have a good organization. It may take them weeks, but if Anton suspects you, they won't stop till you're checked from the ground up. No phony story will fool them. They'll get the truth and they'll learn who you are. Be sure of that! They'll get your true identity. Leave, I tell you. Leave!"

Lucky said, "If I were this guy you say I am, old-timer, aren't you getting yourself into trouble? I take it you want me to use your ship."

"Yes."

"And what would *you* do when the pirates returned?"

"I wouldn't be here. Don't you see? I want to go with you."

"And leave all you have here?"

The old man hesitated. "Yes, it's hard. But I won't have a chance like this again. You're a man of influence; you must be. You're a

member of the Council of Science, perhaps. You're here on secret work. They'll believe you. You could protect me, vouch for me. You would prevent prosecution, see that no harm came to me from the pirates. It would pay the Council, young man. I would tell them all I know about the pirates. I would co-operate in every way I could."

Lucky said, "Where do you keep your ship?"

"It's a deal, then?"

The ship was a small one indeed. The two reached it through a narrow corridor, walking single file, their figures grotesque again in space-suits.

Lucky said, "Is Ceres close enough to pick out by ship's telescope?"

"Yes indeed."

"You could recognize it without trouble?"

"Certainly."

"Let's get on board, then."

The fore end of the airless cavern that housed the ship opened outward as soon as the ship's motors were activated.

"Radio control," explained Hansen.

The ship was fueled and provisioned. It worked smoothly, rising out of its berth and into space with the ease and freedom possible only where gravitational forces were virtually lacking. For the first time Lucky saw Hansen's asteroid from space. He caught a glimpse of the valley of the discarded cans, brighter than the surrounding rock, just before it passed into shadow.

Hansen said, "Tell me, now. You are the son of Lawrence Starr, aren't you?"

Lucky had located a well-charged blaster and a holster belt to boot. He was strapping it on as he spoke.

"My name," he said, "is David Starr. Most people call me Lucky."

Ceres is a monster among the asteroids. It is nearly five hundred miles in diameter, and, standing upon it, the average man actually weighs two full pounds. It is quite spherical in shape, and anyone very close to it in space could easily think it was a respectable planet.

Still, if the Earth were hollow, it would be possible to throw into it four thousand bodies the size of Ceres before filling it up.

Bigman stood on the surface of Ceres, his figure bloated in a space-suit which had been loaded to bursting with lead weights and on shoes the soles of which were foot-thick lead clogs. It had been

his own idea, but it was quite useless. He still weighed less than four pounds and his every motion threatened to twist him up into space.

He had been on Ceres for days now, since the quick space flight with Conway and Henree from the Moon, waiting for this moment, waiting for Lucky Starr to send in the radio message that he was coming in. Gus Henree and Hector Conway had been nervous about it, fearing Lucky's death, worrying about it. He, Bigman, had known better. Lucky could come through anything. He told them that. When Lucky's message finally came, he told them again.

But just the same, out here on Ceres' frozen soil with nothing between himself and the stars, he admitted a sneaking sensation of relief.

From where he sat he was looking directly at the dome of the Observatory, its lower reaches dipping just a little below the close horizon. It was the largest observatory in the Terrestrial Empire for a very logical reason.

In that part of the Solar System inside the orbit of Jupiter, the planets Venus, Earth, and Mars had atmospheres and were by that very fact poorly suited for astronomic observation. The interfering air, even when it was as thin as that of Mars, blotted out the finer detail. It wavered and flickered star images and spoiled things generally.

The largest airless object inside Jupiter's orbit was Mercury, but that was so close to the Sun that the observatory in its twilight zone specialized in solar observations. Relatively small telescopes sufficed.

The second largest airless object was the Moon. Here again circumstances dictated specialization. Weather forecasts on Earth, for instance, had become an accurate, long-range science, since the appearance of Earth's atmosphere could be viewed as a whole from a distance of a quarter of a million miles.

And the third largest airless object was Ceres, and that was the best of the three. Its almost nonexistent gravity allowed huge lenses and mirrors to be poured without the danger of breakage, without even the question of sag, due to its own weight. The structure of the telescope tube itself needed no particular strength. Ceres was nearly three times as far from the Sun as was the Moon and sunlight was only one eighth as strong. Its rapid revolution kept Ceres' temperature almost constant. In short, Ceres was ideal for observation of the stars and of the outer planets.

Only the day before Bigman had seen Saturn through the thousand-inch reflecting telescope, the grinding of the huge mirror having consumed twenty years of painstaking and continuous labor.

"What do I look through?" he had asked.

They laughed at him. "You don't look through anything," they said.

They worked the controls carefully, three of them, each doing something that co-ordinated with the other two, until all were satisfied. The dim red lights dimmed further and in the pit of black emptiness about which they sat a blob of light sprang into being. A touch at the controls and it focused sharply.

Bigman whistled his astonishment. It was Saturn!

It was Saturn, three feet wide, exactly as he had seen it from space half a dozen times. Its triple rings were bright and he could see three marble-like moons. Behind it was a numerous dusting of stars. Bigman wanted to walk about it to see how it looked with the night shadow cutting it, but the picture didn't change as he moved.

"It's just an image," they told him, "an illusion. You see the same thing no matter where you stand."

Now, from the asteroid's surface, Bigman could spot Saturn with the naked eye. It was just a white dot, but brighter than the other white dots that were the stars. It was twice as bright as it appeared from Earth, since it was two hundred million miles closer here. Earth itself was on the other side of Ceres near the pea-size Sun. Earth wasn't a very impressive sight, since the Sun invariably dwarfed it.

Bigman's helmet suddenly rang with sound as the call flooded his left-open radio receiver.

"Hey, Shortie, get moving. There's a ship coming in."

Bigman jumped at the noise and moved straight upward, limbs flailing. He yelled, "Who're you calling Shortie?"

But the other was laughing. "Hey, how much do you charge for flying lessons, little boy?"

"I'll little boy you," screamed Bigman furiously. He had reached the peak of his parabola and was slowly and hesitatingly beginning to settle downward once more. "What's your name, wise guy? Say your name, and I'll crack your gizzard as soon as I get back and peel the suit."

"Think you can reach my gizzard?" came the mocking rejoinder, and Bigman would have exploded into tiny pieces if he had not caught sight of a ship slanting down from the horizon.

He loped in giant, clumsy strides about the leveled square mile of ground that was the asteroid's space-port, trying to judge the exact spot on which the ship would land.

It dropped down its steaming jets to a feather-touch planetary contact and when the air-locks opened and Lucky's tall, suited figure

emerged, Bigman, yelling his joy, made one long leap of it, and they were together.

Conway and Henree were less effusive in their welcome, but no less joyful. Each wrung Lucky's hand as though to confirm, by sheer muscular pressure, the reality of the flesh and blood they beheld.

Lucky laughed. "Whoa, will you? Give me a chance to breathe. What's the matter? Didn't you think I was coming back?"

"Look here," said Conway, "you'd better consult us before you take off on just any old fool notion."

"Well, now, not if it's too much of a fool notion, please, or you won't let me."

"Never mind that. I can ground you for what you've done. I can have you put under detention right now. I can suspend you. I can throw you off the Council," said Conway.

"Which of them are you going to do?"

"None of them, you darned overgrown young fool. But I *may* beat your brains out one of these days."

Lucky turned to Augustus Henree. "You won't let him, will you?"

"Frankly, I'll help him."

"Then I give up in advance. Look, there's a gentleman here I'd like to have you meet."

Until now Hansen had remained in the background, obviously amused by the interchange of nonsense. The two older Councilmen had been too full of Lucky Starr even to be aware of his existence.

"Dr. Conway," said Lucky, "Dr. Henree, this is Mr. Joseph P. Hansen, the man whose ship I used to come back. He has been of considerable assistance to me."

The old hermit shook hands with the two scientists.

"I don't suppose you can possibly know Drs. Conway and Henree," said Lucky. The hermit shook his head.

"Well," he went on, "they're important officials in the Council of Science. After you've eaten and had a chance to rest, they'll talk to you and help you, I'm sure."

An hour later the two Councilmen faced Lucky with somber expressions. Dr. Henree tamped tobacco into his pipe with a little finger, and smoked quietly as he listened to Lucky's accounts of his adventures with the pirates.

"Have you told this to Bigman?" he asked.

"I've just spent some time talking to him," said Lucky.

"And he didn't assault you for not taking him?"

"He wasn't pleased," Lucky admitted.

But Conway's mind was more seriously oriented. "A Sirian-designed ship, eh?" he mused.

"Undoubtedly so," said Lucky. "At least we have that piece of information."

"The information wasn't worth the risk," said Conway, dryly. "I'm much more disturbed over another piece of information we have now. It's obvious that the Sirian organization penetrates into the Council of Science itself."

Henree nodded gravely. "Yes, I saw that, too. Very bad."

Lucky said, "How do you make that out?"

"Galaxy, boy, it's obvious," growled Conway. "I'll admit that we had a large construction crew working on the ship and that even with the best intentions careless slips of information can take place. It remains truth, though, that the fact of the booby-trapping and particularly the exact manner of the fusing were known only to Council members and not too many of those. Somewhere in that small group is a spy, yet I could have sworn that all were faithful." He shook his head. "I still can't believe otherwise."

"You don't have to," said Lucky.

"Oh? And why not?"

"Because the Sirian contact was quite temporary. The Sirian Embassy got their information from *me*."

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## Bigman Takes Over

“Indirectly, of course, through one of their known spies,” he amplified, as the two older men stared at him in shocked astonishment.

“I don’t understand you at all,” said Henree in a low voice. Conway was obviously speechless.

“It was necessary. I had to introduce myself to the pirates without suspicion. If they found me on what they thought was a mapping ship, they would have shot me out of hand. On the other hand, if they found me on a booby-trapped ship the secret of which they had stumbled on by what seemed a stroke of fortune, they would have taken me at face value as a stowaway. Don’t you see? On a mapping ship I’m only a member of the crew that didn’t get away in time. On a booby trap, I’m a poor jerk who didn’t realize what he was stowing away on.”

“They might have shot you anyway. They might have seen through your double-cross and considered you a spy. In fact, they almost did.”

“True! They almost did,” admitted Lucky.

Conway finally exploded. “And what about the original plan? Were we or were we not going to explode one of their bases? When I consider the months we spent on the construction of the *Atlas*, the money that went into it—”

“What good would it have done to explode one of their bases? We spoke about a huge hangar of pirate ships, but actually that was only wishful thinking. An organization based upon the asteroids would have to be decentralized. The pirates probably don’t have more than three or four ships in any one place. There wouldn’t be room for more. Exploding three or four ships would mean very little com-

pared with what would have been accomplished if I had succeeded in penetrating their organization.”

“But you didn’t succeed,” said Conway. “With all your fool risks, you didn’t succeed.”

“Unfortunately the pirate captain who took the *Atlas* was too suspicious, or perhaps too intelligent for us. I’ll try not to underestimate them again. But it’s not all loss. We know for a fact that Sirius is behind them. In addition, we have my hermit friend.”

“He won’t help us,” said Conway. “From what you’ve said about him, it sounds as though he were only interested in having as little to do with the pirates as possible. So what can he know?”

“He may be able to tell us more than he himself thinks is possible,” said Lucky coolly. “For instance, there’s one piece of information he can give us that will enable me to continue efforts at working against piracy from the inside.”

“You’re not going out there again,” said Conway hastily.

“I don’t intend to,” said Lucky.

Conway’s eyes narrowed. “Where’s Bigman?”

“On Ceres. Don’t worry. In fact,” and a shadow crossed Lucky’s face, “he should be here by now. The delay is beginning to bother me a little.”

John Bigman Jones used his special pass card to get past the guard at the door to the Control Tower. He was muttering to himself as he half-ran along the corridors.

The slight flush on his pug-nosed face dimmed his freckles and his reddish hair stood up in tufts like fence pickets. Lucky had frequently told him he cultivated a vertical hair-do to make himself look taller, but he always denied that vigorously.

The final door to the Tower swung open as he broke the photoelectric beam. He stepped inside and looked about.

Three men were on duty. One with earphones sat at the sub-etheric receiver, another was at the calculating machine and the third was at the curved radarized visiplat.

Bigman said, “Which one of you knotbrains called me Shortie?”

The three turned toward him in unison, their faces startled and scowling.

The man with the earphones pulled one away from his left ear. “Who in space are you? How the dickens did you get in here?”

Bigman stood erect and puffed out his small chest. “My name is John Bigman Jones. My friends call me Bigman. Everyone else calls



me Mr. Jones. Nobody calls me Shortie and stays in one piece. I want to know which one of you made that mistake.”

The man with the earphones said, “My name is Lem Fisk and you can call me anything you blame please as long as you do it somewhere else. Get out of here, or I’ll come down, pick you up by one leg, and toss you out.”

The fellow at the calculating machine said, “Hey, Lem, that’s the crackpot who was haunting the port a while back. There’s no point in wasting time on him. Get the guards to throw him out.”

“Nuts,” said Lem Fisk, “we don’t need guards for that guy.”

He took off his earphones altogether and set the sub-etherics at AUTOMATIC SIGNAL. He said, “Well, son, you came in here and asked us a nice question in a nice way. I’ll give you a nice answer. I called you Shortie, but wait, don’t get mad. I have a reason. You see you’re such a real tall fellow. You’re such a long drink of water. You’re such a high-pockets. It makes my friends laugh to hear me call you Shortie.”

He reached into his hip pocket and drew out a plastic container of cigarettes. The smile on his face was bland.

“Come down here,” yelled Bigman. “Come down here and back up your sense of humor with a couple of fists.”

“Temper, temper,” said Fisk, clucking his tongue. “Here, boy, have a cigarette. King-size, you know. Almost as long as you are. Liable to create some confusion, though, come to think of it. We won’t be able to tell whether you’re smoking the cigarette or the cigarette is smoking you.”

The other two Tower men laughed vigorously.

Bigman was a passionate red. Words came thickly to his tongue. “You won’t fight?”

“I’d rather smoke. Pity you don’t join me.” Fisk leaned back, chose a cigarette, and held it before his face as though admiring its slim whiteness. “After all, I can’t be bothered to fight children.”

He grinned, brought his cigarette to his lips, and found them closing on nothingness.

His thumb and first two fingers still held their positions about three eighths of an inch apart, but there was no cigarette between them.

“Watch out, Lem,” cried the man at the visiplat. “He has a needle-gun.”

“No needle-gun,” snarled Bigman. “Just a buzzer.”

There was an important difference. A buzzer’s projectiles, although needle-like, were fragile and nonexplosive. They were used

for target practice and small game. Striking human skin, a buzz needle would do no serious damage, but it would smart like the devil.

Fisk's grin disappeared completely. He yelled, "Watch that, you crazy fool. You can blind a man with that."

Bigman's fist remained clenched at eye level. The thin snout of the buzzer projected between his two middle fingers. He said, "I won't blind you. But I can fix it so you won't sit down for a month. And as you can see, my aim isn't bad. And you," he called over his shoulder to the one at the calculator, "if you move an inch closer to the alarm circuit, you'll have a buzz needle right through your hand."

Fisk said, "What do you want?"

"Come down here and fight."

"Against a buzzer?"

"I'll put it away. Fists. Fair fight. Your buddies can see to that."

"I can't hit a guy smaller than I am."

"Then you shouldn't insult him, either." Bigman brought up the buzzer. "And I'm not smaller than you are. I may look that way on the outside, but inside I'm as big as you. Maybe bigger. I'm counting three." He narrowed one eye as he aimed.

"Galaxy!" swore Fisk. "I'm coming down. Fellas, be my witness that this was forced on me. I'll try not to hurt the crazy idiot too much."

He leaped down from his perch. The man at the calculating machine took his place at the sub-etherics.

Fisk was five feet ten, eight inches taller than Bigman, whose slight figure was more like a boy's than a man's. But Bigman's muscles were steel springs under perfect control. He waited for the other's approach without expression.

Fisk did not bother to put up a guard. He simply extended his right hand as though he were going to lift Bigman by the collar and toss him through the still open door.

Bigman ducked under the arm. His left and right thudded into the larger man's solar plexus in a rapid one-two, and almost in the same instant he danced out of reach.

Fisk turned green and sat down, holding his stomach and groaning.

"Stand up, big boy," said Bigman. "I'll wait for you."

The other two Tower men seemed frozen into immobility by the sudden turn of events.

Slowly Fisk rose to his feet. His face glowed with rage, but he approached more slowly.

Bigman drifted away.

Fisk lunged! Bigman was not there by two inches. Fisk whipped a sharp overhand right. Its thrust ended an inch short of Bigman's jaw.

Bigman bobbed about like a cork on rippling water. His arms lifted occasionally to deflect a blow.

Fisk, yelling incoherently, rushed blindly at his gnat-like opponent. Bigman stepped to one side and his open hand slapped sharply at the other's smooth-shaven cheek. It hit with a sharp report, like a meteor hitting the first layers of dense air above a planet. The marks of four fingers were outlined on Fisk's face.

For a moment Fisk stood there, dazed. Like a striking snake, Bigman stepped in again, his fists moving upward to crack against Fisk's jaw. Fisk went down into a half crouch.

Distantly Bigman was suddenly aware of the steady ringing of the alarm.

Without a moment's hesitation he turned on his heel and was out the door. He wove through a startled trio of guards heading up the corridor at a clattering run, and was gone!

"And why," questioned Conway, "are we waiting for Bigman?"

Lucky said, "Here's the way I see the situation. There is nothing we need so badly as more information about the pirates. I mean inside information. I tried to get it and things didn't quite break the way I hoped they would. I'm a marked man now. They know me. But they don't know Bigman. He has no official connection with the Council. Now it's my idea that if we can trump up a criminal charge against him, for realism, you know, he can hightail it out of Ceres in the hermit's ship——"

"Oh, space," groaned Conway.

"Listen, will you! He'll go back to the hermit's asteroid. If the pirates are there, good! If not, he'll leave the ship in plain view and wait for them inside. It's a very comfortable place to wait in."

"And when they come," said Henree, "they'll shoot him."

"They will *not*. That's why he's taking the hermit's ship. They'll have to know where Hansen went, to say nothing of myself, where Bigman came from, how he got hold of the ship. They'll *have* to know. That will give him time to talk."

"And to explain how he picked out Hansen's asteroid out of all the rocks in creation? That would take some tall talking."

"That won't take any talking at all. The hermit's ship was on Ceres, which it is. I've arranged to leave it out there unguarded, so he can take it. He'll find the ship's home asteroid's space-time co-

ordinates in the log-book. It would just be an asteroid to him, not too far from Ceres, as good as any other, and he would make a beeline for it in order to wait for the furor on Ceres to die down."

"It's a risk," grumbled Conway.

"Bigman knows it. And I tell you right now, we've *got* to take risks. Earth is underestimating the pirate menace so badly that——"

He interrupted himself as the signal light of the Communi-tube flashed on and off in rapid dots of light.

Conway, with an impatient motion of his hand, cut in the signal analyzer, then sat up straight.

He said, "It's on the Council wave length and, by Ceres, it's one of the Council scramblings."

The small visiplat above the Communi-tube was showing a characteristic rapidly shifting pattern of light and dark.

Conway inserted a sliver of metal, which he took from a group of such in his wallet, into a narrow slot in the Communi-tube. The sliver was a crystallite unscrambler, the active portion of the gadget consisting of a particular pattern of tiny crystals of tungsten embedded in an aluminum matrix. It filtered the sub-etheric signal in a specific way. Slowly Conway adjusted the unscrambler, pushing it in deeper and extracting it again until it matched exactly a scrambler similar in nature but opposite in function, at the other end of the signal.

The moment of complete adjustment was heralded by the sudden sharp focusing of the visiplat.

Lucky half-rose to his feet. "Bigman!" he said. "Where in space are you?"

Bigman's little face was grinning puckishly out at them. "I'm in space all right. A hundred thousand miles off Ceres. I'm in the hermit's ship."

Conway whispered furiously, "Is this another of your tricks? I thought you said he was on Ceres?"

"I thought he was," Lucky said. Then, "What happened, Bigman?"

"You said we had to act quickly, so I fixed things up myself. One of the wise guys in the Control Tower was giving me the business. So I slammed him around a little and took off." He laughed. "Check the guardhouse and see if they're not on the lookout for a guy like me with a complaint of assault and battery against him."

"That wasn't the brightest thing you could have done," said Lucky gravely. "You'll have a hard time convincing the men of the

asteroids that you're the type for assault. I don't want to hurt your feelings, but you look a little small for the job."

"I'll knock down a few," Bigman retorted. "They'll believe me. But that's not why I called."

"Well, why did you?"

"How do I get to this guy's asteroid?"

Lucky frowned. "Have you looked in the logbook?"

"Great Galaxy! I've looked everywhere. I've looked under the mattress even. There's no record anywhere of any kind of co-ordinates."

Lucky's look of uneasiness grew. "That's strange. In fact it's worse than strange. Look, Bigman," he spoke rapidly and incisively, "match Ceres' speed. Give me your co-ordinates with respect to Ceres right now and keep them that way, whatever you do, till I call you. You're too close to Ceres now for any pirates to bother you, but if you drift out further, you may be in a bad way. Do you hear me?"

"Check. Got you. Let me calculate my co-ordinates."

Lucky wrote them down and broke connections. He said, "Space, when will I learn *not* to make assumptions."

Henree said, "Hadn't you better have Bigman come back? It's a foolhardy setup at best and as long as you haven't the co-ordinates, give the whole thing up."

"Give it up?" said Lucky. "Give up the one asteroid we know to be a pirates' base? Do you know of any other? One single other? We've got to find the asteroid. It's our only clue to the inside of this knot."

Conway said, "He's got a point there, Gus. It is a base."

Lucky jiggled a switch on the intercom briskly and waited.

Hansen's voice, sleep-filled but startled, said, "Hello! Hello!"

Lucky said briskly, "This is Lucky Starr, Mr. Hansen. Sorry to disturb you, but I would like to have you come down here to Dr. Conway's room as fast as you can."

The hermit's voice answered after a pause, "Certainly, but I don't know the way."

"The guard at your door will take you. I'll contact him. Can you make it in two minutes?"

"Two and a half anyway," he said, good-humoredly. He sounded more awake.

"Good enough!"

Hansen was as good as his word. Lucky was waiting for him.

Lucky paused for a moment, holding the door open. He said to

the guard, "Has there been any trouble at the base earlier this evening? An assault, perhaps?"

The guard looked surprised. "Yes, sir. The man who got hurt refused to press charges, though. Claimed it was a fair fight."

Lucky closed the door. He said, "That follows. Any normal man would hate to get up in a guardhouse and admit a fellow the size of Bigman had given him a banging. I'll call the authorities later and have them put the charge on paper anyway. For the record. . . . Mr. Hansen."

"Yes, Mr. Starr?"

"I have a question the answer to which I did not want floating around this intercom system. Tell me, what are the co-ordinates of your home asteroid? Standard and temporal both, of course."

Hansen stared and his china-blue eyes grew round. "Well, you may find this hard to believe, but do you know, I really couldn't tell you."

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## The Asteroid That Wasn't

Lucky met his eye steadily. "That is hard to believe, Mr. Hansen. I should think you would know your co-ordinates as well as a planet dweller would know his home address."

The hermit looked at his toes and said mildly, "I suppose so. It *is* my home address, really. Yet I don't know it."

Conway said, "If this man is deliberately——"

Lucky broke in. "Now wait. Let's force patience on ourselves if we have to. Mr. Hansen must have some explanation."

They waited for the hermit to speak.

Co-ordinates of the various bodies in the Galaxy were the life-blood of space travel. They fulfilled the same function that lines of latitude and longitude did on the two-dimensional surface of a planet. However, since space is three-dimensional, and since the bodies in it move about in every possible way, the necessary co-ordinates are more complicated.

Basically there is first a standard zero position. In the case of the Solar System, the Sun was the usual standard. Based on that standard, three numbers are necessary. The first number is the distance of an object or a position in space from the Sun. The second and third numbers are two angular measurements indicating the position of the object with reference to an imaginary line connecting the Sun and the center of the Galaxy. If three sets of such co-ordinates are known for three different times, set well apart, the orbit of a moving body could be calculated and its position, relative to the Sun, known for any given time.

Ships could calculate their own co-ordinates with respect to the Sun or, if it were more convenient, with respect to the nearest large

body, whatever it was. On the Lunar Lines, for instance, of which vessels traveled from Earth to the Moon and back, Earth was the customary "zero point." The Sun's own co-ordinates could be calculated with respect to the Galactic Center and the Galactic Prime Meridian, but that was only important in traveling between the stars.

Some of all this might have been passing through the hermit's mind as he sat there with the three Councilmen watching him narrowly. It was hard to tell.

Hansen said suddenly, "Yes, I can explain."

"We're waiting," said Lucky.

"I've never had occasion to use the co-ordinates in fifteen years. I haven't left my asteroid at all for two years and before that any trips I made, maybe one or two a year, were short ones to Ceres or Vesta for supplies of one sort or another. When I did that, I used local co-ordinates which I always calculated out for the moment. I never worked out a table because I didn't have to.

"I'd only be gone a day or two, three at the most, and my own rock wouldn't drift far in that time. It travels with the stream, a little slower than Ceres or Vesta when it's further from the Sun and a little faster when it's nearer. When I'd head back for the position I calculated, my rock might have drifted ten thousand or even a hundred thousand miles off its original spot, but it was always close enough to pick up with the ship's telescope. After that, I could always adjust my course by eye. I never used the solar standard co-ordinates because I never had to, and there it is."

"What you're saying," said Lucky, "is that you couldn't get back to your rock now. Or did you calculate its local co-ordinates before you left?"

"I never thought to," said the hermit sadly. "It's been so long since I left it that I never gave the matter a second's attention. Not until the minute you called me in here."

Dr. Henree said, "Wait. Wait." He had lit up a fresh pipeful of tobacco and was puffing strongly. "I may be wrong, Mr. Hansen, but when you first took over ownership of your asteroid, you must have filed a claim with the Terrestrial Outer World Bureau. Is that right?"

"Yes," said Hansen, "but it was only a formality."

"That could be. I'm not arguing that. Still, the co-ordinates of your asteroid would be on record there."

Hansen thought a bit, then shook his head. "I'm afraid not, Dr. Henree. They took only the standard co-ordinate set for January 1 of that year. That was just to identify the asteroid, like a code number, in case of disputed ownership. They weren't interested in anything



more than that and you can't compute an orbit from only one set of numbers."

"But you yourself must have had orbital values. Lucky told us that you first used the asteroid as an annual vacation spot. So you must have been able to find it from year to year."

"That was fifteen years ago, Dr. Henree. I *had* the values, yes. And those values are somewhere in my record books on the rock, but they're not in my memory."

Lucky, his brown eyes clouded, said, "There's nothing else at the moment, Mr. Hansen. The guard will take you back to the room and we'll let you know when we need you again. And, Mr. Hansen," he added as the hermit rose, "if you should happen to think of the co-ordinates, let us know."

"My word on that, Mr. Starr," said Hansen gravely.

The three were alone again. Lucky's hand shot out to the Communi-tube. "Key me in for transmission," he said.

The voice of the man at Central Communications came back. "Was the previous incoming message for you, sir? I couldn't unscramble it so I thought——"

"You did well. Transmission, please."

Lucky adjusted a scrambler and used Bigman's co-ordinates to zero in the sub-etheric beam.

"Bigman," he said when the other's face appeared, "open the logbook again."

"Do you have the co-ordinates, Lucky?"

"Not yet. Have you got the logbook open?"

"Yes."

"Is there a sheet of scrap paper somewhere in it? Loose, with calculations all over it?"

"Wait. Yes. Here it is."

"Hold it up in front of your transmitter. I want to see it."

Lucky pulled a sheet of paper before him and copied down the figuring. "All right, Bigman, take it away. Now listen, stay put. Get me? Stay put, no matter what, till you hear from me. Signing off."

He turned to the two older men. "I navigated the ship from the hermit's rock to Ceres by eye. I adjusted course three or four times, using his ship's telescope and vernier instruments for observation and measurements. These are my calculations."

Conway nodded. "Now, I suppose, you intend calculating backwards to find out the rock's co-ordinates."

"It can be done easily enough, particularly if we make use of the Ceres Observatory."

Conway rose heavily. "I can't help but think you make too much of all this, but I'll follow your instinct for a while. Let's go to the Observatory."

Corridors and elevators took them close to Ceres' surface, one half mile above the Council of Science offices on the asteroid. It was chilly there, since the Observatory made every attempt to keep the temperature as constant as possible and as near surface temperature as the human body could endure.

Slowly and carefully a young technician was unraveling Lucky's calculations, feeding them into the computer and controlling the operations.

Dr. Henree, in a not too comfortable chair, huddled his thin body together and seemed to be trying to extract warmth from his pipe, for his large-knuckled hands hovered closely about its bowl.

He said, "I hope this comes to something."

Lucky said, "It had better." He sat back, his eyes fixed thoughtfully on the opposite wall. "Look, Uncle Hector, you referred to my 'instinct' a while back. It isn't instinct; not any more. This run of piracy is entirely different from that of a quarter century ago."

"Their ships are harder to catch or stop, if that's what you mean," said Conway.

"Yes, but doesn't that make it all the stranger that their raids are confined to the asteroid belt? It's only here in the asteroids that trade has been disrupted."

"They're being cautious. Twenty-five years ago, when their ships ranged all the way to Venus, we were forced to mount an offensive and crush them. Now they stick to the asteroids and the government hesitates to take expensive measures."

"So far, so good," said Lucky, "but how do they support themselves? It's always been the assumption that pirates didn't raid for pure joy of it alone, but to pick up ships, food, water, and supplies. You would think that now more than ever that was a necessity. Captain Anton boasted to me of hundreds of ships and thousands of worlds. That may have been a lie to impress me, but he certainly took time for the push-gun duel, drifting openly in space for hours as though he had no fear whatever of government interference. And Hansen said, moreover, that the pirates had appropriated the various hermit worlds as stopping-off places. There are hundreds of hermit worlds. If the pirates dealt with all of them, or even a good part of them, that also means a large organization.

"Now where do they get the food to support a large organization

and at the same time mount fewer raids now than pirates did twenty-five years ago? The pirate crewman, Martin Maniu, spoke to me of wives and families. He was a vat-man, he said. Presumably he cultured yeast. Hansen had yeast foods on his asteroid and they weren't Venus yeast. I *know* the taste of Venus yeast.

"Put it all together. They grow their own food in small yeast farms distributed among asteroid caverns. They can get carbon dioxide directly from limestone rocks, and water and extra oxygen from the Jovian satellites. Machinery and power units may be imported from Sirius or obtained by an occasional raid. Raids will also supply them with more recruits, both men and women.

"What it amounts to is that Sirius is building an independent government against us. It's making use of discontented people to build a widespread society that will be difficult or impossible to crush if we wait too long. The leaders, the Captain Antons, are after power in the first place and they're perfectly willing to give half the Terrestrial Empire to Sirius if they themselves can keep the other half."

Conway shook his head. "That's an awfully big structure for the small foundation of fact you have. I doubt if we could convince the government. The Council of Science can act by itself only so far, you know. We don't have a fleet of our own, unfortunately."

"I know. That's exactly why we need more information. If, while it is still early in the game, we can find their major bases, capture their leaders, expose their Sirian connections—"

"Well?"

"Why, it's my opinion the movement would be done with. I'm convinced that the average 'man of the asteroids,' to use their own phrase, has no idea he's being made a Sirian puppet. He probably has a grievance against Earth. He may think he's had a raw deal, resent the fact that he couldn't find a job or advancement, that he wasn't getting along as well as he should have. He may have been attracted to what he thought would be a colorful life. All that, maybe. Still, that's a long way from saying he'd be willing to side with Earth's worst enemy. When he finds out that his leaders have been tricking him into doing just that, the pirate menace will fall apart."

Lucky halted his intense whispering as the technician approached, holding a flexible transparent tape with the computer's code prickings upon it.

"Say," he said, "are you sure these figures you gave me were right?"

Lucky said, "I'm sure. Why?"

The technician shook his head. "There's something wrong. The

final co-ordinates put your rock inside of the forbidden zones. That's allowing for proper motion, too. I mean it can't be."

Lucky's eyebrows lifted sharply. The man was certainly right about the forbidden zones. No asteroids could possibly be found within them. Those zones represented portions of the asteroid belt in which asteroids, if they had existed, would have had times of revolution about the Sun that were an even fraction of Jupiter's twelve-year period of revolution. That would have meant that the asteroid and Jupiter would have continually approached, every few years, in the same portion of space. Jupiter's repeated pull would slowly move the asteroid out of that zone. In the two billion years since the planets had been formed Jupiter had cleared every asteroid out of the forbidden zone and that was that.

"Are you sure," Lucky said, "that your calculations are right?"

The technician shrugged as though to say, "I know my business." But aloud he only said, "We can check it by telescope. The thousand-incher is busy, but that's no good for close work anyway. We'll get one of the smaller ones. Will you follow me, please?"

The Observatory proper was almost like a shrine, with the various telescopes the altars. Men were absorbed in their work and did not pause to look up when the technician and the three Councilmen entered.

The technician led the way to one of the wings into which the huge, cavernous room was divided.

"Charlie," he said to a prematurely balding young man, "can you swing Bertha into action?"

"What for?" Charlie looked up from a series of photographic prints, star-speckled, over which he had been bending.

"I want to check the spot represented by these co-ordinates." He held out the computer film.

Charlie glanced at it and frowned. "What for? That's forbidden-zone territory."

"Would you focus the point anyway?" asked the technician. "It's Council of Science business."

"Oh? Yes, *sir*." He was suddenly far more pleasant. "It won't take long."

He closed a switch and a flexible diaphragm sucked inward high above, closing about the shaft of "Bertha," a hundred-twenty-inch telescope used for close work. The diaphragm made an air-tight seal, and above it Lucky could make out the smooth whirl of the surface-

lock opening. Bertha's large eye lifted upward, the diaphragm clinging, and was exposed to the heavens.

"Mostly," explained Charlie, "we used Bertha for photographic work. Ceres' rotation is too rapid for convenient optical observations. The point you're interested in is over the horizon, which is lucky."

He took his seat near the eyepiece, riding the telescope's shaft as though it were the stiff trunk of a giant elephant. The telescope angled and the young astronomer lifted high. Carefully he adjusted the focus.

He lifted out of his perch then and stepped down the rungs of a wall ladder. At the touch of his finger a partition directly below the telescope moved aside to show a black-lined pit. Into it a series of mirrors and lenses could focus and magnify the telescopic image.

There was only blackness.

Charlie said, "That's it." He used a meter stick as a point. "That little speck is Metis, which is a pretty big rock. It's twenty-five miles across, but it's millions of miles away. Here you have a few specks within a million miles of the point you're interested in, but they're to one side, outside the forbidden zone. We've got the stars blanked out by phase polarization or they'd confuse everything."

"Thank you," said Lucky. He sounded stunned.

"Any time. Glad to help whenever I can."

They were in the elevator, headed downward, before Lucky spoke again. He said distantly, "It can't be."

"Why not?" said Henree. "Your figures were wrong."

"How could they be? I got to Ceres."

"You may have intended one figure and put down another by mistake, then made a correction by eye and forgot to correct the paper."

Lucky shook his head. "I couldn't have done that. I just don't— Wait. *Great Galaxy!*" He stared at them wildly.

"What's the matter, Lucky?"

"It works out! Space, it fits in! Look, I was wrong. It's not early in the game at all; it's darned late in the game. It may be too late. I've underestimated them again."

The elevator had reached the proper level. The door opened and Lucky was out with a rapid stride.

Conway ran after, seized his elbow, swung him about. "What are you talking about?"

"I'm going out there. Don't even think of stopping me. And if I

don't come back, for Earth's sake, *force* the government to begin major preparations. Otherwise the pirates may be in control of the entire System within a year. Perhaps sooner."

"Why?" demanded Conway violently. "Because you couldn't find an asteroid?"

"Exactly," said Lucky.

# 10

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## The Asteroid That Was

Bigman had brought Conway and Henree to Ceres on Lucky's own ship, the *Shooting Starr*, and for that Lucky was grateful. It meant he could go out into space with it, feel its deck beneath his feet, hold its controls in his hands.

The *Shooting Starr* was a two-man cruiser, built this last year after Lucky's exploits among the farmboys of Mars. Its appearance was as deceptive as modern science could make it. It had almost the appearance of a space-yacht in its graceful lines, and its extreme length was not more than twice that of Hansen's little rowboat. No traveler in space, meeting the *Shooting Starr*, would have estimated it to be anything more than a rich man's plaything, speedy perhaps but thin-skinned and unequal to hard knocks. Certainly it would not have seemed the type of vessel to trust in the dangerous reaches of the asteroid belt.

An investigation of the interior of the vessel might have changed some of those notions, however. The gleaming hyperatomic motors were the equal of those on armored space-cruisers ten times the *Shooting Starr's* weight. Its energy reserve was tremendous and the capacity of its hysteretic shield was sufficient to stop the largest projectile that could be put out against it by anything short of a dreadnought. Offensively its limited mass prevented it from being first-class, but weight for weight it could outfight any ship.

It was no wonder that Bigman capered with delight once he had entered the air-lock and thrown off his space-suit.

"Space," Bigman said, "I'm glad to get off that other tub. What do we do with it?"

"I'll have them send up a ship from Ceres to scoop it in."

Ceres was behind them, a hundred thousand miles away. In appearance it was about half the diameter of the Moon as seen from Earth.

Bigman said curiously, "How about letting me in on all this, Lucky? Why the sudden change of plans? I was heading out all by myself, the last I heard."

"There aren't any co-ordinates for you to head to," said Lucky. Grimly he told him the events of the last several hours.

Bigman whistled. "Then where are we going?"

"I'm not sure," said Lucky, "but we begin by aiming at the place where the hermit's rock ought to be now."

He studied the dials, and added, "And we leave here fast, too."

He *meant* fast. Acceleration on the *Shooting Starr* went high as velocity built up. Bigman and Lucky were pinned back to their diamagnetically cushioned chairs and the growing pressure spread evenly over their entire body surfaces. The oxygen concentration in the cabin was built up by the acceleration-sensitive air-purifier controls and allowed shallower breathing without oxygen starvation. The g-harness (g being the usual scientific symbol for acceleration) they both wore was light and did not hamper their movements, but under the stress of increasing velocity it stiffened and protected the bones, particularly the spine, from breaking. A nylotexmesh girdle kept the abdominal viscera from undue harm.

In every respect the cabin accessories had been designed by experts at the Council of Science to allow for twenty to thirty per cent greater acceleration on the *Shooting Starr* than on even the most advanced vessels of the fleet.

Even on this occasion the acceleration, though high, was less than half of that of which the ship was capable.

When velocity leveled off, the *Shooting Starr* was five million miles from Ceres, and, if Lucky or Bigman had been interested in looking for it, they would have found it to have become, in appearance, merely a speck of light, dimmer than many of the stars.

Bigman said, "Say, Lucky, I've been wanting to ask you. Do you have your glimmer shield?"

Lucky nodded and Bigman looked grieved.

"Well, you big dumb ox," the little fellow said, "why in space didn't you take it with you when you went out pirate-hunting then?"

"I did have it with me," said Lucky calmly. "I've had it with me since the day the Martians gave it to me."

As Lucky and Bigman (but no one else in the Galaxy) knew, the Martians to whom Lucky referred were not the farmboys and ranchers



of Mars. They were rather a race of immaterial creatures who were the direct descendants of the ancient intelligences that once inhabited the surface of Mars in the ages before it had lost its oxygen and water. Excavating huge caverns below Mars' surface by destroying cubic miles of rock, converting the matter so destroyed into energy and storing that energy for future use, they now lived in comfortable isolation. Abandoning their material bodies and living as pure energy, their existence remained unsuspected by Mankind. Only Lucky Starr had penetrated their fastnesses and as the one souvenir of that eerie trip he had obtained what Bigman called the "glimmer shield."

Bigman's annoyance increased. "Well, if you had it, why didn't you use it? What's wrong with you?"

"You have the wrong idea of the shield, Bigman. It won't do everything. It won't feed me and wipe my lips when I'm through."

"I've seen what it can do. It can do plenty."

"It can, in certain ways. It can soak up all types of energy."

"Like the energy of a blaster bolt. You're not going to kick about that, are you?"

"No, I admit I'd be immune to blasters. The shield would soak up potential energy, too, if the mass of a body weren't too great or too small. For instance, a knife or an ordinary bullet couldn't penetrate, though the bullet might knock me down. A good sledge hammer would swing right through the shield, though, and even if it didn't its momentum would crush me. And what's more, molecules of air can go through the shield as if it weren't there because they're too small to be handled. I'm telling you this so that you'll understand that if I were wearing the shield and Dingo had broken my face plate when we were both tangled up in space, I would have died anyway. The shield wouldn't have prevented the air in my suit from scattering away in a split second."

"If you had used it in the first place, Lucky, you wouldn't have had any trouble. Don't I remember when you used it on Mars?" Bigman chuckled at the reminiscence. "It glimmered all over you, smoky-like, only luminous, so you could just be seen in a haze. All except your face anyway. That was just a sheet of white light."

"Yes," said Lucky dryly, "I would have scared them. They would have hit at me with blasters and I wouldn't have been hurt. So they would have all high-tailed it off the *Atlas*, gone off about ten miles, and blasted the ship. I would have been stone dead. Don't forget that the shield is only a shield. It doesn't give me any offensive powers whatever."

"Aren't you ever going to use it again?" asked Bigman.

"When it's necessary. Not till then. If I use it too much, the effect would be lost. Its weaknesses would be found out and I would be just a target for anyone I came up against."

Lucky studied the instruments. Calmly he said, "Ready for acceleration again."

Bigman said, "Hey——"

Then, as he was pushed back into his seat, he found himself fighting for breath and could say nothing more. The redness was rising to his eyes and he could feel the skin drawing backward as though it were trying to peel off his bones.

This time the *Shooting Starr's* acceleration was on full.

It lasted fifteen minutes. Toward the end Bigman was scarcely conscious. Then it relaxed and life crept back.

Lucky was shaking his head and panting for breath.

Bigman said, "Hey, that wasn't funny."

"I know," said Lucky.

"What's the idea? Weren't we going fast enough?"

"Not quite. But it's all right now. We've shaken them."

"Shaken whom?"

"Whoever was following us. We were being followed, Bigman, from the minute you stepped foot on the deck of the old Shooter. Look at the Ergometer."

Bigman did so. The Ergometer resembled the one on the *Atlas* in name only. The one on the *Atlas* had been a primitive model designed to pick up motor radiation for the purpose of releasing the lifeboats. That had been its only purpose. The Ergometer on the *Shooting Starr* could pick up the radiation pattern of a hyperatomic motor on ships no larger than an ordinary lifeboat and do it at a distance of better than two million miles.

Even now the inked line on the graphed paper jiggled very faintly, but periodically.

"That isn't anything," said Bigman.

"It was, a while ago. Look for yourself." Lucky unreeled the cylinder of paper that had already passed the needle. The jiggings grew deeper, more characteristic. "See that, Bigman?"

"It could be any ship. It could be a Ceres freighter."

"No. For one thing, it tried to follow us and did a good job of it, too, which means it had a pretty good Ergometer of its own. Besides that, did you ever see an energy pattern like this?"

"Not exactly like this, Lucky."

"I did, you see, in the case of the ship that boarded the *Atlas*. This Ergometer does a much better job of pattern analysis, but the

resemblance is definite. The motor of the ship that's following us is of Sirian design."

"You mean it's Anton's ship."

"That or a similar one. It doesn't matter. We've lost them."

"At the moment," said Lucky, "we're right where the hermit's rock should be, plus or minus, say, a hundred thousand miles."

"Nothing's here," said Bigman.

"That's right. The gravitics register no asteroidal mass anywhere near us. We're in what the astronomers call a forbidden zone."

"Uh-huh," said Bigman wisely, "I see."

Lucky smiled. There was nothing to see. A forbidden zone in the asteroid belt looked no different from a portion of the belt that was thickly strewn with rocks, at least not to the naked eye. Unless an asteroid happened to be within a hundred miles or so, the view was the same. Stars or things that looked like stars filled the heavens. If some of them were asteroids and not stars, there was no way of telling the difference short of watching intently for several hours to see which "stars" changed relative position, or using a telescope to begin with.

Bigman said, "Well, what do we do?"

"Look around the neighborhood. It may take us a few days."

The path of the *Shooting Starr* grew erratic. It headed outward from the Sun, away from the forbidden zone and into the nearest constellation of asteroids. The gravitics jumped their needles at the pull of distant mass.

Tiny world after tiny world slid into the field of the visiplat, was allowed to remain there while it rotated, and was then permitted to slip out. The *Shooting Starr*'s velocity had decelerated to a relative crawl, but the miles still passed by the hundreds of thousands and into the millions. The hours passed. A dozen asteroids came and went.

"You better eat," said Bigman.

But Lucky contented himself with sandwiches and catnaps while he and Bigman watched visiplat, gravitics and Ergometer in turn.

Then, with an asteroid in view, Lucky said in a strained voice, "I'm going down."

Bigman was caught by surprise. "Is that the asteroid?" He looked at its angularity. "Do you recognize it?"

"I think I do, Bigman. In any case, it's going to be investigated."

It took half an hour to manipulate the ship into the asteroid's shadow.

"Keep it here," Lucky said. "Someone's got to stay with the ship and you're the one. Don't forget it. It can be detected, but if it's in the shadow, with the lights out and the motors at minimum, it will make it as hard as possible for them. According to the Ergometer, there's no ship in space near us now. Right?"

"Right!"

"The most important thing to remember is this: Don't come down after me for any reason. When I'm through, I'll come up to you. If I'm not back in twelve hours and haven't called, either, back you go to Ceres with a report, after taking photographs of this asteroid at every angle."

Bigman's face grew sullenly stubborn. "No."

"This is the report," said Lucky calmly. He withdrew a personal capsule from an inner pocket. "This capsule is keyed to Dr. Conway. He's the only one who can open it. He's got to get the information, regardless of me. Do you understand?"

"What's in it?" asked Bigman, making no move to take it.

"Just theories, I'm afraid. I've told no one of them, because I've come out here to try to get facts to back them up. If I can't make it, the theories, at least, must get through. Conway may believe them and he may get the government to act upon them."

"I won't do it," said Bigman. "I won't leave you."

"Bigman, if I can't trust you to do what's right regardless of yourself and myself, you won't be much use to me after this if I come through safely."

Bigman held out his hand. The personal capsule was dropped into it.

"All right," he said.

Lucky dropped through vacuum to the asteroid's surface, hastening the drop by use of the suit's push-gun. He knew the asteroid to be about the right size. It was roughly the shape he remembered it to be. It was jagged enough and the sunlit portion looked the right color. All that, however, might have held true for any asteroid.

But there was the other item. That was not likely to be duplicated very often.

From his waist pouch he took out a small instrument that looked like a compass. Actually it was a pocket radar unit. Its enclosed emission source could put out radio short waves of almost any range. Certain octaves could be partially reflected by rock and partially transmitted through reasonable distances.

In the presence of a thick layer of rock the reflection of radiation

activated a needle on the dial. In the presence of a thin layer of rock, as, for instance, on a surface under which lay a cave or hollow, some radiation was reflected, but some penetrated into the hollow and was reflected from the further wall. In this way a double reflection occurred, one component of which was much weaker than the second. In response to such a double reflection the needle responded with a characteristic double quiver.

Lucky watched the instrument as he leaped easily over the stony peaks. The needle's smooth pulsing gained a quiver, and then a distinct subsidiary movement. Lucky's heart bounded. The asteroid was hollow. Find where the subsidiary movements were strongest and there the hollow would be nearest the surface. There would be the air-lock.

For a few moments all of Lucky's faculties were concentrated on the needle. He was unaware of the magnetic cable snaking its way toward him from the near horizon.

He was unaware of it until it snapped about him in coil after coil, clinging close, its momentum tossing his nearly weightless body first clear of the asteroid and then down to the rock, where he lay helpless.

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## At Close Quarters

Three lights came over the horizon and toward the prostrate Lucky. In the darkness of the asteroid's night he could not see the figures that accompanied the lights.

Then there was a voice in his ear and the voice was the well-known hoarseness of the pirate, Dingo. It said, "Don't call your pal upstairs. I've got a jigger here that can pick up your carrier wave. If you try to, I'll blast you out of your suit right now, nark!"

He spat out the final word; the contemptuous term of all law-breakers for those they considered to be spies of the law-enforcement agencies.

Lucky kept silent. From the moment he had first felt the tremor of his suit under the lash of the magnetic cable he knew that he had fallen into a trap. To call Bigman before he knew more about the nature of the trap would have been putting the *Shooting Starr* into danger, and that without helping himself.

Dingo stood over him, a foot on either side. In the light of one of the flashes Lucky caught a quick glimpse of Dingo's face-plate and of the stubby goggles that covered his eyes. Lucky knew those to be infrared translators, capable of converting ordinary heat radiation into visible light. Even without flashes and in the asteroid's dark night they had been able to watch him by the energy of his own heaters.

Dingo said, "What's the matter, nark? Scared?"

He lifted a bulky leg with its bulkier metal swathing and brought his heel down sharply in the direction of Lucky's face-plate. Lucky turned his head swiftly away to let the blow fall on the sturdier metal

of the helmet, but Dingo's heel stopped midway. He laughed whoopingly.

"You won't get it that easy, nark," he said.

His voice changed as he spoke to the other two pirates. "Hop over the jag and get the air-lock open."

For a moment they hesitated. One of them said, "But, Dingo, the captain said you were too——"

Dingo said, "Get going, or maybe I'll start with him and finish with you."

In the face of the threat the two hopped away. Dingo said to Lucky, "Now suppose we get you to the air-lock."

He was still holding the butt end of the magnetic cable. With a flick at the switch he turned off its current and momentarily demagnetized it. He stepped away and pulled it sharply toward himself. Lucky dragged along the rocky floor of the asteroid, bounced upward, and rolled partly out of the cable. Dingo touched the switch again and the remaining coils suddenly clung and held.

Dingo flicked the whip upward. Lucky traveled with it, while Dingo maneuvered skillfully to maintain his own balance. Lucky hovered in space and Dingo walked with him as though he were a child's balloon at the end of a string.

The lights of the other two were visible again after five minutes. They were shining into a patch of darkness of which regular boundaries were proof enough that it was an open air-lock.

Dingo called, "Watch out! I've got a package to deliver."

He demagnetized the cable again, and flicked it downward, rising six inches into the air as he did so. Lucky rotated rapidly, spinning completely out of the cable.

Dingo leaped upward and caught him. With the skill of a man long used to weightlessness, he avoided Lucky's attempts to break his hold, and hurled him in the direction of the air-lock. He broke his own backward tumble by a quick double spurt of his suit's push-gun and righted himself in time to see Lucky enter the air-lock cleanly.

What followed was clearly visible in the light of the pirates' flashes. Caught in the pseudo-grav field that existed within the air-lock, Lucky was hurled suddenly downward, hitting the rocky floor with a clatter and force that knocked the breath out of him. Dingo's braying laughter filled his helmet.

The outer door closed, the inner opened. Lucky got to his feet, actually thankful for the normality of gravity.

"Get in, nark." Dingo was holding a blaster.

Lucky paused as he entered the asteroid's interior. His eyes shifted quickly from side to side while the frost gathered at the rims of his face-plate. What he saw was not the soft-lit library of the hermit, Hansen, but a tremendously long hallway, the roof of which was supported by a series of pillars. He could not see to the other end. Openings to rooms pierced the wall of the corridors regularly. Men hurried to and fro and there was the smell of ozone and machine oil in the air. In the distance he could hear the characteristic drum-drum of what must have been gigantic hyperatomic motors.

It was quite obvious that this was no hermit's cell, but a large industrial plant, *inside an asteroid*.

Lucky bit his lower lip thoughtfully and wondered despondently if all this information would die with him now.

Dingo said, "In there, nark. Get in there."

It was a storeroom he indicated, its shelves and bins well filled, but empty of human beings other than themselves.

"Say, Dingo," said one of the pirates nervously, "why are we showing him all this? I don't think—"

"Then don't talk," said Dingo, and laughed. "Don't worry, he won't tell anyone about anything he sees. I guarantee that. Meanwhile I have a little something to finish with him. Get that suit off him."

He was removing his own suit as he spoke. He stepped out, monstrously bulky. One hand rubbed slowly over the hairy back of the other. He was savoring the moment.

Lucky said firmly, "Captain Anton never gave you orders to kill me. You're trying to finish a private feud and it will only get you into trouble. I'm a valuable man to the captain and he knows it."

Dingo sat down on the edge of a bin of small metal objects, with a grin on his face. "To listen to you, nark, you'd think you had a case. But you didn't fool us, not for one minute. When we left you on the rock with the hermit, what do you think we did? *We watched*. Captain Anton's no fool. He sent me back. He said, 'Watch that rock and report back.' I saw the hermit's dinghy leave. I could have blasted you out of space then, but the order was to follow.

"I stayed off Ceres for a day and a half and spotted the hermit's dinghy hitting out for space again. I waited some more. Then I caught this other ship coming out to meet it. The man off the dinghy got on to the other ship and I followed you when you took off."

Lucky could not help smiling. "Tried to follow, you mean."

Dingo's face turned a blotchy red. He spat out, "All right. You were faster. Your kind is good at running. What of it? I didn't have



to chase you. I just came here and waited. I knew where you were heading. I've got you, haven't I?"

Lucky said, "All right, but what have you got? I was unarmed on the hermit's rock. I didn't have any weapons, while the hermit had a blaster. I had to do what he said. He wanted to get back to Ceres and he forced me along so he could claim he was being kidnapped if the men of the asteroids stopped him. You admit yourself that I got off Ceres as fast as I could and tried to get back here."

"In a nice, shiny government ship?"

"I stole it. So? It just means that you've got another ship for your fleet. And a good one."

Dingo looked at the other pirates. "Doesn't he throw the comet-dust, though?"

Lucky said, "I warn you again. The captain will take anything that happens to me out on you."

"No he won't," snarled Dingo, "because he knows who you are and so do I, Mr. David Lucky Starr. Come on, move out into the middle of the room."

Dingo rose. He said to his two companions, "Get those bins out of the way. Pull them over to one side."

They looked at his staring, blood-congested face once and did as he said. Dingo's bulbously thickset body was slightly stooped, his head sank down into his bulging shoulders, and his thick, somewhat bandy, legs planted themselves firmly. The scar on his upper lip was a vivid white.

He said, "There are easy ways of finishing you and there are nice ways. I don't like a nark and I especially don't like a nark who fouls me in a push-gun fight. So before I finish you, I'm breaking you into little pieces."

Lucky, looking tall and spindly in comparison with the other, said, "Are you man enough to take care of me alone, Dingo, or will your two friends help you?"

"I don't need help, pretty boy." He laughed nastily. "But if you try to run, they'll stop you, and if you keep on trying to run, they've got neuronics whips that will *really* stop you." He raised his voice. "And use them, you two, if you have to."

Lucky waited for the other to make his move. He knew that the one most nearly fatal tactic would be to try to mix it up at close quarters. Let the pirate enclose his chest in the hug of those enormous arms and broken ribs would be the nearly certain result.

Dingo, right fist drawn back, ran forward. Lucky stood his ground as long as he dared, then stepped quickly to his right, seized his

opponent's extended left arm, pulled backward, taking advantage of the other's forward momentum, and caught the other's ankle against his foot.

Dingo went sprawling forward and down heavily. He was up immediately, however, one cheek scraped and little lights of madness dancing in his eyes.

He thundered toward Lucky, who retired nimbly toward one of the bins lining the wall.

Lucky seized the ends of the bin and swung his legs up and out. Dingo caught them in his chest, halted momentarily. Lucky whirled out of the way and was free in the center of the room again.

One of the pirates called out, "Hey, Dingo, let's stop fooling around."

Dingo panted, "I'll kill him, I'll kill him."

But he was more cautious now. His little eyes were nearly buried in the fat and gristle that surrounded his eyeballs. He crept forward, watching Lucky, waiting for the moment he might strike.

Lucky said, "What's the matter, Dingo? Afraid of me? You get afraid very quick for such a big talker."

As Lucky expected, Dingo roared incoherently and dashed heavily and directly at him. Lucky had no trouble in evading the bull rush. The side of his hand came sharply and swiftly down on the back of Dingo's neck.

Lucky had seen any number of men knocked unconscious by that particular blow; he had seen more than one killed. But Dingo merely staggered. He shook it off and turned, snarling.

He walked flat-footedly toward the dancing Lucky. Lucky lashed out with his fist, which landed sharply on Dingo's scraped cheek bone. Blood flowed, but Dingo did not so much as attempt to block the blow, nor did he blink when it landed.

Lucky squirmed away and struck sharply twice more at the pirate. Dingo paid no attention. He came forward, always forward.

Suddenly, unexpectedly, he went down, apparently as a man who had stumbled. But his arms shot out as he fell and one hand closed about Lucky's right ankle. Lucky went down too.

"I've got you now," whispered Dingo.

He reached up to catch Lucky's waist and in a moment, fast-locked, they were rolling across the floor.

Lucky felt the growing, enclosing pressure and pain washed inward like an advancing flame. Dingo's fetid panting was in his ear.

Lucky's right arm was free, but his left was enclosed in the numbing vise of the other's grip about his chest. With the last of his

fading strength, Lucky brought his right fist up. The blow traveled no more than four inches, catching the point where Dingo's chin met his neck with a force that sent stabs of pain the length of Lucky's arm.

Dingo's grip loosened for a moment and Lucky, writhing, flung himself out of the deadly embrace and onto his feet.

Dingo got up more slowly. His eyes were glassy, and fresh blood was trickling out the corner of his mouth.

He muttered thickly, "The whip! The whip!"

Unexpectedly he turned upon one of the pirates who had been standing there a frozen onlooker. He wrested the weapon from the other's hand and sent him sprawling.

Lucky tried to duck, but the neuronc whip was up and flashing. It caught his right side and stimulated the nerves of the area it struck into a bath of pain. Lucky's body stiffened and went down again.

For a moment his senses recorded only confusion, and with what consciousness he possessed he expected death to be a second off. Dimly he heard a pirate's voice.

"Look, Dingo, the captain said to make it look like an accident. He's a Council of Science man and . . ."

It was all Lucky heard.

When he swam back to consciousness with an excruciating tingle of pins and needles down the length of his side, he found himself in a space-suit again. They were just about to put on his helmet. Dingo, lips puffed, cheek and jaw bruised, watched malignantly.

There was a voice in the doorway. A man was entering hurriedly, full of talk.

Lucky heard him say, "—for Post 47. It's getting so *I* can't keep track of all the requisitions. I can't even keep our own orbit straight enough to keep up the co-ordinate corrections of—"

The voice flickered out. Lucky twisted his head and caught sight of a small man with spectacles and gray hair. He was just inside the doorway, looking with mingled astonishment and disbelief at the disorder that met his eyes.

"Get out," roared Dingo.

"But I've got to have a requisition—"

"Later!"

The little man left and the helmet was fitted over Lucky's head.

They took him out again, through the air-lock, to a surface which was now in the feeble blaze of the distant Sun. A catapult waited on a relatively flat table of rock. Its function was no mystery to Lucky. An automatic winch was drawing back a large metal lever which

bent more and more slowly till its original slant had strained back into a complete horizontal at the tip. Light straps were attached to the bent lever and then buckled about Lucky's waist.

"Lie still," said Dingo. His voice was dim and scratchy in Lucky's ear. There was something wrong with the helmet receiver, Lucky realized. "You're just wasting your oxygen. Just to make you feel better, we're sending ships up to blast your friend down before he can pick up speed, if he feels like running."

An instant after that Lucky felt the sharp tingling vibration of the lever as it was released. It sprang elastically back into its original position with terrific force. The buckles about him parted smoothly and he was cast off at a speed of a mile a minute or better, with no gravitational field to slow him. There was one glimpse of the asteroid with the pirates looking up at him. The whole was shrinking rapidly even as he watched.

He inspected his suit. He already knew that his helmet radio had been maltreated. Sure enough, the sensitivity knob hung loose. It meant his voice could penetrate no more than a few miles of space. They had left him his space-suit's push-gun. He tried it but nothing happened. Its gas stores had been drained.

He was quite helpless. There were only the contents of one oxygen cylinder between himself and a slow, unpleasant death.

# 12

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## Ship Versus Ship

With a clammy constriction of his chest Lucky surveyed the situation. He thought he could guess the pirates' plans. On the one hand, they wished to get rid of him, since he obviously knew far too much. On the other hand, they must want him to be found dead in such a way that the Council of Science would be unable to prove conclusively that his death was by pirate violence.

Once before, pirates had made the mistake of killing an agent of the Council and the resultant fury had been crushing. They would be more cautious this time.

He thought, They'll rush the *Shooting Starr*, blanket it with interference to keep Bigman from sending out a call for help. Then they can use a cannon blast on its hull. It would make a good imitation of a meteorite collision. They can make that look better by sending their own engineers on board to hocus the shield activators. It would look as though a defect in the mechanism had prevented the shield from going up as the meteorite approached.

They would know his own course through space, Lucky knew. There would be nothing to deflect him from whatever his original angles of flight had been. Later, with him safely dead, they would pick him up and send him whirling in an orbit about the broken *Shooting Starr*. The discoverers (and perhaps one of their own ships would send in an anonymous report of the find) would reach an obvious conclusion. Bigman at the controls, maneuvering to the last, killed at his post. Lucky, on the other hand, scrambling into a suit, damaging the external sensitivity knob of the suit's radio in the excitement. He would have been unable to call for help. He would have

expended his push-gun's gas in a desperate and futile attempt to find a place of safety. And he would have died.

It would not work. Neither Conway nor Henree could possibly believe that Lucky would be concerned only with his own safety while Bigman stuck loyally at the controls. But then, the failure of the scheme would be small satisfaction to a dead Lucky Starr. Worse yet, it would not only be Lucky Starr who would die, but all the information now locked in Lucky Starr's head.

For a moment he was sick with outrage at himself that he had not forced all his suspicions on Conway and Henree before leaving, that he had waited till he boarded the *Shooting Starr* before preparing the personal capsule. Then he gained control of himself. No one would have believed him without facts.

For that very reason he would have to get back.

Have to!

But how? What good was "have to" when one was alone and helpless in space with a few hours' worth of oxygen and nothing else?

Oxygen!

Lucky thought, There's my oxygen. Anyone but Dingo would have drained his cylinder of all but dregs, to let death come quickly. But if Lucky knew Dingo, the pirate had sent him on his way with a loaded cylinder simply to prolong the agony.

Good! Then he would reverse that. He would use the oxygen otherwise. And if he failed, death would come the sooner, despite Dingo.

Only he must not fail.

The asteroid had been crossing his line of vision periodically as he spun in space. First, it was a shrinking rock, its sunlit highlights slanting jaggedly across the blackness of space. Then it had been a bright star and a single line of light. The brightness was fading quickly now. Once the asteroid became dim enough to be simply one more in the myriad of stars, it was all over. Not many minutes were left before that would be the case.

His clumsy, metal-covered fingers were already fumbling with the flexible tube that led from the air inlet just under the face-plate to the oxygen cylinder in back. He twisted strenuously at the bolt that held the air tube tightly fixed to the cylinder.

It gave. He paused to fill his helmet and suit with oxygen. Ordinarily oxygen leaked slowly in from the cylinders at about the rate it was used up by human lungs. The carbon dioxide and water formed as the result of respiration were mostly absorbed by the chemicals

contained in the valved canisters affixed to the inner surface of the suit's chest plates. The result was the oxygen was kept at a pressure one fifth that of Earth's atmosphere. This was exactly right, since four fifths of Earth's atmosphere is nitrogen anyway, which is useless for breathing.

However, this left room for higher concentrations, up to somewhat more than normal atmospheric pressure, before there was danger of toxic effects. Lucky let the oxygen pour into his suit.

Then, having done so, he closed the valve under his face-plate entirely and removed the cylinder.

The cylinder was itself a sort of push-gun. It was an unusual push-gun, to be sure. For a person marooned in space to use the precious oxygen that stood between himself and death as motive power, to blow it into space, meant desperation. Or else, a firm resolution.

Lucky cracked the reducing valve and let a blast of oxygen issue out. There was no line of crystals this time. Oxygen, unlike carbon dioxide, froze at very low temperatures indeed and before it could lose sufficient heat to freeze, it had diffused out into space. Gas or solid, however, Newton's third law of motion still held. As the gas pushed out one way, Lucky was pushed in the opposite direction by a natural counter-push.

His spinning slowed. Carefully he allowed the asteroid to come into full view before stopping the spin completely.

He was still receding from the rock. It was no longer particularly brighter than the neighboring stars. Conceivably he had already mistaken his target, but he closed his mind against that uncertainty.

He fixed his eyes firmly on the spot of light he assumed to be the asteroid and let the cylinder blast in the opposite direction. He wondered if he would have enough to reverse the direction of his travel. There was no way of telling at the moment.

In any case, he would have to save some gas. He would need it to maneuver about the asteroid, get on its night side, find Bigman and the ship, unless . . .

Unless the ship had already been driven away, or destroyed, by the pirates.

It seemed to Lucky that the vibration of his hands, due to the escaping oxygen, was lessening. Either the cylinder was running low, or its temperature was dropping. He was holding it away from his suit so it was no longer absorbing heat from it. It was from the suit that oxygen cylinders gained enough heat to be breathable, and the carbon dioxide cylinders of the push-guns gained enough heat to keep

their contents gaseous. In the vacuum of space heat could be lost only by radiation, a slow process, but, even so, the oxygen cylinder had had time to drop in temperature.

He encircled the cylinder in his arms, hugged it to his chest, and waited.

It seemed hours, but only fifteen minutes passed before it seemed to him that the asteroid was growing brighter. Was he approaching the rock again? Or was it imagination? Another fifteen minutes passed and it was distinctly brighter. Lucky felt a deep gratitude to the chance that had shot him out on the sunlit side of the rock so that he could see it plainly as a target.

It was getting harder to breathe. There was no question of carbon dioxide asphyxiation. That gas was removed as it was formed. Still, each breath also removed a small fraction of his precious oxygen. He tried to breathe shallowly, close his eyes, rest. After all, he could do nothing more until he had reached and passed the asteroid. There on the night side, Bigman might still be waiting.

Then, if he could get close enough to Bigman, if he could call him on his limping radio before he passed out, there might yet be a chance.

The hours had passed slowly and torturously for Bigman. He longed to descend, but dared not. He reasoned with himself that, if the enemy existed, he would have shown himself by now. Then he argued it out bitterly and came to the conclusion that the very silence and motionlessness of space meant a trap, and that Lucky was caught.

He put Lucky's personal capsule before him and wondered about its contents. If only there were some way of bursting it, of reading the thin roll of microfilm within. If he could do that, he could radio it to Ceres, get it off his hands, and be free to go slamming down to the rock. He would blast them all, drag Lucky out of whatever mess he was in.

No! In the first place he dared not use the subetherics. True, the pirates could not break the code, but they would detect the carrier wave and he had been instructed not to give away the location of the ship.

Besides, what was the use of thinking of breaking into a personal capsule. A solar furnace could melt and destroy it, an atom blast could disintegrate it, but nothing could open it and leave its message intact except the living touch of the person for whom it had been "personalized." That was that.



More than half of the twelve-hour period had passed when the gravitics gave their entirely distinctive warning.

Bigman roused himself out of his frustrated reverie and stared with shocked surprise at the Ergometer. The pulsations of several ships were blending themselves into complicated curves that melted snakelike from one configuration to another.

The *Shooting Starr's* shield, which had been glimmering routinely at a strength sufficient to ward off casual "debris" (the usual space term for wandering meteorites an inch or less in diameter) stiffened to maximum. Bigman heard the soft purr of the power output grow strident. One by one, he let the short-range visiplates grow into life, bank on bank of them.

His mind churned. The ships were rising from the asteroid, since none could be detected further away. Lucky must be caught, then; dead, probably. He didn't care now how many ships came at him. He would get them all, every single one of them.

He sobered. The first Sun glint had caught in one of the visiplates. He maneuvered the cross hairs and centered them. He then depressed something that looked like a piano key and, caught in an invisible burst of energy, the pirate ship glowed.

The glow was not due to any action upon its hull, but was rather the result of the energy absorption of the enemy screen. It glowed brightly and more brightly still. Then it dimmed as the enemy turned tail and put distance between them.

A second ship and a third were in view. A projectile was making its way toward the *Shooting Starr*. In the vacuum of space there was no flash, no sound, but the Sun caught it and it was a little sparking spot of light. It became a little circle in the visiplate, then a larger one, until finally it moved out of the plate's field.

Bigman might have dodged, flashed the Shooter out of the way, but he thought, Let it hit. He wanted them to see what they were playing with. The Shooter might look like a rich man's toy, but they weren't going to put it out of action with a few slingshooters.

The projectile stuck and slogged to a halt against the *Shooting Starr's* hysteretic shields, which, Bigman knew, must have flashed momentarily into brilliance. The ship itself moved smoothly, absorbing the momentum that had leaked past the shield.

"Let's return that," Bigman muttered. The *Shooting Starr* carried no projectiles, explosive or otherwise, but its store of energy projectors was varied and powerful.

His hand was hovering over the blaster controls when he saw in

one of the visiplates something that brought a scowl to his small, determined face, something that looked like a man in a space-suit.

It was strange that the space-ship was more vulnerable to a man in a space-suit than to the best weapons of another ship. An enemy ship could be easily detected by gravitics at a distance of miles and by Ergometers at a distance of thousands of miles. A single man in a space-suit could only be detected by a gravitic at a hundred yards and by an Ergometer not at all.

Again, a hysteretic shield worked the more effectively the greater the velocity of the projectile. Huge lumps of metal tearing at miles per second could be stopped cold. One man, however, drifting along at ten miles an hour was not even aware of the existence of the shield except for a tiny warming of his suit.

Let a dozen men creep toward a ship at once and only great skill could bring them all down. If two or three penetrated and succeeded in blasting open the air-lock with hand weapons, the ship they attacked was seriously crippled.

And now Bigman caught the little speck that could only mean the advance guard of such a suicide squadron. He brought one of the secondaries to bear. The single figure was centered and Bigman was ready to fire when his radio receiver sounded.

For a moment he was startled. The pirates had attacked without warning and had not tried to communicate, to call for surrender, to offer terms, anything. What now?

He hesitated and the sounding became a word, repeated twice, "Bigman . . . Bigman . . . Bigman . . ."

Bigman jumped from his seat, ignoring the suited man, the battle, everything. "Lucky! Is that you?"

"I'm near the ship . . . Space-suit . . . Air . . . nearly gone."

"Great Galaxy!" Bigman, white-faced, maneuvered the *Shooting Starr* nearer the figure in space, the figure whom he had nearly destroyed.

Bigman watched over Lucky, who, helmet off, was still gulping air. "You'd better get some rest, Lucky."

"Later," said Lucky. He climbed out of his suit. "Have they attacked yet?"

Bigman nodded. "It doesn't matter. They're just breaking their teeth on the old Shooter."

"They've got stronger teeth than any they've shown," said Lucky. "We've got to get away and fast. They'll be bringing out their heavy craft, and even *our* energy stores won't last forever."

"Where are they going to get heavy craft from?"

"That's a major pirate base down there! *The* major base, perhaps."

"You mean it *isn't* the hermit's rock?"

"I mean we've got to get away."

He took the controls, face still pale from his ordeal. For the first time the rock below them moved from its position on the screens. Even during the attack Bigman had heeded Lucky's parting order to stay put for twelve hours.

The rock grew larger.

Bigman protested. "If we've got to get away, why are we landing?"

"We're not landing." Lucky watched the screen intently, while one hand set the controls of the ship's heavy blaster. Deliberately he widened and softened the focus of the blaster till it could cover a broad area indeed, but at an energy intensity reduced to little more than that of an ordinary heat ray.

He waited, for reasons that the wondering Bigman could not divine, and then fired. There was a startling blazing brightness on the asteroid's surface which subsided almost instantly into a glowing redness that in a further minute or so blackened out.

"Now let's go," said Lucky, and, as new ships spiraled up from the pirate base, acceleration took hold.

Half an hour later, with asteroid gone and any pursuing ships safely lost, he said, "Get Ceres, I want to speak to Conway."

"Okay, Lucky. And listen, I've got the co-ordinates of the asteroid. Shall I send them along? We can send a fleet back and—"

"It won't do any good," said Lucky, "and it isn't necessary."

Bigman's eyes widened. "You don't mean you destroyed the rock with that blaster bolt?"

"Of course not. I hardly touched it," said Lucky. "Have you got Ceres?"

"I'm having trouble," said Bigman pettishly. He knew Lucky was in one of his tight-mouthed moods and would give no information. "Wait, here it is, but, hey— They're broadcasting a general alarm!"

There was no need to explain that. The call was strident and uncoded. "General call to all fleet units outside Mars. Ceres under attack by enemy force, presumed pirates. . . . General call to all fleet units . . ."

Bigman said, "Great Galaxy!"

Lucky said tightly, "They stay one step ahead of us, no matter what we do. We've got to get back! Quickly!"

# 13

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## Raid!

The ships came swarming out of space in perfect co-ordination. An entire wing struck directly at the Observatory. In response to this, almost inevitably, the defending forces on Ceres concentrated their power at that point.

The attack was not pressed full-force. Ship after ship dived downward to launch energy beams at an obviously impregnable shield. None took the risky step of trying to blast the underground power plants, the location of which they must have known. Government ships took to space and ground batteries opened up. In the end two pirate ships were destroyed when their shields broke down and they flared into glowing vapor. Another one, its energy reserves down to a trickle, was almost captured in the eventual pursuit. It was blown up at the last moment, probably by its own crew.

Even during the attack some of the defenders suspected it to be a feint. Later, of course, they knew that for a fact. While the Observatory was engaged, three ships landed on the asteroid a hundred miles away. Pirates disembarked and with hand weapons and portable blasting cannon attacked the residential air-locks from flitting "space-sleds."

The locks were blasted open and space-suited pirates swarmed down the corridors from which air emptied. The upper reaches of the corridors were factories and offices, the occupants of which had evacuated at the first alarm. Their place was taken by space-suited members of the local militia who fought bravely, but were no match for the professionals of the pirate fleet.

In the lower depths, in the peaceful apartments of Ceres, the noise

of blasting battle sounded. Calls for help were sent out. Then, almost as suddenly as they came, the pirates retreated.

When they left, the men of Ceres counted their casualties. Fifteen Cereans were dead and many more hurt in one way or another, as against the bodies of five pirates. Damage to property was very high.

"And one man," Conway explained furiously to Lucky when the latter arrived, "is missing. Only he's not on the list of inhabitants and we've been able to keep his name out of the news reports."

Lucky found Ceres the focus of almost hysterical excitement now that the raid was over. It had been the first attack on an important Terrestrial center by any enemy in a generation. He had had to pass three inspections before being allowed to land.

He sat in the Council office with Conway and Henree and said bitterly, "So Hansen is gone! That's what it boils down to."

"I'll say this for the old hermit," said Henree. "He had guts. When the pirates penetrated, he insisted on getting into a suit, grabbing up a blaster, and going up there with the militia."

"We weren't short on militia," said Lucky. "If he had stayed down here, he would have done us a much greater service. How is it you didn't stop him? Under the circumstances was he a person to be allowed to do such a thing?" Lucky Starr's usually even voice contained a repressed anger.

Conway said patiently, "We weren't with him. The guard we left in charge had to report for militia duty. Hansen insisted on joining him and the guard decided he could do both duties at once that way; fight the pirates and guard the hermit."

"But he didn't guard the hermit."

"Under the circumstances he can scarcely be blamed. The guard saw Hansen last charging a pirate. Next thing he knew there was no one in sight and the pirates were retreating. Hansen's body hasn't been recovered. The pirates must have him alive or dead."

"So they must," said Lucky. "Now let me tell you something. Let me tell you exactly what a bad mistake this was. I'm certain that the whole attack on Ceres was arranged simply to capture Hansen."

Henree reached for his pipe. "You know, Hector," he said to Conway, "I'm almost tempted to go along with Lucky on that. The attack on the Observatory was a miserable one, an obvious false alarm to draw off our defenses. Getting Hansen was the only thing they did accomplish."

Conway snorted. "One possible information leak like the hermit isn't worth risking thirty ships."

"That's the whole point," said Lucky vehemently. "Right now, it may be. I told you about the asteroid I was on, the kind of industrial plant it must have been. Suppose they're almost at the point where they're ready to make the big push? Suppose Hansen knows the exact date for when the push is scheduled? Suppose he knows the exact method?"

"Then why hasn't he told us?" demanded Conway.

"Maybe," said Henree, "he's waiting to use it as material with which to buy his own immunity. We never did have a chance really to discuss that question with him. You've got to admit, Hector, that if he had that kind of key information, any number of ships would have been worth the risk. And you've got to admit Lucky is probably right about their being ready for the big push."

Lucky looked sharply from one to the other. "Why do you say that, Uncle Gus? What happened?"

"Tell him, Hector," said Henree.

"Why tell him anything," growled Conway. "I'm tired of his one-man trips. He'll be wanting to go to Ganymede."

"What's on Ganymede?" asked Lucky coldly. As far as he knew, there was little or nothing on Ganymede to interest anyone. It was Jupiter's largest moon, but the very nearness of Jupiter made it difficult to maneuver space-ships, so that space travel in its vicinity was unprofitable.

"Tell him," said Henree.

"Look," said Conway. "Here it is. We knew Hansen was important. The reason we didn't have him under tighter observation, the reason Gus and I weren't there ourselves, was that two hours before the pirate attack a report came in from the Council to the effect that there was evidence that Sirian forces had landed on Ganymede."

"What kind of evidence?"

"Tight-beam sub-etheric signals had been penetrated. It's a long story, but the nub of it was that, more by accident than by anything else, a few scraps of code were picked up. The experts say it's a Sirian code and certainly there isn't anything Terrestrial on Ganymede that's capable of putting out signals in a beam *that* tight. Gus and I were going to take Hansen and return to Earth when the pirates attacked, and that's it. Right now we've still got to return to Earth. With Sirius on the scene there may be war at any time."

Lucky said, "I see. Well, before we go to Earth, there's one thing I would like to check on. Do we have motion pictures of the pirate attack? I'm supposing the defenses of Ceres weren't so disorganized that pictures weren't taken?"

"They've been taken. How do you expect them to help?"

"I'll tell you after I've seen them."

Men in the uniform of the fleet, and wearing high-rank insignia, projected the top-secret motion pictures of what later became known in history as the "Ceres Raid."

"Twenty-seven ships attacked the Observatory. Is that right?" asked Lucky.

"Right," said a commander. "No more than that."

"Good. Now let's see if I have the rest of the facts straight. Two of the ships were accounted for during the fight and a third during the pursuit. The remaining twenty-four got away, but you have one or more shots of each of them in retreat."

The commander smiled. "If you're implying that any of them landed on Ceres and are still hidden here, you're quite wrong."

"As far as those twenty-seven ships are concerned, perhaps. But three more ships *did* land on Ceres and their crew attacked the Massey Airlock. Where are the pictures of those?"

"Unfortunately we didn't get many of those," admitted the commander uncomfortably. "It was a case of complete surprise. But we have pictures of them in retreat, too, and we showed you those."

"Yes, you did, and there were only two ships in those pictures. Eyewitnesses reported three as having landed."

The commander said stiffly, "And three took off and retreated. There's eyewitness evidence of that also."

"But you have pictures of only two?"

"Well . . . yes."

"Thank you."

Back in the office Conway said, "Now what was that all about, Lucky?"

"I thought Captain Anton's ship might be in an interesting place. The motion pictures proved it was."

"Where was it?"

"Nowhere. That was what was interesting. His ship is the one pirate ship I would recognize, yet no ship faintly similar took part in the raid. This is strange because Anton must be one of their very best men or they wouldn't have sent him out after the *Atlas*. Or it would be strange if the truth wasn't that thirty ships attacked Ceres and we had pictures of only twenty-nine. The missing thirtieth was Anton!"

"I could figure that out too," said Conway. "What of it?"

Lucky said, "The attack on the Observatory was a feint. That's

admitted even by the defending ships, now. It was the three ships that attacked the air-lock that were important and they were under Anton's command. Two of those ships joined the rest of the squadron in their retreat, a feint within a feint. The third ship, Anton's own, the only one we didn't see, continued on with the main business of the day. It left on an entirely different trajectory. People saw it lift into space but it veered off so radically that our own ships, chasing the main body of the enemy with all its might, never even caught it on film."

Conway said unhappily, "You're going to say that it's going to Ganymede."

"Doesn't it follow? The pirates, however well organized, can't attack Earth and its dependencies on their own. But they *can* put up an excellent diversionary fight. They can keep enough Terrestrial ships patrolling the endless asteroid belt to allow Sirian fleets to defeat the remainder. On the other hand, Sirius can't safely conduct a war eight light years away from their own planet unless they can count on major help from the asteroids. After all, eight light years amounts to forty-five trillion miles. Anton's ship is speeding to Ganymede to assure them of that help and to give the word to begin the war. Without warning, of course."

"If only," muttered Conway, "we could have stumbled on their Ganymede base sooner."

"Even with the knowledge of Ganymede," said Henree, "we would not have known the seriousness of the situation without Lucky's two trips into asteroid territory."

"I know. My apologies, Lucky. Meanwhile we have very little time to do anything. We'll have to strike at the heart instantly. A squadron of ships sent to the key asteroid Lucky has told us of—"

"No," said Lucky. "No good."

"Why do you say that?"

"We don't want to start a war, even if it's with a victory. That's what *they* want to do. Look here, Uncle Hector, the pirate, Dingo, might have burned me down right there on the asteroid. Instead, he had orders to set me adrift in space. For a while I thought that was to make my death look like an accident. Now I feel it was intended to anger the Council. They were going to broadcast the fact they had killed a Councilman, not hide it, goading us into a premature attack. One of the reasons for the Ceres Raid might have been to insure an added provocation."

"And if we do start the war with a victory?"



“Here on this side of the Sun? And leave Earth on the other side stripped of important units of the fleet? With Sirian ships waiting at Ganymede, also on the other side of the Sun? I predict that it would be a very costly victory. Our best bet is not to start a war, but to prevent one.”

“How?”

“Nothing will happen until Anton’s ship reaches Ganymede. Suppose we intercept him and prevent the meeting.”

“Interception is a long chance,” said Conway doubtfully.

“Not if I go. The *Shooting Starr* is faster and has better Ergometrics than any ship in the fleet.”

“You go?” cried Conway.

“It would be unsafe to send fleet units. The Sirians on Ganymede would have no way of being certain an attack wasn’t heading their way. They’d have to take counteraction and that would mean the very war we’re trying to avoid. The *Shooting Starr* would look harmless to them. It would be one ship. They’d stay put.”

Henree said, “You’re overeager, Lucky. Anton has a twelve-hour head start. Even the *Shooting Starr* can’t make that up.”

“You’re wrong. It can. And once I catch them, Uncle Gus, I think I can force the asteroids into surrender. Without them Sirius won’t attack and there’ll be no war.”

They stared at him.

Lucky said earnestly, “I’ve come back twice now.”

“Each time by half a miracle,” grumbled Conway.

“The other times I didn’t know what I was tackling. I had to feel my way. This time I do know. I know exactly. Look, I’ll warm up the *Shooting Starr* and make the necessary arrangements with the Ceres Observatory while that’s taking place. You two can get on the sub-ether to Earth. Get the Co-ordinator to——”

Conway said, “I can take care of that, son. I’ve been dealing with government affairs before you were born. And Lucky, *will* you take care of yourself?”

“Don’t I always, Uncle Hector? Uncle Gus?”

He shook hands warmly and whirled away.

Bigman scuffed the dust of Ceres disconsolately. He said, “I’ve got my suit on. Everything.”

“You can’t go, Bigman,” said Lucky. “I’m sorry.”

“Why not?”

“Because I’m taking a short cut to get to Ganymede.”

“So what? What kind of a short cut?”

Lucky smiled tightly. “I’m cutting through the Sun!”

He walked out on to the field toward the *Shooting Starr*, leaving Bigman standing there, mouth open.

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## To Ganymede via the Sun

A three-dimensional map of the Solar System would have the appearance of a rather flat plate. In the center would be the Sun, the dominant member of the System. It is *really* dominant, since it contains 99.8% of all the matter in the Solar System. In other words, it weighs five hundred times as much as everything else in the Solar System put together.

Around the Sun circle the planets. All of them revolve in nearly the same plane, and this plane is called the Ecliptic.

In traveling from planet to planet space-ships usually follow the Ecliptic. In doing so they are within the main sub-etheric beams of planetary communication and can most conveniently make intermediate stops on the way to their destination. Sometimes, when a ship is interested in speed or in escaping detection, it veers away from the Ecliptic, particularly when it must travel to the other side of the Sun.

This, Lucky thought, might be what Anton's ship was intending to do. It would lift up from the "plate" that was the Solar System, make a huge arc or bridge above the Sun, and come down to the "plate" on the other side, in the neighborhood of Ganymede. Certainly Anton must have started in that direction, or the defending forces on Ceres wouldn't have missed filming him. It was almost second nature for men to make all spationautical observations along the Ecliptic first of all. By the time they thought of turning away from the Ecliptic, Anton would have been too far away for observation.

But, thought Lucky, the chances were that Anton would *not* leave the Ecliptic permanently. He might have started out as though that would be the case, but he would return. The advantages in a return

would be many. The asteroid belt extended completely about the Sun, in the sense that asteroids were evenly distributed all the way around. By keeping within the belt Anton could remain among the asteroids all the way to within a hundred million miles or so of Ganymede. This would mean security for him. The Terrestrial government had virtually abdicated its power over the asteroids and, except for the routes to the four large rocks, government ships did not penetrate the area. Moreover, if one did, Anton would always be in the position of being able to call for reinforcements from some nearby asteroidal base.

Yes, thought Lucky, Anton would remain in the belt. Partly because he thought this, and partly because he had his own plans, Lucky lifted the *Shooting Starr* out of the Ecliptic in a shallow arc.

The Sun was the key. It was the key to the entire System. It was a roadblock and a detour to every ship man could build. To travel from one side of the System to another, a ship had to make a wide curve to avoid the Sun. No passenger ship approached closer than sixty million miles, the distance of Venus from the Sun. Even there, cooling systems were imperative for the comfort of the passengers.

Technical ships could be designed to make the trip to Mercury, the distance of which from the Sun varied from forty-three million miles in some parts of its orbit to twenty-eight million in others. Ships had to hit it at the furthest region of its retirement from the Sun. At closer than thirty million miles various metals melted.

Still more specialized ships were sometimes built for close-by solar observation. Their hulls were permeated by a strong electric field of peculiar nature which induced a phenomenon known as "pseudolique-faction" in the outermost molecular skin. Heat reflection from such a skin was almost total, so that only a tiny fraction penetrated into the ship. From outside such ships would appear perfect mirrors. Even so, enough heat penetrated to raise the temperature within the ship above the boiling point of water at distances of five million miles from the Sun, the closest recorded approach. Even if human beings could survive such a temperature, they couldn't survive the short-wave radiation that flooded out of the Sun and into the ship at such distances. It could kill anything living in seconds.

The disadvantage of the Sun's position with respect to space travel was obvious in the present instance, in which Ceres was on one side of the Sun while Earth and Jupiter were almost diametrically opposed on the other side. If one was in the asteroid belt, the distance from Ceres to Ganymede was about one billion miles. If the Sun could be ignored and a ship could cut straight across space through

it, the distance would be only six hundred million miles, a saving of about forty per cent.

This, as far as was possible, Lucky intended to do.

He drove the *Shooting Starr* hard, virtually living in his g-harness, eating and sleeping there, feeling the pressure of acceleration continuously. He gave himself only fifteen minutes' respite out of each hour.

He passed high above the orbits of Mars and Earth but there was nothing to see there, not even with the ship's telescope. Earth was on the other side of the Sun, and Mars was at a position nearly at right angles to his own.

Already the Sun was at its normal size as seen from Earth and he could view it only through the most strongly polarized visiplates. A little more and he would have to use the stroboscopic attachments.

The radioactivity indicators began to chuckle occasionally. Within Earth's orbit the density of short-wave radiation started to reach respectable values. Inside Venus's orbit special precautions would have to be taken, such as the wearing of lead-impregnated semi-space-suits.

I, myself, thought Lucky, would have to do better than lead. At the approach to the Sun that he would have to make, lead would not do. Nothing material would do.

For the first time since his adventure on Mars the previous year Lucky drew out of a special pouch glued to his waist the flimsy, semi-transparent object obtained from the Martian energy beings.

He had long since abandoned any effort at speculation as to the method by which the object worked. It was the development of a science that had continued for a million years longer than the science known to Mankind and along alien paths. It was as incomprehensible to him as a space-ship would be to a cave man, and as impossible to duplicate. But it worked! That was what counted!

He slipped it on over his head. It molded itself to his skull as though it carried a strange life of its own, and as it did so, light gleamed out all over him. Over his body it was a glimmer like a billion fireflies, and it was for that reason that Bigman referred to it as a "glimmer shield." Over his face and head it was a solid sheet of brilliance that covered his features entirely, without, on the other hand, preventing light from reaching his eyes.

It was an energy shield, designed by the alien Martians for Lucky's needs. That is, it was impervious to all forms of energy other than that required by his body, such as a certain intensity of visible light and a certain amount of heat. Gases penetrated freely, so that

Lucky could breathe, and heated gases, in passing, were robbed of their heat and came through cool.

When the *Shooting Starr* passed the orbit of Venus, still heading in toward the Sun, Lucky put on his energy shield permanently. While he wore it, he would not be able to eat or drink, but the enforced fast would not last for more than a day, at the outside.

He was now traveling at a terrific speed, far greater than any he had previously experienced. In addition to the slugging pull of the hyperatomics of the *Shooting Starr*, there was the unimaginable attraction of the Sun's giant gravitational field. He was traveling at millions of miles an hour now.

He activated the electric field that rendered the outer skin of the ship pseudo-liquid and was grateful, as he did so, for the foresight that had made him insist on that accessory during the building of the *Shooting Starr*. The thermocouple which had been registering temperatures above one hundred degrees began to show a drop. The visiplates went dark as metal shields passed over the thick glassite to keep them from damage and from softening in the heat of the Sun.

By the time Mercury's orbit was reached the radiation counters had gone completely mad. Their chatter was continuous. Lucky placed a glimmering hand over their windows and their noise stopped. Down to the hardest gamma rays the radiation penetrating and filling the ship was stopped by the resistance of the insubstantial aura that surrounded his body.

The temperature, which had reached a low of eighty, was climbing again, despite the mirror skin of the *Shooting Starr*. It passed one hundred fifty and still went up. The gravimetrics indicated the Sun to be only ten million miles away.

A shallow dish of water, which Lucky had placed upon the table, and which had been steaming for an hour past, was now bubbling outright. The thermocouple reached the boiling point of water, two hundred and twelve degrees.

The *Shooting Starr*, whipping about the Sun, was now five million miles away. It would approach no closer. Actually it was inside the outermost wisps of the most rarefied portion of the Sun's atmosphere, its corona. Since the Sun was gaseous through and through (though most of it was a gas the like of which could not exist even under the most extreme laboratory conditions on Earth), it had no surface, and its "atmosphere" was part of the very body of the Sun. By going through the corona, then, Lucky was, in a way, going through the Sun, as he had told Bigman he would.

Curiosity tugged at him. No man had ever been this close to the

Sun. No man, perhaps, ever would again. Certainly, any man who did, could not look at the Sun with his unaided eyes. The shortest possible glimpse of the Sun's tremendous radiation at that distance would mean instant death.

But he was wearing the Martian energy shield. Could it handle solar radiation at five million miles? He felt he ought not take the chance and yet the impulse tugged desperately at him. The ship's chief visiplate was outfitted with a stroboscopic outlet-series, one which would expose, one by one, each of a series of sixty-four outlets to the Sun, each for a millionth of a second every four seconds. To the eye (or to the camera), it would seem a continuous exposure, but actually any given piece of glass would only get one four-millionth of the radiation the Sun was emitting. Even that required specially designed, nearly opaque lenses.

Lucky's fingers moved remorselessly, almost without conscious volition, to the controls. He could not bear the thought of losing the chance. He adjusted the plate direction toward the Sun, using the gravimetrics as indicators.

Then he turned his head away and plunged the contact home. A second passed, then two seconds. He imagined an increase in heat on the back of his neck; he half-waited for radiation death. Nothing happened.

Slowly he turned.

What he saw was to stay with him the rest of his life. A bright surface, puckered and wrinkled, filled the visiplate. It was a portion of the Sun. He could not see the whole, he knew, in the visiplate, for at his distance, the Sun was twenty times as wide as it seemed from Earth and covered four hundred times as much of the sky.

Caught in the visiplate were a pair of sunspots, black against the brightness. Threads of glowing white curled into it and were lost. They were heaving areas of activity that moved across the plate visibly as he watched. This was not due to the Sun's own motion of rotation, which, even at its equator, was not more than fourteen hundred miles an hour, but rather to the tremendous velocity of the *Shooting Starr*.

As he watched, gouts of red, flaming gas shot up toward him, dim against the blazing background, and turning a smoky black as it receded from the Sun and cooled.

Lucky shifted the plate, catching a portion of the rim of the Sun, and now the flaming gas (which were the so-called "prominences," consisting of gigantic puffs of hydrogen gas) stood out sharply crimson against the black of the sky. They spread outward in slow motion,

thinning and taking on fantastic shapes. Lucky knew that each one of them could engulf a dozen planets the size of Earth, and that the Earth could be dropped into the sunspot he saw without even making a respectable splash.

He closed the stroboscopes with a sudden movement. Even though physically safe, no man could stare at the Sun from that distance without becoming oppressed by the insignificance of Earth and all things Earthly.

The *Shooting Starr* had whipped half around the Sun and was now receding rapidly past the orbits of Mercury and Venus. It was decelerating now. The ship's prow opposed the direction of its flight and its powerful main engines were acting as brakes.

Once past Venus's orbit, Lucky removed his shield and stowed it away. The ship's cooling system strained to get rid of the excess heat. Drinking water was still uncomfortably hot and the canned foods bulged where liquid within had bubbled into gas.

The Sun was shrinking. Lucky looked at it. It was an even, glowing sphere. Its irregularities, its churning spots, and heaving prominences could no longer be seen. Only its corona, always visible in space, though visible on Earth only during eclipses, thrust out in every direction for millions of miles. Lucky shuddered involuntarily to think that he had passed through it.

He passed within fifteen million miles of Earth, and through his telescope he spied the familiar outlines of the continents peeping through the ragged white masses of cloud banks. He felt a twinge of homesickness and then a new resolve to keep war away from the teeming, busy billions of human beings that inhabited that planet, which was the origin of all the men that now occupied the far-flung star systems of the Galaxy.

Then the Earth, too, receded.

Past Mars and back into the asteroid belt, Lucky still aimed at the Jovian system, that miniature solar system within the greater one. At its center was Jupiter, larger than all the other planets combined. About it swung four giant moons, three of them, Io, Europa, and Callisto, about the size of the Earth's Moon, and the fourth, Ganymede, much larger. Ganymede, in fact, was larger than Mercury, and almost as large as Mars. In addition there were dozens of moonlets, ranging from some hundreds of miles in diameter down to insignificant rocks.

In the ship's telescope Jupiter was a growing yellow globe, marked with faintly orange stripes, one of which bellied out into what



was once known as the "Great Red Spot." Three of the main moons, including Ganymede, were on one side, the fourth was on the other.

Lucky had been in guarded communication with the Council's main offices on the Moon for the better part of a day now. His Ergometrics probed space with widely stretching fingers. It detected many ships, but Lucky watched only for the one with the Sirian motor pattern which he would recognize with certainty the instant it appeared.

Nor did he fail. At a distance of twenty million miles, the first quiverings roused his suspicions. He veered in the proper direction, and the characteristic curves grew more pronounced.

At one hundred thousand miles, his telescope showed it as a faint dot. At ten thousand, it had form and shape and was Anton's ship.

At a thousand miles (with Ganymede still fifty million miles away from both ships), Lucky sent out his first message, a demand that Anton turn his ship back toward Earth.

At one hundred miles Lucky received his answer—a blast of energy that made his generators whine and shook the *Shooting Starr* as though it had collided with another ship.

Lucky's tired face took on a drawn look.

Anton's ship was better-armed than he had expected.

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## Part of the Answer

For an hour the maneuvers of both ships were indecisive. Lucky had the faster ship and the better, but Captain Anton had a crew. Each of Anton's men could specialize. One could focus and one could release, while a third could control the reactor banks and Anton himself could direct operations.

Lucky, trying to do everything at once and by himself, had to rely heavily on words.

"You can't get to Ganymede, Anton, and your friends won't dare tip their hand by coming out now before they know what's up. . . . You're all through, Anton; we know all your plans. . . . There's no use trying to get a message through to Ganymede, Anton; we're blanketing the sub-ether from you to Jupiter. Nothing can get through. . . . Government ships are coming, Anton. Count your minutes. You don't have many, unless you surrender. . . . Give up, Anton. Give up."

And all this while the *Shooting Starr* dodged through as concentrated a fire as Lucky had ever seen. Nor were all the blasts successfully dodged. The Shooter's energy stores began to show the strain. Lucky would have liked to believe that Anton's ship was suffering equally, but he himself was aiming few blasts at Anton and landing virtually none.

He dared not take his eyes off the screen. Terrestrial ships, speeding to the scene, would not be there for hours. In those hours, if Anton beat down his energy banks, broke away, and made good headway toward Ganymede, while a limping *Shooting Starr* could only pursue, without catching. . . . Or if a pirate fleet suddenly sparkled on-screen. . . .

Lucky dared not follow those lines of thought further. Perhaps

he had been wrong in not entrusting the interception to government ships in the first place. No, he told himself, only the *Shooting Starr* could have caught Anton still fifty million miles from Ganymede; only the Shooter's speed; more important still, only the Shooter's Ergometers. At this distance from Ganymede it was safe to call in units of the fleet for the kill. Closer to Ganymede and fleet action would have been unsafe.

Lucky's receiver, open all this time, was suddenly activated. Anton's face filled it, smiling and carefree.

"You got away from Dingo again, I see."

Lucky said, "Again? You're admitting he was working under orders in the push duel!"

An energy feeler toward Lucky's ship suddenly hardened into a beam of disruptive force. Lucky moved aside with an acceleration that wrenched him.

Anton laughed. "Don't watch me too closely. We almost caught you then with a lulu. Certainly Dingo was working under orders. We knew what we were doing. Dingo didn't know who you really were, but I did. Nearly from the first."

"Too bad the knowledge didn't help you," said Lucky.

"It's Dingo that it hasn't helped. It may amuse you to know that he has been, shall we say, executed. It's bad to make mistakes. But this kind of talk is out of place here. I'm only plating you to say that this has been fun, but I'll be going now."

"You have nowhere to go," said Lucky.

"I'll try Ganymede."

"You'll be stopped."

"By government ships? I don't see them yet. And there's not one that can catch me in time."

"I can catch you."

"You have caught me. But what can you do with me? From the way you're fighting, you must be the only man on board. If I had known that from the beginning, I wouldn't have bothered with you as long as this. You can't fight a whole crew."

Lucky said in a low, intense voice, "I can ram you. I can smash you completely."

"And yourself. Remember that."

"That wouldn't matter."

"Please. You sound like a space-scout. You'll be reciting the junior scout-patrol oath next."

Lucky raised his voice. "You men aboard the ship, listen! If your captain tries to break away in the direction of Ganymede, I will ram

the ship. It is certain death for all of you, unless you surrender. I promise you all a fair trial. I promise all of you the utmost consideration possible if you co-operate with us. Don't let Anton throw your lives away for the sake of his Sirian friends."

"Talk on, government boy, talk on," said Anton. "I'm letting them listen. They know what kind of a trial they can expect and they know what kind of consideration, too. An injection of enzymic poison." His fingers made the quick movements of someone inserting a needle into another's skin. "That's what they'll get. They're not afraid of you. Good-by, government boy."

The needles on Lucky's gravimetrics wavered downward as Anton's ship picked up speed and moved away. Lucky watched his visiplates. Where were the government ships? Blast all space, where were the government ships?

He let acceleration take hold. Gravimetric needles moved upward again.

The miles between the ships were sliced away. Anton's ship put on more speed; so did the *Shooting Starr*. But the accelerative possibilities of the Shooter were higher.

The smile on Anton's face did not alter. "Fifty miles away," he said. Then, "Forty-five." Another pause. "Forty. Have you said your prayers, government boy?"

Lucky did not answer. For him there was no way out. He would have to ram. Sooner than let Anton get through, sooner than allow war to come to Earth, he would have to stop the pirates by suicide, if there were no other way. The ships were curving toward one another in a long, slow tangent.

"Thirty," said Anton lazily. "You're not frightening anyone. You'll look a fool in the end. Veer off and go home, Starr."

"Twenty-five," retorted Lucky firmly. "You have fifteen minutes to surrender or die." He himself, he reflected, had the same fifteen minutes to win or die.

A face appeared behind Anton's in the visiplate. It held a finger to pale, tight lips. Lucky's eyes might have flickered. He tried to conceal that by looking away, then coming back.

Both ships were at maximum acceleration.

"What's the matter, Starr?" asked Anton. "Scared? Heart beating fast?" His eyes were dancing and his lips were parted.

Lucky had the sudden, sure knowledge that Anton was enjoying this, that he considered it an exciting game, that it was only a device whereby he might demonstrate his power. Lucky knew at that moment that Anton would never surrender, that he would allow himself

to be rammed rather than back away. And Lucky knew that there was no escape from death.

"Fifteen miles," Lucky said.

It was Hansen's face behind Anton. The hermit's! And there was something in his hand.

"Ten miles," said Lucky. Then, "Six minutes. I'll ram you. By space, I'll ram you."

It was a blaster! Hansen held a blaster.

Lucky's breath came tightly. If Anton turned . . .

But Anton was not going to miss a second of Lucky's face if he could help it. He was waiting to see the fright come and grow. To Lucky, that was plain as could be in the pirate's expression. Anton would not have turned for a much noisier event than the careful lifting of a blaster.

Anton caught it in the back. Death came too suddenly for the eager smile to disappear from his face, and though life left it, the look of cruel joy did not. Anton fell forward across the visiplat and for a moment his face remained pressed there, larger than life-size, leering at Lucky out of dead eyes.

Lucky heard Hansen's shout, "Back, all of you. Do you want to die? We're giving up. Come and get us, Starr!"

Lucky veered the direction of acceleration by two degrees. Enough to miss.

His Ergometers were registering the motors of approaching government ships strongly now. They were coming at last.

The screens on Anton's ship were glowing white as a sign of surrender.

It was almost an axiom that the fleet was never entirely pleased when the Council of Science interfered too much in what they considered to be the province of the military. Especially so when the interference was spectacularly successful. Lucky Starr knew that well. He was quite prepared for the admiral's poorly hidden disapproval.

The admiral said, "Dr. Conway has explained the situation adequately, Starr, and we commend you for your actions. However, you must realize that the fleet has been aware of the Sirian danger for some time now and had a careful program of its own. These independent actions on the part of the Council can be harmful. You might mention that to Dr. Conway. Now I have been requested by the Coordinator to co-operate with the Council in the next stages of the fight against the pirates, but," he looked stubborn, "I cannot agree to your suggestion that we delay an attack on Ganymede. I think the

fleet is capable of making its own decisions where battle and victory are concerned.”

The admiral was in his fifties and unused to consulting on equal terms with anyone, let alone a youngster of half his age. His square-cut face with its bristly gray mustache showed it.

Lucky was tired. The reaction, now that Anton's ship had been taken in tow and its crew in custody, had set in. He managed, however, to be very respectful. He said, “I think that if we mop up the asteroids first, the Sirians on Ganymede will automatically cease being a problem.”

“Good Galaxy, man, how do you mean ‘mop up.’ We've been trying to do that for twenty-five years without success. Mopping up the asteroids is like chasing feathers. As for the Sirian base, we know where it is, and we have a good notion as to its strength.” He smiled briefly. “Oh, it may be hard for the Council to realize this, but the fleet is on its toes as well as they are. Perhaps even more so. For instance, I know that the power at my command is enough to break their strength on Ganymede. We are ready for the battle.”

“I have no doubt that you are and that you can defeat the Sirians. But the ones on Ganymede are not all the Sirians there are. You may be ready for a battle, but are you ready for a long and costly war?”

The admiral reddened. “I have been asked to co-operate, but I cannot do so at the risk of Earth's safety. I can under no conditions lend my voice to a plan which involves dispersing our fleet among the asteroids, while a Sirian expedition is in being in the Solar System.”

“May I have an hour?” interrupted Lucky. “One hour to speak with Hansen, the Cerean captive I had brought aboard this ship just before you boarded, sir?”

“How will that help?”

“May I have an hour to show you?”

The admiral's lips pressed together. “An hour may be valuable. It may be priceless. . . . Well, begin, but quickly. Let's see how it goes.”

“Hansen!” called Lucky without taking his calm eyes from the admiral.

The hermit entered from the bunk room. He looked tired, but managed a smile for Lucky. His stay on the pirate ship had apparently left his spirits unmarked.

He said, “I've been admiring your ship, Mr. Starr. It's quite a piece of metal.”

"Look here," said the admiral, "none of that. Get on with it, Starr! Never mind your ship."

Lucky said, "This is the situation, Mr. Hansen. We've stopped Anton, with your invaluable help, for which I thank you. That means we've delayed the start of hostilities with Sirius. However, we need more than delay. We must remove the danger completely, and as the admiral will tell you, our time is very short."

"How can I help?" asked Hansen.

"By answering my questions."

"Gladly, but I've told you all I know. I'm sorry that it turned out to be worth so little."

"Yet the pirates believed you to be a dangerous man. They risked a great deal to get you out of our hands."

"I can't explain that."

"Is it possible that you have a piece of knowledge without being aware of it? Something that could be deadly for them?"

"I don't see how."

"Well, they trusted you. By the information you yourself gave me, you were rich; a man with good investments on Earth. Certainly you were much better off than the average hermit. Yet the pirates treated you well. Or at least they didn't mistreat you. They didn't rifle your belongings. In fact, they left your very luxurious home completely in peace."

"Remember, Mr. Starr, I helped them in return."

"Not very much. You said that you allowed them to land on your rock, to leave people there sometimes and that's about all. If they had simply shot you down, they could have had that and your quarters as well. In addition, they would not have had to worry about your becoming an informer. You eventually did become one, you know."

Hansen's eyes shifted. "That's the way it was, though. I told you the truth."

"Yes, what you told me was true. It wasn't the whole truth, however. I say that there must have been a good reason for the pirates to trust you so completely. They must have known that it meant your life to go to the government."

"I told you that," said Hansen mildly.

"You said that you had incriminated yourself by helping the pirates, but they trusted you when they first arrived, *before* you had begun helping them. Otherwise they would have blasted you to begin with. Now, let me guess. I'd say that once, before you became a hermit, you were a pirate yourself, Hansen, and that Anton and men like him knew about it. What do you say?"

Hansen's face went white.

Lucky said, "What do you say, Hansen?"

Hansen's voice was very soft. "You are right, Mr. Starr. I was once a member of the crew of a pirate ship. That was a long time ago. I have tried to live it down. I retired to the asteroids and did my best to be dead as far as Earth was concerned. When a new group of pirates arose in the Solar System and entangled me, I had no choice but to play along with them.

"When you landed, I found my first chance to leave; my first chance to take the risk of facing the law. Twenty-five years had passed, after all. And I would have in my favor the fact that I had risked my life to save the life of a Councilman. That was why I was so anxious to fight the pirate raiders on Ceres. I wanted to make another point in my favor. Finally, I killed Anton, saving your life a second time, and giving Earth a breathing space, you tell me, in which a war may be prevented. I was a pirate, Mr. Starr, but that's gone, and I think I've evened the score."

"Good," said Lucky, "as far as it goes. Now do you have any information for us that you didn't mention before?"

Hansen shook his head.

Lucky said, "You didn't tell us you were a pirate."

"That was irrelevant, really. And you found out for yourself. I didn't try to deny it."

"Well, then let's see if we can find anything else which you won't deny. You see, you still haven't told the whole truth."

Hansen looked surprised. "What remains?"

"The fact that you've never stopped being a pirate. The fact that you are a person that was only mentioned once in my hearing, and that by one of Anton's crewmen shortly after my push-gun duel with Dingo. The fact that you are the so-called Boss. You, Mr. Hansen, are the mastermind of the asteroid pirates."



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## All of the Answer

Hansen jumped out of his seat, and remained standing. His breath whistled harshly through parted lips.

The admiral, scarcely less astonished, cried, "Great Galaxy, man! What is this? Are you serious?"

Lucky said, "Sit down, Hansen, and let's try it on for size. Let's see how it sounds. If I'm wrong, there'll be a contradiction somewhere. It begins with Captain Anton, landing on the *Atlas*. Anton was an intelligent and capable man, even if his mind was twisted. He mistrusted me and my story. He took a trimensional photograph of me (that wouldn't be hard, even without my noticing) and sent it to the Boss for instructions. The Boss thought he recognized me. Certainly, Hansen, if you were the Boss, that would follow, because as a matter of fact, when you saw me face to face later, you *did* recognize me.

"The Boss sent back a message to the effect that I was to be killed. It amused Anton to do that by sending me out in a push-gun duel with Dingo. Dingo was given definite instructions to kill me. Anton admitted that in our last conversation. Then, when I returned, with Anton's word that I was to be given a chance to join the organization if I survived, you had to take over yourself. I was sent to your rock."

Hansen burst out, "But this is mad. I did you no harm. I saved you. I brought you back to Ceres."

"So you did, and came along with me, too. Now it had been my idea to get into the pirate organization, learn the facts from within. You got the same idea in reverse and were more successful. You brought me to Ceres and came yourself. You learned how unprepared

we were and how we underestimated the pirate organization. It meant you could go ahead at full speed.

“The Ceres Raid makes sense now. I imagine you got word to Anton somehow. Pocket sub-etherics are not unheard of and clever codes can be worked out. You went up the corridors *not* to fight the pirates but to join them. They didn’t kill you, they ‘captured’ you. That was very queer. If your story were true, you would have been a dangerous informer to them. They should have blasted you the moment you came within range. Instead they did not harm you. Instead, they put you on Anton’s flagship and took you with them to Ganymede. You weren’t even bound or under surveillance. It was perfectly possible for you to move quietly behind Anton and shoot him down.”

Hansen cried, “But I did shoot him. Why in the name of Earth would I have shot him if I were who you say I am?”

“Because he was a maniac. He was ready to let me ram him rather than back down or lose face. You had greater plans and had no intention of dying to soothe his vanity. You knew that even if we stopped Anton from contacting Ganymede, it would mean only a delay. By attacking Ganymede afterward, we would provoke the war anyway. Then by continuing your role as hermit, you would eventually find a chance to escape and take on your real identity. What was Anton’s life and the loss of one ship compared with all that?”

Hansen said, “What proof is there to all this? It’s guesswork, that’s all! Where’s the proof?”

The admiral, who had been looking from one to the other through all of this, bestirred himself. “Look here, Starr, this man’s mine. We’ll get whatever truth is in him.”

“No hurry, Admiral. My hour isn’t up. . . . Guesswork, Hansen? Let’s go on. I tried to get back to your rock, Hansen, but you didn’t have the co-ordinates, which was strange, despite your painstaking explanations. I calculated out a set of co-ordinates from the trajectory we had taken going from your rock to Ceres, and those turned out to be in a forbidden zone, where no asteroids could be in the ordinary course of nature. Since I was certain that my calculations were correct, I knew that your rock had been where it was *against* the ordinary course of nature.”

“Eh? What?” said the admiral.

“I mean that a rock need not travel in its orbit if it’s small enough. It can be fitted with hyperatomic motors and can *move out of its orbit like a space-ship*. How else can you explain an asteroid being in a forbidden zone?”

Hansen said wildly, "Saying so doesn't make it so. I don't know why you're doing this to me, Starr. Are you testing me? Is it a trick?"

"No trick, Mr. Hansen," said Lucky. "I went back for your rock. I didn't think you'd move it far. An asteroid that can move has certain advantages. No matter how often it is detected, its co-ordinates noted and its orbit calculated, observers or pursuers can always be thrown off by movement out of the orbit. Still, a moving asteroid runs certain risks. An astronomer at a telescope, happening to observe it at the time, might wonder why an asteroid should be moving out of the Ecliptic or into a forbidden zone. Or, if he were close enough, he would wonder why an asteroid should have reactor exhaust glow at one end.

"You had already moved once, I imagine, to meet Anton's ship part way so that I could be landed on your rock. I was certain you would not move very far so soon after. Perhaps just far enough to get into the nearest cluster of asteroids for camouflage purposes. So I returned and searched among the asteroids nearest at hand for one that was the right size and shape. I found it. I found an asteroid that was actually a base, a factory, and storehouse all at once, and on it I heard the sound of giant hyperatomics perfectly capable of moving it through space. A Sirian importation, I think."

Hansen said, "But that wasn't *my* rock."

"No? I found Dingo waiting on it. He boasted that he had had no need to follow me; that he knew where I was heading. The only place to which he knew I was heading was your rock. From that I conclude that one and the same rock had your living quarters at one end and the pirate base at the other."

"No. No," shouted Hansen. "I leave it to the admiral. There are a thousand asteroids the size and shape of mine, and I'm not responsible for some casual remark made by a pirate."

"There's another piece of evidence that may sound better to you," said Lucky. "On the pirate base was a valley between two outcroppings of rock; a valley full of used cans."

"Used cans!" shouted the admiral. "What in the Galaxy has that to do with anything, Starr?"

"Hansen discarded his used cans into a valley on his own rock. He said he didn't like his rock to be accompanied by its own garbage. Actually he probably didn't want it surrounding his rock and advertising it. I saw the valley of the cans when we were leaving his rock. I saw them again when I approached the pirate base. It was the reason I chose that asteroid to reconnoiter and no other. Look at this man, Admiral, and tell me whether you can doubt that I have the truth."

Hansen's face was contorted with fury. He was not the same man. All trace of benevolence was gone. "All right. What of it? What do you want?"

"I want you to call Ganymede. I'm sure you conducted previous negotiations with them. They'll know you. Tell them that the asteroids are surrendering to Earth and will join us against Sirius if necessary."

Hansen laughed. "Why should I? You've got me, but you haven't got the asteroids. You can't clean them out."

"We can, if we capture your rock. It has all necessary records on it, hasn't it?"

"Try and find it," said Hansen, hoarsely. "Try to locate it in a forest of rocks. You say yourself it can move."

"It will be easy to find," said Lucky. "Your valley of cans, you know."

"Go ahead. Look at every rock till you find the valley. It will take you a million years."

"No. Only a day or so. When I left the pirate base, I paused just long enough to burn the valley of cans with a heat beam. I melted them and let them freeze back into a bumpy, angled sheet of fresh, gleaming metal. There was no atmosphere to rust or corrode them, so its surface remains just like the metal-foil goal posts used in a push-gun duel. It catches the Sun and sends reflections glittering back in tight beams. All Ceres Observatory has to do is quarter the heavens, looking for an asteroid about ten times as bright as it should be for its size. I had them begin the search even before I left to intercept Anton."

"It's a lie."

"Is it? Long before I reached the Sun, I received a sub-etheric message that included a photograph. Here it is." Lucky drew it out from under the blotter on the desk. "The bright dot with the arrow pointing to it is your rock."

"Do you think you're frightening me?"

"I should be. Council ships landed on it."

"What?" roared the admiral.

"There was no time to waste, sir," said Lucky. "We found Hansen's living quarters at the other end and we found the connecting tunnels between it and the pirate base. I have here some sub-etherized documents containing the co-ordinates of your main subsidiary bases, Hansen, and some photographs of the bases themselves. The real thing, Hansen?"

Hansen collapsed. His mouth opened and hopeless sobbing sounds came out.

Lucky said, "I've gone through all this, Hansen, to convince you that you've lost. You've lost completely and finally. You have nothing left but your life. I make no promises, but if you do as I say, you may end up by at least saving that. Call Ganymede."

Hansen stared helplessly at his fingers.

The admiral said with stunned anguish, "The Council cleaned out the asteroids? They've done the job? They haven't consulted the Admiralty?"

Lucky said, "How about it, Hansen?"

Hansen said, "What's the difference now? I'll do it."

Conway, Henree, and Bigman were at the space-port to greet Lucky when he returned to Earth. They had dinner together in the Glass Room on the highest level of Planet Restaurant. With the room's walls made of curving, clear one-way glass, they could look out over the warm lights of the city, fading off into the level plains beyond.

Henree said, "It's fortunate the Council was able to penetrate the pirate bases before it became a job for the fleet. Military action wouldn't have solved the matter."

Conway nodded. "You're right. It would have left the asteroids vacant for the next pirate gang. Most of those people there had no real knowledge that they were fighting alongside Sirius. They were rather ordinary people looking for a better life than they had been experiencing. I think we can persuade the government to offer amnesty to all but those who had actually participated in raids, and they weren't many."

"As a matter of fact," said Lucky, "by helping them continue the development of the asteroids, by financing the expansion of their yeast farms, and supplying water, air, and power, we're building a defense for the future. The best protection against asteroid criminals is a peaceful and prosperous asteroid community. That way lies peace."

Bigman said belligerently, "Don't kid yourself. It's peace only till Sirius decides to try again."

Lucky put a hand to the little man's frowning face and shoved it playfully. "Bigman, I think you're sorry we're short one nice war. What's the matter with you? Can't you enjoy a little rest?"

Conway said, "You know, Lucky, you might have told us more at the time."

"I would have liked to," said Lucky, "but it was necessary for me to deal with Hansen alone. There were important personal reasons involved."

"But when did you first suspect him, Lucky? What gave him away?" Conway wanted to know. "The fact that his rock had blundered into a forbidden zone?"

"That was the final straw," admitted Lucky, "but I knew he was no mere hermit within an hour after meeting him. I knew from that time on that he was more important to me than anyone else in the Galaxy."

"How about explaining that?" Conway sank his fork into the last of the steak and munched away contentedly.

Lucky said, "Hansen recognized me as the son of Lawrence Starr. He said he had met Father once, and he must have. After all, Councilmen get no publicity and a personal greeting is necessary to explain the fact that he could see the resemblance in my face.

"But there were two queer angles to the recognition. He saw the resemblance most clearly when I grew angry. He said that. Yet from what you tell me, Uncle Hector, and you, Uncle Gus, Father hardly ever got angry. 'Laughing' is the adjective you usually use when you talk about Father. Then, too, when Hansen arrived on Ceres, he recognized neither of you. Even hearing your names meant nothing."

"What's wrong with that?" asked Henree.

"Father and you two were always together, weren't you? How could Hansen have met Father and not you two? Met my father, moreover, at a time when he was angry and under circumstances which fixed his face so firmly in Hansen's mind that he could recognize me from the resemblance twenty-five years later.

"There's only one explanation. My father was separated from you two only on his last flight to Venus, and Hansen had been in at the kill. Nor was he there as an ordinary crewman. Ordinary crewmen don't become rich enough to be able to build a luxurious asteroid and spend twenty-five years after the government's raids on the asteroids building a new and bigger organization from scratch. He must have been the captain of the attacking pirate ship. He would have been thirty years old then; quite old enough to be captain."

"Great space!" said Conway blankly.

Bigman yelled indignantly, "And you never shot him down?"

"How could I? I had bigger affairs at hand than squaring a personal grudge. He killed my father and mother, yes, but I had to be polite to him just the same. At least for a while."

Lucky lifted a cup of coffee to his lips and paused to look down at the city again.

He said, "Hansen will be in the Mercury Prison for the rest of his life, which is better punishment really than a quick, easy death. And the Sirians have left Ganymede, so there'll be peace. That's a better reward for me than his death ten times over; and a better offering to the memory of my parents."





# **LUCKY STARR AND THE OCEANS OF VENUS**

# DEDICATION

To Margaret Lesser  
and all the girls in the department

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# 1

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## Through the Clouds of Venus

Lucky Starr and John Bigman Jones kicked themselves up from the gravity-free Space Station No. 2 and drifted toward the planetary coaster that waited for them with its air lock open. Their movements had the grace of long practice under non-gravity conditions, despite the fact that their bodies seemed thick and grotesque in the space suits they wore.

Bigman arched his back as he moved upward and craned his head to stare once again at Venus. His voice sounded loudly in Lucky's ear through the suit's radio. "Space! Look at that rock, will you?" Every inch of Bigman's five-foot-two was tense with the thrill of the sight.

Bigman had been born and bred on Mars and had never in his life been so close to Venus. He was used to ruddy planets and rocky asteroids. He had even visited green and blue Earth. But here, now, was something that was pure gray and white.

Venus filled over half the sky. It was only two thousand miles away from the space station they were on. Another space station was on the opposite side of the planet. These two stations, acting as receiving depots for Venus-bound spaceships, streaked about the planet in a three-hour period of revolution, following one another's tracks like little puppies forever chasing their tails.

Yet from those space stations, close though they were to Venus, nothing could be seen of the planet's surface. No continents showed, no oceans, no deserts or mountains, no green valleys. Whiteness, only brilliant whiteness, interspersed with shifting lines of gray.

The whiteness was the turbulent cloud layer that hovered eternally over all of Venus, and the gray lines marked the boundaries

where cloud masses met and clashed. Vapor moved downward at those boundaries, and below those gray lines, on Venus's invisible surface, it rained.

Lucky Starr said, "No use looking at Venus, Bigman. You'll be seeing plenty of it, close up, for a while. It's the sun you ought to be saying good-by to."

Bigman snorted. To his Mars-accustomed eyes, even Earth's sun seemed swollen and overbright. The sun, as seen from Venus's orbit, was a bloated monster. It was two and a quarter times as bright as Earth's sun, four times as bright as the familiar sun on Bigman's Mars. Personally, he was glad that Venus's clouds would hide its sun. He was glad that the space station always arranged its vanes in such a way as to block off the sunlight.

Lucky Starr said, "Well, you crazy Martian, are you getting in?"

Bigman had brought himself to a halt at the lip of the open lock by the casual pressure of one hand. He was still looking at Venus. The visible half was in the full glare of the sun, but at the eastern side the night shadow was creeping in, moving quickly as the space station raced on in its orbit.

Lucky, still moving upward, caught the lip of the lock in his turn and brought his other space-suited hand flat against Bigman's seat. Under the gravity-free conditions, Bigman's little body went tumbling slowly inward, while Lucky's figure bobbed outward.

Lucky's arm muscle contracted, and he floated up and inward with an easy, flowing motion. Lucky had no cause for a light heart at the moment, but he was forced into a smile when he found Bigman spread-eagled in mid-air, with the tip of one gauntleted finger against the inner lock holding him steady. The outer lock closed as Lucky passed through.

Bigman said, "Listen, you wombug, someday I'm walking out on you and you can get yourself another—"

Air hissed into the small room, and the inner lock opened. Two men floated rapidly through, dodging Bigman's dangling feet. The one in the lead, a stocky fellow with dark hair and a surprisingly large mustache, said, "Is there any trouble, gentlemen?"

The second man, taller, thinner, and with lighter hair but a mustache just as large, said, "Can we help you?"

Bigman said loftily, "You can help us by giving us room and letting us get our suits off." He had flicked himself to the floor and was removing his suit as he spoke. Lucky had already shucked his.

The men went through the inner lock. It, too, closed behind them. The space suits, their outer surface cold with the cold of space, were

frosting over as moisture from the warm air of the coaster congealed upon them. Bigman tossed them out of the coaster's warm, moist air on to the tiled racks, where the ice might melt.

The dark-haired man said, "Let's see, now. You two are William Williams and John Jones. Right?"

Lucky said, "I'm Williams." Using that alias under ordinary conditions was second nature to Lucky by now. It was customary for Council of Science members to shun publicity at all times. It was particularly advisable now with the situation on Venus as confused and uncertain as it was.

Lucky went on, "Our papers are in order, I believe, and our luggage is aboard."

"Everything's all right," the dark-haired one said. "I'm George Reval, pilot, and this is Tor Johnson, my co-pilot. We'll be taking off in a few minutes. If there's anything you want, let us know."

The two passengers were shown to their small cabin, and Lucky sighed inwardly. He was never thoroughly comfortable in space except on his own speed cruiser, the *Shooting Starr*, now at rest in the space station's hangar.

Tor Johnson said in a deep voice, "Let me warn you, by the way, that once we get out of the space station's orbit, we won't be in free fall any more. Gravity will start picking up. If you get space-sick——"

Bigman yelled, "Space-sick! You in-planet goop, I could take gravity changes when I was a baby that you couldn't take right now." He flicked his finger against the wall, turned a slow somersault, touched the wall again, and ended with his feet just a half-inch above the floor. "Try *that* someday when you feel real manly."

"Say," said the co-pilot, grinning, "you squeeze a lot of brash into half a pint, don't you?"

Bigman flushed instantly. "Half a pint! Why, you soup-straining clobber——" he screamed, but Lucky's hand was on his shoulder and he swallowed the rest of the sentence. "See you on Venus," the little Martian muttered darkly.

Tor was still grinning. He followed his chief into the control room toward the head of the ship.

Bigman, his anger gone at once, said to Lucky curiously, "Say, how about those mustaches? Never saw any so big."

Lucky said, "It's just a Venusian custom, Bigman. I think practically everybody grows them on Venus."

"That so?" Bigman fingered his lip, stroking its bareness. "Wonder how I'd look in one."

"With one that big?" smiled Lucky. "It would drown your whole face."

He dodged the punch Bigman threw at him just as the floor trembled lightly beneath their feet and the *Venus Marvel* lifted off the space station. The coaster turned its nose into the contracting spiral trajectory that would carry it "down" to Venus.

Lucky Starr felt the beginnings of a long-overdue relaxation flooding him as the coaster picked up speed. His brown eyes were thoughtful, and his keen, fine-featured face was in repose. He was tall and looked slim, but beneath that deceptive slimness were whipcord muscles.

Life had already given much to Lucky of both good and evil. He had lost his parents while still a child, lost them in a pirate attack near the very Venus he was now approaching. He had been brought up by his father's dearest friends, Hector Conway, now chief of the Council of Science, and Augustus Henree, section director of the same organization.

Lucky had been educated and trained with but one thought in mind: Someday he was to enter that very Council of Science, whose powers and functions made it the most important and yet least-known body in the galaxy.

It was only a year ago, upon his graduation from the academy, that he had entered into full membership and become dedicated to the advancement of man and the destruction of the enemies of civilization. He was the youngest member of the Council and probably would remain so for years.

Yet already he had won his first battles. On the deserts of Mars and among the dimlit rocks of the asteroid belt, he had met and triumphed over wrongdoing.

But the war against crime and evil is not a short-term conflict, and now it was Venus that was the setting for trouble, a trouble that was particularly disturbing since its details were misty.

Chief of the Council Hector Conway had pinched his lip and said, "I'm not sure whether it's a Sirian conspiracy against the Solar Confederation, or just petty racketeering. Our local men there tend to view it seriously."

Lucky said, "Have you sent any of our trouble shooters?" He was not long back from the asteroids, and he was listening to this with concern.

Conway said, "Yes: Evans."



"Lou Evans?" asked Lucky, his dark eyes lighting with pleasure. "He was one of my roommates at the academy. He's *good*."

"Is he? The Venus office of the Council has requested his removal and investigation on the charge of corruption!"

"*What?*" Lucky was on his feet, horrified. "Uncle Hector, that's impossible."

"Want to go out there and look into it yourself?"

"Do I! Great stars and little asteroids! Bigman and I will take off just as soon as we get the *Shooting Starr* flight-ready."

And now Lucky watched out the porthole thoughtfully, on the last leg of his flight. The night shadow had crept over Venus, and for an hour there was only blackness to be seen. All the stars were hidden by Venus's huge bulk.

Then they were out in the sunlight again, but now the viewpoint was only gray. They were too close to see the planet as a whole. They were even too close to see the clouds. They were actually inside the cloudy layer.

Bigman, having just finished a large chicken-salad sandwich, wiped his lips and said, "Space, I'd hate to have to pilot a ship through all this muck."

The coaster's wings had snapped out into extended position to take advantage of the atmosphere, and there was a definite difference in the quality of the ship's motion as a result. The buffeting of the winds could be felt and the plunging and lifting of the drafts that sink and rise.

Ships that navigate space are not suitable for the treachery of thick atmosphere. It is for that reason that planets like Earth and Venus, with deep layers of air enshrouding them, require space stations. To those space stations come the ships of deep space. From the stations planetary coasters with retractable wings ride the tricky air currents to the planet's surface.

Bigman, who could pilot a ship from Pluto to Mercury blindfolded, would have been lost at the first thickening wisp of an atmosphere. Even Lucky, who in his intensive training at the academy had piloted coasters, would not have cared to take on the job in the blanketing clouds that surrounded them now.

"Until the first explorers landed on Venus," Lucky said, "all mankind ever saw of the planet was the outer surface of these clouds. They had weird notions about the planet then."

Bigman didn't reply. He was looking into the celloplex container to make sure there wasn't another chicken-salad sandwich hiding there.

Lucky went on. "They couldn't tell how fast Venus was rotating or whether it was rotating at all. They weren't even sure about the composition of Venus's atmosphere. They knew it had carbon dioxide, but until the late 1900s astronomers thought Venus had no water. When ships began to land, mankind found that wasn't so."

He broke off. Despite himself, Lucky's mind returned once again to the coded spacegram he had received in mid-flight, with Earth ten million miles behind. It was from Lou Evans, his old roommate, to whom he had subethered that he was on his way.

The reply was short, blunt, and clear. It was, "Stay away!"

Just that! It was unlike Evans. To Lucky, a message like that meant trouble, big trouble, so he did not "stay away." Instead, he moved the micropile energy output up a notch and increased acceleration to the gasping point.

Bigman was saying, "Gives you a funny feeling, Lucky, when you think that once, long ago, people were all cooped up on Earth. Couldn't get off it no matter what they did. Didn't know anything about Mars or the moon or anywhere. It gives me the shivers."

It was just at that point that they pierced the cloud barrier, and even Lucky's gloomy thoughts vanished at the sight that met their eyes.

It was sudden. One moment they were surrounded by what seemed an eternal milkiess; the next, there was only transparent air about them. Everything below was bathed in a clear, pearly light. Above was the gray undersurface of the clouds.

Bigman said, "Hey, Lucky, look!"

Venus stretched out below them for miles in every direction, and it was a solid carpet of blue-green vegetation. There were no dips or rises in the surface. It was absolutely level, as though it had been planed down by a giant atomic slicer.

Nor was there anything to be seen that would have been normal in an Earthly scene. No roads or houses, no towns or streams. Just blue-green, unvarying, as far as could be seen.

Lucky said, "Carbon dioxide does it. It's the part of the air plants feed on. On Earth there's only three hundredths of one per cent in the air, but here almost ten per cent of the air is carbon dioxide."

Bigman, who had lived for years on the farms of Mars, knew about carbon dioxide. He said, "What makes it so light with all the clouds?"

Lucky smiled. "You're forgetting, Bigman. The sun is over twice as bright here as on Earth." Then as he looked out the port again, his smile thinned and vanished.

"Funny," he murmured.

Suddenly, he turned away from the window. "Bigman," he said, "come with me to the pilot room."

In two strides he was out the cabin. In two more, he was at the pilot room. The door wasn't locked. He pulled it open. Both pilots, George Reval and Tor Johnson, were at their places, eyes glued to the controls. Neither turned as they entered.

Lucky said, "Men——"

No response.

He touched Johnson's shoulder, and the co-pilot's arm twitched irritably, skaking off Lucky's grip.

The young Councilman seized Johnson by either shoulder and called, "Get the other one, Bigman!"

The little fellow was already at work on that very job, asking no questions, attacking with a bantam's fury.

Lucky hurled Johnson from him. Johnson staggered back, righted himself, and charged forward. Lucky ducked a wild blow and brought a straight-armed right to the side of the other's jaw. Johnson went down, cold. At nearly the same moment, Bigman, with a quick and skillful twist of George Reval's arm, flung him along the floor and knocked him breathless.

Bigman dragged both pilots outside the pilot room and closed the door on them. He came back to find Lucky handling the controls feverishly.

Only then did he ask for an explanation. "What happened?"

"We weren't leveling off," said Lucky grimly. "I watched the surface, and it was coming up too fast. It still is."

He strove desperately to find the particular control for the ailerons, those vanes that controlled the angle of flight. The blue surface of Venus was much closer. It was rushing at them.

Lucky's eyes were on the pressure gauge. It measured the weight of air above them. The higher it rose, the closer they were to the surface. It was climbing less quickly now. Lucky's fist closed more tightly on the duorod, squeezing the forks together. That must be it. He dared not exert force too rapidly or the ailerons might be whipped off altogether by the screaming gale that flung itself past their ship. Yet there was only five hundred feet to spare before zero altitude.

His nostrils flaring, the cords in his neck standing out, Lucky played those ailerons against the wind.

"We're leveling," breathed Bigman. "We're leveling——"

But there wasn't room enough. The blue-green came up and up

till it filled all the view in the port. Then, with a speed that was too great and an angle that was also too great, the *Venus Marvel*, carrying Lucky Starr and Bigman Jones, struck the surface of the planet Venus.

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## Under the Sea Dome

Had the surface of Venus been what it seemed to be at first glance, the *Venus Marvel* would have smashed to scrap and burned to ash. The career of Lucky Starr would have ended at that moment.

Fortunately, the vegetation that had so thickly met the eye was neither grass nor shrubbery, but seaweed. The flat plain was no surface of soil and rock, but water, the top of an ocean that surrounded and covered all of Venus.

The *Venus Marvel*, even so, hit the ocean with a thunderous rattle, tore through the ropy weeds, and boiled its way into the depths. Lucky and Bigman were hurled against the walls.

An ordinary vessel might have been smashed, but the *Venus Marvel* had been designed for entering water at high speed. Its seams were tight; its form, streamlined. Its wings, which Lucky had neither time nor knowledge to retract, were torn loose, and its frame groaned under the shock, but it remained seaworthy.

Down, down it went into the green-black murk of the Venusian ocean. The cloud-diffused light from above was almost totally stopped by the tight weed cover. The ship's artificial lighting did not go on, its workings apparently put out of order by the shock of contact.

Lucky's senses were whirling. "Bigman," he called.

There was no answer, and he stretched out his arms, feeling. His hand touched Bigman's face.

"Bigman!" he called again. He felt the little Martian's chest, and the heart was beating regularly. Relief washed over Lucky.

He had no way of telling what was happening to the ship. He knew he could never find any way of controlling it in the complete

darkness that enveloped them. He could only hope that the friction of the water would halt the ship before it struck bottom.

He felt for the pencil flash in his shirt pocket—a little plastic rod some six inches long that, on activation by thumb pressure, became a solid glow of light that streamed out forward, its beam broadening without seeming to weaken appreciably.

Lucky groped for Bigman again and examined him gently. There was a lump on the Martian's temple, but no broken bones so far as Lucky could tell.

Bigman's eyes fluttered. He groaned.

Lucky whispered, "Take it easy, Bigman. We'll be all right." He was far from sure of that as he stepped out into the corridor. The pilots would have to be alive and cooperative if the ship were ever to see home port again.

They were sitting up, blinking at Lucky's flash as he came through the door.

"What happened?" groaned Johnson. "One minute I was at the controls, and then——" There was no hostility, only pain and confusion, in his eyes.

The *Venus Marvel* was back to partial normality. It was limping badly, but its searchlights, fore and aft, had been restored to operation and the emergency batteries had been rigged up to supply them with all the power they would need for vital operations. The churning of the propeller could be dimly heard, and the planetary coaster was displaying, adequately enough, its third function. It was a vessel that could navigate, not only in space and in air, but under water as well.

George Reval stepped into the control room. He was downcast and obviously embarrassed. He had a gash on his cheek, which Lucky had washed, disinfected, and neatly sprayed with koagulum.

Reval said, "There are a few minor seepages, but I plugged them. The wings are gone, and the main batteries are all junked up. We'll need all sorts of repairs, but I guess we're lucky at that. You did a good job, Mr. Williams."

Lucky nodded briefly. "Suppose you tell me what happened."

Reval flushed. "I don't know. I hate to say it, but I don't know."

"How about you?" asked Lucky, addressing the other.

Tor Johnson, his large hands nursing the radio back to life, shook his head.

Reval said, "The last clear thoughts I can remember were while we were still inside the cloud layer. I remember nothing after that till I found myself staring at your flash."

Lucky said, "Do you or Johnson use drugs of any kind?"

Johnson looked up angrily. He rumbled, "No. Nothing."

"Then what made you blank out, and both at the same time, too?"

Reval said, "I wish I knew. Look, Mr. Williams, neither one of us is an amateur. Our records as coaster pilots are first class." He groaned. "Or at least we *were* first-class pilots. We'll probably be grounded after this."

"We'll see," said Lucky.

"Say, look," said Bigman, testily, "what's the use of talking about what's over and gone? Where are we now? That's what I want to know. Where are we going?"

Tor Johnson said, "We're way off our course. I can tell you that much. It will be five or six hours before we get out to Aphrodite."

"Fat Jupiter and little satellites!" said Bigman, staring at the blackness outside the port in disgust. "Five or six hours in *this* black mess?"

Aphrodite is the largest city on Venus, with a population of over a quarter of a million.

With the *Venus Marvel* still a mile away, the sea about it was lit into green translucence by Aphrodite's lights. In the eerie luminosity the dark, sleek shapes of the rescue vessels, which had been sent out to meet them after radio contact had been established, could be plainly made out. They slipped along, silent companions.

As for Lucky and Bigman, it was their first sight of one of Venus's underwater domed cities. They almost forgot the unpleasantness they had just passed through, in the amazement at the wonderful object before them.

From a distance it seemed an emerald-green, fairyland bubble, shimmering and quivering because of the water between them. Dimly they could make out buildings and the structural webbing of the beams that held up the city dome against the weight of water overhead.

It grew larger and glowed more brightly as they approached. The green grew lighter as the distance of water between them grew less. Aphrodite became less unreal, less fairylandish, but even more magnificent.

Finally they slid into a huge air lock, capable of holding a small fleet of freighters or a large battle cruiser, and waited while the water was pumped out. And when that was done, the *Venus Marvel* was floated out of the lock and into the city on a lift field.

Lucky and Bigman watched as their luggage was removed, shook

hands gravely with Reval and Johnson, and took a skimmer to the Hotel Bellevue-Aphrodite.

Bigman looked out of the curved window as their skimmer, its gyrowings revolving with stately dignity, moved lightly among the city's beams and over its rooftops.

He said, "So this is Venus. Don't know if it's worth going through so much for it, though. I'll never forget that ocean coming up at us!"

Lucky said, "I'm afraid that was just the beginning."

Bigman looked uneasily at his big friend. "You really think so?"

Lucky shrugged. "It depends. Let's see what Evans has to tell us."

The Green Room of the Hotel Bellevue-Aphrodite was just that. The quality of the lighting and the shimmer of it gave the tables and guests the appearance of being suspended beneath the sea. The ceiling was an inverted bowl, below which there turned slowly a large aquarium globe, supported by cunningly placed lift beams. The water in it was laced with strands of Venusian seaweed and in among it writhed colorful "sea ribbons," one of the most beautiful forms of animal life on the planet.

Bigman had come in first, intent on dinner. He was annoyed at the absence of a punch menu, disturbed by the presence of actual human waiters, and resentful over the fact that he was told that diners in the Green Room ate a meal supplied by the management and only that. He was mollified, slightly, when the appetizer turned out to be tasty and the soup, very good.

Then the music started, the domed ceiling gradually came to glowing life, and the aquarium globe began its gentle spinning.

Bigman's mouth fell open; his dinner was forgotten.

"Look at that," he said.

Lucky was looking. The sea ribbons were of different lengths, varying from tiny threads two inches long to broad and sinuous belts that stretched a yard or more from end to end. They were all thin, thin as a sheet of paper. They moved by wriggling their bodies into a series of waves that rippled down their full length.

And each one fluoresced; each one sparkled with colored light. It was a tremendous display. Down the sides of each sea ribbon were little glowing spirals of light: crimson, pink, and orange; a few blues and violets scattered through; and one or two striking among the larger specimens. All were overcast with the light-green wash of the external light. As they swam, the lines of color snapped and inter-



laced. To the dazzled eye they seemed to be leaving rainbow trails that washed and sparkled in the water, fading out only to be renewed in still brighter tints.

Bigman turned his attention reluctantly to his dessert. The waiter had called it "jelly seeds," and at first the little fellow had regarded the dish suspiciously. The jelly seeds were soft orange ovals, which clung together just a bit but came up readily enough in the spoon. For a moment they felt dry and tasteless to the tongue, but then, suddenly, they melted into a thick, sirupy liquid that was sheer delight.

"Space!" said the astonished Bigman. "Have you tried the dessert?"

"What?" asked Lucky absently.

"Taste the dessert, will you? It's like thick pineapple juice, only a million times better. . . . What's the matter?"

Lucky said, "We have company."

"Aw, go on." Bigman made a move to turn in his seat as though to inspect the other diners.

Lucky said quietly, "Take it easy," and that froze Bigman.

Bigman heard the soft steps of someone approaching their table. He tried to twist his eyes. His own blaster was in his room, but he had a force knife in his belt pocket. It looked like a watch fob, but it could slice a man in two, if necessary. He fingered it intensely.

A voice behind Bigman said, "May I join you, folks?"

Bigman turned in his seat, force knife palmed and ready for a quick, upward thrust. But the man looked anything but sinister. He was fat, but his clothes fit well. His face was round and his graying hair was carefully combed over the top of his head, though his baldness showed anyway. His eyes were little, blue, and full of what seemed like friendliness. Of course, he had a large, grizzled mustache of the true Venusian fashion.

Lucky said calmly, "Sit down, by all means." His attention seemed entirely centered on the cup of hot coffee that he held cradled in his right hand.

The fat man sat down. His hands rested upon the table. One wrist was exposed, slightly shaded by the palm of the other. For an instant, an oval spot on it darkened and turned black. Within it little yellow grains of light danced and flickered in the familiar patterns of the Big Dipper and of Orion. Then it disappeared, and there was only an innocent plump wrist and the smiling, round face of the fat man above it.

That identifying mark of the Council of Science could be neither

forged nor imitated. The method of its controlled appearance by the exertion of will was just about the most closely guarded secret of the Council.

The fat man said, "My name is Mel Morriss."

Lucky said, "I rather thought you were. You've been described to me."

Bigman sat back and returned his force knife to its place. Mel Morriss was head of the Venusian section of the Council. Bigman had heard of him. In a way he was relieved, and in another way he was just a little disappointed. He had expected a fight—perhaps a quick dash of coffee into the fat man's face, the table overturned, and from then on, anything.

Lucky said, "Venus seems an unusual and beautiful place."

"You have observed our fluorescent aquarium?"

"It is very spectacular," said Lucky.

The Venusian councilman smiled and raised a finger. The waiter brought him a hot cup of coffee. Morriss let it cool for a moment, then said softly, "I believe you are disappointed to see me here. You expected other company, I think."

Lucky said coolly, "I had looked forward to an informal conversation with a friend."

"In fact," said Morriss, "you had sent a message to Councilman Evans to meet you here."

"I see you know that."

"Quite. Evans has been under close observation for quite a while. Communications to him are intercepted."

Their voices were low. Even Bigman had trouble hearing them as they faced one another, sipping coffee and allowing no trace of expression in their words.

Lucky said, "You are wrong to do this."

"You speak as his friend?"

"I do."

"And I suppose that, as your friend, he warned you to stay away from Venus."

"You know about that, too, I see?"

"Quite. And you had a near-fatal accident in landing on Venus. Am I right?"

"You are. You're implying that Evans feared some such event?"

"Feared it? Great space, Starr, your friend Evans *engineered* that accident."

# 3



## Yeast!

Lucky's expression remained impassive. Not by so much as an eye flicker did he betray any concern. "Details, please," he said.

Morriss was smiling again, half his mouth hidden by his preposterous Venusian mustache. "Not here, I'm afraid."

"Name your place, then."

"One moment." Morriss looked at his watch. "In just about a minute, the show will begin. There'll be dancing by sealight."

"Sealight?"

"The globe above will shine dim green. People will get up to dance. We will get up with them and quietly leave."

"You sound as though we are in danger at the moment."

Morriss said gravely, "*You* are. I assure you that since you entered Aphrodite, our men have never let you out of their sight."

A genial voice rang out suddenly. It seemed to come from the crystal centerpiece on the table. From the direction in which other diners turned their attention, it obviously came from the crystal centerpiece on every table.

It said, "Ladies and gentlemen, welcome to the Green Room. Have you eaten well? For your added pleasure, the management is proud to present the magnetonic rhythms of Tobe Tobias and his—"

As the voice spoke, the lights went out and the remainder of its words were drowned in a rising sigh of wonder that came from the assembled guests, most of whom were fresh from Earth. The aquarium globe in the ceiling was suddenly a luminous emerald green and the sea-ribbon glow was sharply brilliant. The globe assumed a faceted appearance so that, as it turned, drifting shadows circled the

room in a soft, almost hypnotic fashion. The sound of music, drawn almost entirely from the weird, husky sound boxes of a variety of magnetonic instruments, grew louder. The notes were produced by rods of various shapes being moved in skillful patterns through the magnetic field that surrounded each instrument.

Men and women were rising to dance. There was the rustle of much motion and the sibilance of laughing whispers. A touch of Lucky's sleeve brought first him, and then Bigman, to their feet.

Lucky and Bigman followed Morriss silently. One by one, grim-faced figures fell in behind them. It was almost as though they were materializing out of the draperies. They remained far enough away to look innocent, but each, Lucky felt sure, had his hand near the butt of a blaster. No mistake about it. Mel Morriss of the Venusian section of the Council of Science took the situation very much in earnest.

Lucky looked about Morriss's apartment with approval. It was not lavish, although it was comfortable. Living in it, one could forget that a hundred yards above was a translucent dome beyond which was a hundred yards of shallow, carbonated ocean, followed by a hundred miles of alien, unbreathable atmosphere.

What actually pleased Lucky most was the collection of book films that overflowed one alcove.

He said, "You're a biophysicist, Dr. Morriss?" Automatically, he used the professional title.

Morriss said, "Yes."

"I did biophysical work myself at the academy," said Lucky.

"I know," said Morriss. "I read your paper. It was good work. May I call you David, by the way?"

"It's my first name," conceded the Earthman, "but everyone calls me Lucky."

Bigman, meanwhile, had opened one of the film holders, unreeled a bit of the film, and held it to the light. He shuddered and replaced it.

He said belligerently to Morriss, "You sure don't look like a scientist."

"I imagine not," said Morriss, unoffended. "That helps, you know."

Lucky knew what he meant. In these days, when science really permeated all human society and culture, scientists could no longer restrict themselves to their laboratories. It was for that reason that the Council of Science had been born. Originally it was intended only as an advisory body to help the government on matters of galactic

importance, where only trained scientists could have sufficient information to make intelligent decisions. More and more it had become a crime-fighting agency, a counterespionage system. Into its own hands it was drawing more and more of the threads of government. Through its activities there might grow, someday, a great Empire of the Milky Way in which all men might live in peace and harmony.

So it came about that, as members of the Council had to fulfill many duties far removed from pure science, it was better for their success if they didn't look particularly like scientists—as long, that is, as they had the brains of scientists.

Lucky said, "Would you begin, sir, by filling me in on the details of the troubles here?"

"How much were you told on Earth?"

"The barest sketch. I would prefer to trust the man on the scene for the rest."

Morriss smiled with more than a trace of irony. "Trust the man on the scene? That's not the usual attitude of the men in the central office. They send their own trouble shooters, and men such as Evans arrive."

"And myself, too," said Lucky.

"Your case is a little different. We all know of your accomplishments on Mars last year and the good piece of work you've just finished in the asteroids."

Bigman crowed, "You should have been *with* him if you think you know all about it."

Lucky reddened slightly. He said hastily, "Never mind now, Bigman. Let's not have any of your yarns."

They were all in large armchairs, Earth-manufactured, soft and comfortable. There was something about the reflected sound of their voices that, to Lucky's practiced ear, was good evidence that the apartment was insulated and spy-shielded.

Morriss lit a cigarette and offered one to the others but was refused. "How much do you know about Venus, Lucky?"

Lucky smiled. "The usual things one learns in school. Just to go over a few things quickly, it's the second closest planet to the sun and is about sixty-seven million miles from it. It's the closest world to Earth and can come to within twenty-six million miles of the home planet. It's just a little smaller than Earth, with a gravity about five sixths Earth-normal. It goes around the sun in about seven and a half months and its day is about thirty-six hours long. Its surface temperature is a little higher than Earth's but not much, because of the clouds. Also because of the clouds, it has no seasons to speak of. It

is covered by ocean, which is, in turn, covered with seaweed. Its atmosphere is carbon dioxide and nitrogen and is unbreathable. How is that, Dr. Morriss?"

"You pass with high marks," said the biophysicist, "but I was asking about Venusian society rather than about the planet itself."

"Well, now, that's more difficult. I know, of course, that humans live in domed cities in the shallower parts of the ocean, and, as I can see for myself, Venusian city life is quite advanced—far beyond Martian city life, for instance."

Bigman yelled, "Hey!"

Morriss turned his little twinkling eyes on the Martian. "You disagree with your friend?"

Bigman hesitated. "Well, maybe not, but he doesn't have to say so."

Lucky smiled and went on, "Venus is a fairly developed planet. I think there are about fifty cities on it and a total population of six million. Your exports are dried seaweed, which I am told is excellent fertilizer, and dehydrated yeast bricks for animal food."

"Still fairly good," said Morriss. "How was your dinner at the Green Room, gentlemen?"

Lucky paused at the sudden change of topic, then said, "Very good. Why do you ask?"

"You'll see in a moment. What did you have?"

Lucky said, "I couldn't say, exactly. It was the house meal. I should guess we had a kind of beef goulash with a rather interesting sauce and a vegetable I didn't recognize. There was a fruit salad, I believe, before that and a spicy variety of tomato soup."

Bigman broke in. "And jelly seeds for dessert."

Morriss laughed hootingly. "You're all wrong, you know," he said. "You had no beef, no fruit, no tomatoes. Not even coffee. You had only one thing to eat. Only one thing. Yeast!"

"What?" shrieked Bigman.

For a moment Lucky was startled also. His eye narrowed and he said, "Are you serious?"

"Of course. It's the Green Room's specialty. They never speak of it, or Earthmen would refuse to eat it. Later on, though, you would have been questioned thoroughly as to how you liked this dish or that, how you thought it might have been improved, and so on. The Green Room is Venus's most valuable experimental station."

Bigman screwed up his small face and yelled vehemently, "I'll have the law on them. I'll make a Council case of it. They can't feed me yeast without telling me, like I was a horse or cow—or a——"

He ended in a flurry of sputtering.

"I am guessing," said Lucky, "that yeast has some connection with the crime wave on Venus."

"Guessing, are you?" said Morriss, dryly. "Then you haven't read our official reports. I'm not surprised. Earth thinks we are exaggerating here. I assure you, however, we are not. And it isn't merely a crime wave. Yeast, Lucky, yeast! That is the nub and core of everything on this planet."

A self-propelled tender had rolled into the living room with a bubbling percolator and three cups of steaming coffee upon it. The tender stopped at Lucky first, then Bigman. Morriss took the third cup, put his lips to it, then wiped his large mustache appreciatively.

"It will add cream and sugar if you wish, gentlemen," he said.

Bigman looked and sniffed. He said to Morriss with sharp suspicion, "Yeast?"

"No. Real coffee this time. I swear it."

For a moment they sipped in silence; then Morriss said, "Venus, Lucky, is an expensive world to keep up. Our cities must make oxygen out of water, and that takes huge electrolytic stations. Each city requires tremendous power beams to help support the domes against billions of tons of water. The city of Aphrodite uses as much energy in a year as the entire continent of South America, yet it has only a thousandth the population.

"We've got to earn that energy, naturally. We've got to export to Earth in order to obtain power plants, specialized machinery, atomic fuel, and so on. Venus's only product is seaweed, inexhaustible quantities of it. Some we export as fertilizer, but that is scarcely the answer to the problem. Most of our seaweed, however, we use as culture media for yeast, ten thousand and one varieties of yeast."

Bigman's lip curled. "Changing seaweed to yeast isn't much of an improvement."

"Did you find your last meal satisfactory?" asked Morriss.

"Please go on, Dr. Morriss," said Lucky.

Morriss said, "Of course, Mr. Jones is quite cor——"

"Call me Bigman!"

Morriss looked soberly at the small Martian and said, "If you wish. Bigman is quite correct in his low opinion of yeast in general. Our most important strains are suitable only for animal food. But even so, it's highly useful. Yeast-fed pork is cheaper and better than any other kind. The yeast is high in calories, proteins, minerals, and vitamins.

"We have other strains of higher quality, which are used in cases

where food must be stored over long periods and with little available space. On long space journeys, for instance, so-called Y-rations are frequently taken.

"Finally, we have our top-quality strains, extremely expensive and fragile growths that go into the menus of the Green Room and with which we can imitate or improve upon ordinary food. None of these are in quantity production, but they will be someday. I imagine you see the whole point of all this, Lucky."

"I think I do."

"I don't," said Bigman belligerently.

Morriss was quick to explain. "Venus will have a monopoly on these luxury strains. No other world will possess them. Without Venus's experience in zymoculture——"

"In what?" asked Bigman.

"In yeast culture. Without Venus's experience in that, no other world could develop such yeasts or maintain them once they did obtain them. So you see that Venus could build a tremendously profitable trade in yeast strains as luxury items with all the galaxy. That would be important not only to Venus, but to Earth as well—to the entire Solar Confederation. We are the most overpopulated system in the Galaxy, being the oldest. If we could exchange a pound of yeast for a ton of grain, things would be well for us."

Lucky had been listening patiently to Morriss's lecture. He said, "For the same reason, it would be to the interest of a foreign power, which was anxious to weaken Earth, to ruin Venus's monopoly of yeast."

"You see that, do you? I wish I could persuade the rest of the Council of this living and ever-present danger. If growing strains of yeast were stolen along with some of the knowledge of our developments in yeast culture, the results could be disastrous."

"Very well," said Lucky, "then we come to the important point: Have such thefts occurred?"

"Not yet," said Morriss grimly. "But for six months now we have had a rash of petty pilfering, odd accidents, and queer incidents. Some are merely annoying, or even funny, like the case of the old man who threw half-credit pieces to children and then went frantically to the police, insisting he had been robbed. When witnesses came forward to show that he had given the money away, he nearly went mad with fury, insisting that he had done no such thing. There are more serious accidents, too, like that in which a freight-roller operator released a half-ton bale of weed at the wrong time and killed two men. He insisted later that he had blacked out."



Bigman squealed excitedly, "Lucky! The pilots on the coaster claimed *they* blacked out."

Morriss nodded, "Yes, and I'm almost glad it happened as long as the two of you survived. The Council on Earth may be a bit readier to believe there is something behind all this."

"I suppose," said Lucky, "you suspect hypnotism."

Morriss drew his lips into a grim, humorless smile. "Hypnotism is a mild word, Lucky. Do you know of any hypnotist who can exert his influence at a distance over unwilling subjects? I tell you that some person or persons on Venus possesses the power of complete mental domination over others. They are exerting this power, practicing it, growing more adept in its use. With every day it will grow more difficult to fight them. Perhaps it is already too late!"

# 4

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## Councilman Accused!

Bigman's eyes sparkled. "It's never too late once Lucky gets going. Where do we start, Lucky?"

Lucky said quietly, "With Lou Evans. I've been waiting for you to mention him, Dr. Morriss."

Morriss's eyebrows drew together; his plump face contracted into a frown. "You're his friend. You want to defend him, I know. It's not a pleasant story. It wouldn't be if it involved any councilman at all—but a friend at that."

Lucky said, "I am not acting out of sentiment only, Dr. Morriss. I know Lou Evans as well as one man can know another. I know he is incapable of doing anything to harm the Council or Earth."

"Then listen, and judge for yourself. For most of Evans's tour of duty here on Venus, he accomplished nothing. A 'trouble shooter' they called him, which is a pretty word but means nothing."

"No offense, Dr. Morriss, but did you resent his arrival?"

"No, of course not. I just saw no point in it. We here have grown old on Venus. We have the experience. What do they expect a youngster, new from Earth, to accomplish?"

"A fresh approach is helpful sometimes."

"Nonsense. I tell you, Lucky, the trouble is that Earth headquarters don't consider our problem important. Their purpose in sending Evans was to have him give it a quick glance, whitewash it, and return to tell them it was nothing."

"I know the Council on Earth better than that. You do, too."

But the grumbling Venusian went on. "Anyway, three weeks ago, this man Evans asked to see some of the classified data concerning yeast-strain growth. The men in the industry objected."

"Objected?" said Lucky. "It was a councilman's request."

"True, but yeast-strain men are secretive. You don't make requests like that. Even councilmen don't. They asked Evans why he wanted the information. He refused to tell them. They forwarded his request to me, and I quashed it."

"On what grounds?" demanded Lucky.

"He wouldn't tell me his reasons either, and while I'm senior councilman on Venus, nobody in my organization will have secrets from me. But your friend Lou Evans then did something I had not expected. He stole the data. He used his position as councilman to get inside a restricted area in the yeast-research plants, and he left with microfilms inside his boot."

"Surely he had a good reason."

"He did," said Morriss, "he did. The microfilms dealt with the nutrient formulas required for the nourishment of a new and very tricky strain of yeast. Two days later a workman making up one component of that mixture introduced a trace of mercury salt. The yeast died, and six months' work was ruined. The workman swore he'd done no such thing, but he had. Our psychiatrists psychoprobed him. By now, you see, we had a pretty good notion of what to expect. He'd had a blackout period. The enemy still hasn't stolen the strain of yeast, but they're getting closer. Right?"

Lucky's brown eyes were hard. "I can see the obvious theory. Lou Evans had deserted to the enemy, whoever he is."

"Sirians," blurted Morriss. "I'm sure of it."

"Maybe," admitted Lucky. The inhabitants of the planets of Sirius had, for centuries now, been Earth's most fervent enemies. It was easy to blame them. "Maybe. Lou Evans deserted to them, let us say, and agreed to get data for them that would enable them to start trouble inside the yeast factories. Little troubles at first, which would pave the way for larger troubles."

"Yes, that's my theory. Can you propose any other?"

"Couldn't Councilman Evans himself be under mental domination?"

"Not likely, Lucky. We have many cases in our files now. No one who has suffered from mental domination has blacked out for longer than half an hour, and all gave clear indication under the psychoprobe of periods of total amnesia. Evans would have had to be under mental domination for two days to have done what he did, and he gave no signs of amnesia."

"He was examined?"

"He certainly was. When a man is found with classified mate-

rial in his possession—caught in the act, as it were—steps have to be taken. I wouldn't care if he were a hundred times a councilman. He was examined, and I, personally, put him on probation. When he broke it to send some message on his own equipment, we tapped his scrambler and made sure he'd do it no more—or, at least, not without our intercepting whatever he sent or received. The message he sent you was his last. We're through playing with him. He's under confinement now. I'm preparing my report for central headquarters, a thing I should have done before this, and I'm requesting his removal from office and trial for corruption, or, perhaps, for treason."

"Before you do that——" said Lucky.

"Yes?"

"Let me speak to him."

Morriss rose, smiling ironically. "You wish to? Certainly. I'll take you to him. He's in this building. In fact, I'd like to have you hear his defense."

They passed up a ramp, quiet guards snapping to attention and saluting.

Bigman stared at them curiously. "Is this a prison or what?"

"It's a kind of prison on these levels," said Morriss. "We make buildings serve many purposes on Venus."

They stepped into a small room, and suddenly, quite without warning, Bigman burst into loud laughter.

Lucky, unable to repress a smile, said, "What's the matter, Bigman?"

"No—nothing much," panted the little fellow, his eyes moist. "It's just that you look so funny, Lucky, standing there with your bare upper lip hanging out. After all those mustaches I've been watching, you look deformed. You look as though someone had taken a whiffgun and blown off the mustache you should have had."

Morriss smiled at that and brushed his own grizzled mustache with the back of his hand, self-consciously and a little proudly.

Lucky's smile expanded. "Funny," he said, "I was thinking exactly the same about you, Bigman."

Morriss said, "We'll wait here. They're bringing Evans now." His finger moved away from a small pushbutton signal.

Lucky looked about the room. It was smaller than Morriss's own room, more impersonal. Its only furniture consisted of several upholstered chairs plus a sofa, a low table in the center of the room, and two higher tables near the false windows. Behind each of the false windows was a cleverly done seascape. On one of the

two high tables was an aquarium; on the other, two dishes, one containing small dried peas and the other, a black, greasy substance.

Bigman's eyes automatically started following Lucky's about the room.

He said, suddenly, "Say, Lucky, what's this?"

He half-ran to the aquarium, bending low, peering into its depths. "Look at it, will you?"

"It's just one of the pet V-frogs the men keep about here," said Morriss. "It's a rather good specimen. Haven't you ever seen one?"

"No," said Lucky. He joined Bigman at the aquarium, which was two feet square and about three feet deep. The water in it was criss-crossed with feathery fronds of weed.

Bigman said, "It doesn't bite or anything, does it?" He was stirring the water with a forefinger and bending close to peer inside.

Lucky's head came down next to Bigman's. The V-frog stared back at them solemnly. It was a little creature, perhaps eight inches long, with a triangular head into which two bulging black eyes were set. It rested on six little padded feet drawn up close to its body. Each foot had three long toes in front and one behind. Its skin was green and froglike, and there were frilly fins, which vibrated rapidly, running down the center line of its back. In place of a mouth it had a beak, strong, curved and parrotlike.

As Lucky and Bigman watched, the V-frog started rising in the water. Its feet remained on the floor of the aquarium, but its legs stretched out like extendible stilts, as its numerous leg joints straightened. It stopped rising just as its head was about to pierce the surface.

Morriss, who had joined them and was staring fondly at the little beast, said, "It doesn't like to get out of the water. Too much oxygen in the air. They enjoy oxygen, but only in moderation. They're mild, pleasant little things."

Bigman was delighted. There was virtually no native animal life on Mars, and living creatures of this sort were a real novelty to him. "Where do they live?" he asked.

Morriss put a finger down into the water and stroked the V-frog's head. The V-frog permitted it, closing its dark eyes in spasmodic motions that might have meant delight, for all they could guess.

Morriss said, "They congregate in the seaweed in fairly large numbers. They move around in it as though it were a forest. Their long toes can hold individual stems, and their beaks can tear the

toughest fronds. They could probably make a mean dent in a man's finger, but I've never known one of them to bite. I'm amazed you haven't seen one yet. The hotel has a whole collection of them, real family groups, on display. You haven't seen it?"

"We've scarcely had the chance," said Lucky dryly.

Bigman stepped quickly to the other table, picked up a pea, dipped it into the black grease, and brought it back. He held it out temptingly, and with infinite care the V-frog's beak thrust out of the water and took the morsel from Bigman's fingers. Bigman crowed his delight.

"Did you see that?" he demanded.

Morriss smiled fondly, as though at the tricks of a child. "The little imp. They'll eat that all day. Look at him gobble it."

The V-frog was crunching away. A small black droplet leaked out of one side of its beak, and at once the little creature's legs folded up again as it moved down through the water. The beak opened and the little black droplet was caught.

"What is the stuff?" asked Lucky.

"Peas dipped in axle grease," said Morriss. "Grease is a great delicacy for them, like sugar for us. They hardly ever find pure hydrocarbon in their natural habitat. They love it so, I wouldn't be surprised if they let themselves be captured just to get it."

"How are they captured, by the way?"

"Why, when the seaweed trawlers gather up their seaweed, there are always V-frogs collected with it. Other animals, too."

Bigman was saying eagerly, "Hey, Lucky, let's you and I get one——"

He was interrupted by a pair of guards, who entered stiffly. Between them stood a lanky, blond young man.

Lucky sprang to his feet. "Lou! Lou, old man!" He held out his hand, smiling.

For a moment it seemed as though the other might respond. A flicker of joy rose to the newcomer's eyes.

It faded quickly. His arms remained stiffly and coldly at his side. He said flatly, "Hello, Starr."

Lucky's hand dropped reluctantly. He said, "I haven't seen you since we graduated." He paused. What could one say next to an old friend?

The blond councilman seemed aware of the incongruity of the situation. Nodding curtly to the flanking guards, he said with macabre humor, "There've been some changes made since then." Then, with

a spasmodic tightening of his thin lips, he went on, "Why did you come? Why didn't you stay away? I asked you to."

"I can't stay away when a friend's in trouble, Lou."

"Wait till your help is asked for."

Morriss said, "I think you're wasting your time, Lucky. You're thinking of him as a councilman. I suggest that he's a renegade."

The plump Venusian said the word through clenched teeth, bringing it down like a lash. Evans reddened slowly but said nothing.

Lucky said, "I'll need proof to the last atom before I admit any such word in connection with Councilman Evans." His voice came down hard on the word "councilman."

Lucky sat down. For a long moment he regarded his friend soberly, and Evans looked away.

Lucky said, "Dr. Morriss, ask the guards to leave. I will be responsible for Evans's security."

Morriss lifted an eyebrow at Lucky, then after an instant's thought, gestured to the guards.

Lucky said, "If you don't mind, Bigman, just step into the next room, will you?"

Bigman nodded and left.

Lucky said gently, "Lou, there are only three of us here now. You, I, Dr. Morriss; that's all. Three men of the Council of Science. Suppose we start fresh. Did you remove classified data concerning yeast manufacture from their place in the files?"

Lou Evans said, "I did."

"Then you must have had a reason. What was it?"

"Now look. I stole the papers. I say *stole*. I admit that much. What more do you want? I had no reason for doing it. I just did it. Now drop it. Get away from me. Leave me alone." His lips were trembling.

Morriss said, "You wanted to hear his defense, Lucky. That's it. He has none."

Lucky said, "I suppose you know that there was an accident inside the yeast plants, shortly after you took those papers, involving just the strain of yeast the papers dealt with."

"I know all that," said Evans.

"How do you explain it?"

"I have no explanation."

Lucky was watching Evans closely, searching for some sign of the good-natured, fun-loving, steel-nerved youth he remembered so well at the academy. Except for a new mustache, grown according to Venusian fashion, the man Lucky saw now resembled the memory

as far as mere physical appearance was concerned. The same long-boned limbs, the blond hair cut short, the angular, pointed chin, the flat-bellied, athletic body. But otherwise? Evans's eyes moved restlessly from spot to spot; his lips quivered dryly; his fingernails were bitten and ragged.

Lucky struggled with himself before he could put the next blunt question. It was a friend he was talking to, a man he had known well, a man whose loyalty he never had questioned, and on whose loyalty he would have staked his own life without thought.

He said, "Lou, have you sold out?"

Evans said in a dull, toneless voice, "No comment."

"Lou, I'm asking you again. First, I want you to know that I'm on your side no matter what you've done. If you've failed the Council, there must be a reason. Tell us that reason. If you've been drugged or forced, either physically or mentally, if you've been blackmailed or if someone close to you has been threatened, tell us. For Earth's sake, Lou, even if you've been tempted with offers of money or power, even if it's as crude as that, tell us. There's no error you can have made that can't be at least partially retrieved by frankness now. What about it?"

For a moment, Lou Evans seemed moved. His blue eyes lifted in pain to his friend's face. "Lucky," he began, "I——"

Then the softness in him seemed to die, and he cried, "No comment, Starr, no comment."

Morriss, arms folded, said, "That's it, Lucky. That's his attitude. Only he has information and we want it, and, by Venus, we'll get it one way or another."

Lucky said, "Wait——"

Morriss said, "We can't wait. Get that through your head. There is no time. No time at all. These so-called accidents have been getting more serious as they get closer to their objective. We need to break this thing *now*." And his pudgy fist slammed down on the arm of his chair, just as the communo shrilled its signal.

Morriss frowned. "Emergency signal! What in space——"

He flicked the circuit open, put the receiver to his ear.

"Morriss speaking. What is it? . . . *What?* . . . *WHAT?*"

He let the receiver fall, and his face, as it turned toward Lucky, was a doughy, unhealthy white.

"There's a hypnotized man at lock number twenty-three," he choked out.



Lucky's lithe body tightened like a steel spring. "What do you mean by 'lock'? Are you referring to the dome?"

Morriss nodded and managed to say, "I said the accidents are getting more serious. This time, the sea dome. The man may—at any moment—let the ocean into—Aphrodite!"

# 5

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## “Beware Water!”

From the speeding gyrocar, Lucky caught glimpses of the mighty dome overhead. A city built under water, he reflected, requires engineering miracles to be practical.

There were domed cities in many places in the solar system. The oldest and most famous were on Mars. But on Mars, gravity was only two fifths of Earth normal, and pressing down on the Martian domes was only a rarefied, wispy atmosphere.

Here on Venus, gravity was five sixths Earth normal, and the Venusian domes were topped with water. Even though the domes were built in shallow sea so that their tops nearly broke surface at low tide, it was still a matter of supporting millions of tons of water.

Lucky, like most Earthmen (and Venusians, too, for that matter), tended to take such achievements of mankind for granted. But now, with Lou Evans returned to confinement and the problem involving him momentarily dismissed, Lucky's agile mind was putting thoughts together and craving knowledge on this new matter.

He said, “How is the dome supported, Dr. Morriss?”

The fat Venusian had recovered some of his composure. The gyrocar he was driving hurtled toward the threatened sector. His words were still tight and grim.

He said, “Diamagnetic force fields in steel housings. It looks as though steel beams are supporting the dome, but that's not so. Steel just isn't strong enough. It's the force fields that do it.”

Lucky looked down at the city streets below, filled with people and life. He said, “Have there ever been any accidents of this type before?”

Morriss groaned, "Great space, not like this. . . . We'll be there in five minutes."

"Are any precautions taken against accidents?" Lucky went on stolidly.

"Of course there are. We have a system of alarms and automatic field adjusters that are as foolproof as we can manage. And the whole city is built in segments. Any local failure in the dome brings down sections of transite, backed by subsidiary fields."

"Then the city won't be destroyed, even if the ocean is let in. Is that right? And this is well known to the populations?"

"Certainly. The people know they're protected, but still, man, a good part of the city will be ruined. There's bound to be some loss of life, and property damage will be terrific. Worse still, if men can be controlled into doing this once, they can be controlled into doing it again."

Bigman, the third man in the gyrocar, stared anxiously at Lucky. The tall Earthman was abstracted, and his brows were knit into a hard frown.

Then Morriss grunted, "Here we are!" The car decelerated rapidly to a jarring halt.

Bigman's watch said two-fifteen, but that meant nothing. Venus's night was eighteen hours long, and here under the dome there was neither day or night.

Artificial lights blossomed now as they always did. Buildings loomed clearly as always. If the city seemed different in any way, it was in the actions of its inhabitants. They were swirling out of the various sections of the city. News of the crisis had spread by the mysterious magic of word of mouth, and they were flocking to see the sight, morbidly curious, as though going to a show or a circus parade, or as men on Earth would flock for seats at a magnetonic concert.

Police held back the rumbling crowds and beat out a path for Morriss and the two with him. Already a thick partition of cloudy transite had moved down, blocking off the section of the city that was threatened by deluge.

Morriss shepherded Lucky and Bigman through a large door. The noise of the crowd muffled and faded behind them. Inside the building a man stepped hastily toward Morriss.

"Dr. Morriss——" he began.

Morriss looked up and snapped out hasty introductions. "Lyman Turner, chief engineer. David Starr of the Council. Bigman Jones."

Then, at some signal from another part of the room, he dashed off, his heavy body making surprising speed. He called out over his shoulder as he started, "Turner will take care of you two."

Turner yelled, "Just a minute, Dr. Morriss!" but the yell went unheard.

Lucky gestured to Bigman, and the little Martian raced after the Venusian councilman.

"Is he going to bring Dr. Morriss back?" asked Turner worriedly, stroking a rectangular box he carried suspended from a strap over one shoulder. He had a gaunt face and red-brown hair, a prominently hooked nose, a scattering of freckles, and a wide mouth. There was trouble in his face.

"No," said Lucky. "Morriss may be needed out there. I just gave my friend the high sign to stick closely to him."

"I don't know what good that will do," muttered the engineer. "I don't know what good anything will do." He put a cigarette to his mouth and absently held one out to Lucky. Lucky's refusal went unnoticed for a few moments, and Turner stood there, holding the plastic container of smokes at arm's length, lost in a thoughtful world of his own.

Lucky said, "They're evacuating the threatened sector, I suppose?"

Turner took back his cigarettes with a start, then puffed strongly at the one between his lips. He dropped it and pressed it out with the sole of his shoe.

"They are," he said, "but I don't know . . ." and his voice faded out.

Lucky said, "The partition is safely across the city, isn't it?"

"Yes, yes," muttered the engineer.

Lucky waited a moment, then said, "But you're not satisfied. What is it you were trying to tell Dr. Morriss?"

The engineer looked hastily at Lucky, hitched at the black box he carried and said, "Nothing. Forget it."

They were off by themselves in a corner of the room. Men were entering now, dressed in pressure suits with the helmets removed, mopping perspiring foreheads. Parts of sentences drifted to their ears:

"... not more than three thousand people left. We're using all the interlocks now . . ."

"... can't get to him. Tried everything. His wife is on the etherics now, pleading with him . . ."

"Damn it, he's got the lever in his hand. All he has to do is pull it and we're . . ."

"If we could only get close enough to blast him down! If we were only sure he wouldn't see us first and . . ."

Turner seemed to listen to all of it with a grisly fascination, but he remained in the corner. He lit another cigarette and ground it out.

He burst out savagely, "Look at that crowd out there. It's fun to them. Excitement! I don't know what to do. I tell you, I don't." He hitched the black box he carried into a more comfortable position and held it close.

"What is that?" asked Lucky peremptorily.

Turner looked down, stared at the box as though he were seeing it for the first time, then said, "It's my computer. A special portable model I designed myself." For a moment pride drowned the worry in his voice. "There's not another one in the galaxy like it. I always carry it around. That's how I know——" And he stopped again.

Lucky said in a hard voice, "All right, Turner, what do you know? I want you to start talking. Now!"

The young councilman's hand came lightly to rest upon the engineer's shoulder, and then his grip began to tighten just a bit.

Turner looked up, startled, and the other's calm, brown eyes held him. "What's your name again?" he said.

"I'm David Starr."

Turner's eyes brightened. "The man they call 'Lucky' Starr?"

"That's right."

"All right, then, I'll tell you, but I can't talk loudly. It's dangerous."

He began whispering, and Lucky's head bent toward him. Both were completely disregarded by the busily hurrying men who entered and left the room.

Turner's low words flooded out now as though he were glad to be able to get rid of them. He said, "The walls of the city dome are double, see. Each wall is made of transite, which is the toughest, strongest silicone plastic known to science. And it's backed by force beams. It can stand immense pressures. It's completely insoluble. It doesn't etch. No form of life will grow on it. It won't change chemically as a result of anything in the Venusian ocean. In between the two parts of the double wall is compressed carbon dioxide. That serves to break the shock wave if the outer wall should give way, and of course the inner wall is strong enough to hold the water by itself. Finally, there's a honeycomb of partitions between the walls so that only small portions of the in-between will be flooded in case of any break."

"It's an elaborate system," said Lucky.

"Too elaborate," said Turner bitterly. "An earthquake, or a Venusquake, rather, might split the dome in two, but nothing else can touch it. And there are no Venusquakes in this part of the planet." He stopped to light still another cigarette. His hands were trembling. "What's more, every square foot of the dome is wired to instruments that continually measure the humidity between the walls. The slightest crack anywhere and the needles of those instruments jump. Even if the crack is microscopic and completely invisible, they jump. Then bells ring and sirens sound. Everyone yells, 'Beware water!'"

He grinned crookedly. "Beware water! That's a laugh. I've been on the job ten years, and in all that time the instruments registered only five times. In every case repairs took less than an hour. You pin a diving bell on the affected part of the dome, pump out the water, fuse the transite, add another gob of the stuff, let it cool. After that, the dome is stronger than before. Beware water! We've never had even a drop leak through."

Lucky said, "I get the picture. Now get to the point."

"The point is overconfidence, Mr. Starr. We've partitioned off the dangerous sector, but how strong is the partition? We always counted on the outer wall's going gradually, springing a small leak. The water would trickle in, and we always knew that we would have plenty of time to get ready for it. No one ever thought that someday a lock might be opened wide. The water will come in like a fat steel bar moving a mile a second. It will hit the sectional transite barrier like a spaceship at full acceleration."

"You mean it won't hold?"

"I mean no one has ever worked out the problem. No one has ever computed the forces involved—until half an hour ago. Then I did, just to occupy my time while all this is going on. I had my computer. I always have it with me. So I made a few assumptions and went to work."

"And it won't hold?"

"I'm not certain. I don't know how good some of my assumptions are, but I think it won't hold. I think it won't. So what do we do? If the barrier doesn't hold, Aphrodite is done. The whole city. You and I and a quarter of a million people. Everybody. Those crowds outside that are so excited and thrilled are doomed once that man's hand pulls downward on the switch it holds."

Lucky was staring at the man with horror. "How long have you known this?"

The engineer blurted in immediate self-defense, "Half an hour. *But what can I do?* We can't put subsea suits on a quarter of a million

people! I was thinking of talking to Morriss and maybe getting some of the important people in town protected, or some of the women and children. I wouldn't know how to pick which ones to save, but maybe something should be done. What do you think?"

"I'm not sure."

The engineer went on, harrowed. "I thought maybe I could put on a suit and get out of here. Get out of the city altogether. There won't be proper guards at the exits at a time like this."

Lucky backed away from the quivering engineer, his eyes narrowed. "Great Galaxy! I've been blind!"

And he turned and dashed out of the room, his mind tingled with a desperate thought.

# 6

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## Too Late!

Bigman felt dizzily helpless in the confusion. Hanging as closely as he could to the coattails of the restless Morriss, he found himself trotting from group to group, listening to breathless conversations which he did not always understand because of his ignorance about Venus.

Morriss had no opportunity to rest. Each new minute brought a new man, a new report, a new decision. It was only twenty minutes since Bigman had run off after Morriss, and already a dozen plans had been proposed and discarded.

One man, just returned from the threatened sector, was saying with pounding breath, "They've got the spy rays trained on him, and we can make him out. He's just sitting with the lever in his hand. We beamed his wife's voice in at him through the etherics, then through the public-address system, then through loudspeaker from outside. I don't think he hears her. At least he doesn't move."

Bigman bit his lip. What would Lucky do if he were here? The first thought that had occurred to Bigman was to get behind the man—Poppnoe, his name was—and shoot him down. But that was the first thought everyone had had, and it had been instantly discarded. The man at the lever had closed himself off, and the dome-control chambers were carefully designed to prevent any form of tampering. Each entrance was thoroughly wired, the alarms being internally powered. That precaution was now working in reverse—to Aphrodite's peril rather than its protection.

At the first clang, at the first signal gleam, Bigman was sure, the lever would be driven home and Venus's ocean would charge inward



upon Aphrodite. It could not be risked while evacuation was incomplete.

Someone had suggested poison gas, but Morriss had shaken his head without explanations. Bigman thought he knew what the Venusian must be thinking. The man at the lever was not sick or mad or malevolent, but under mental control. That fact meant that there were two enemies. The man at the lever, considered by himself, might weaken from the gas past the point where he would be physically capable of pulling the lever, but before that the weakening would be reflected in his mind, and the men in control would work their tool's arm muscles quickly enough.

"What are they waiting for, anyway?" growled Morriss under his breath, while the perspiration rolled down his cheeks in streams. "If I could only train an atom cannon at the spot."

Bigman knew why that was impossible, too. An atom cannon trained to hit the man from the closest approach possible would require enough power to go through a quarter mile of architecture and would damage the dome enough to bring on the very danger they were trying to avoid.

He thought, Where *is* Lucky, anyway? Aloud he said, "If you can't get this fellow, what about the controls?"

"What do you mean?" said Morriss.

"I mean, gimmick the lever. It takes power to open the lock, doesn't it? What if the power is cut?"

"Nice thought, Bigman. But each lock has its own emergency power generator on the spot."

"Can't it be closed off from anywhere?"

"How? He's closed off in there, with every cubic foot set off with alarms."

Bigman looked up and, in vision, seemed to see the mighty ocean that covered them. He said, "This is a closed-in city, like on Mars. We've got to pump air all over. Don't you do that, too?"

Morriss brought a handkerchief to his forehead and wiped it slowly. He stared at the little Martian. "The ventilating ducts?"

"Yes. There's got to be one to that place with the lock, doesn't there?"

"Of course."

"And isn't there someplace along the line where a wire can be wrenched loose or cut or *something*?"

"Wait a while. A microbomb shoved along the duct, instead of the poison gas we were talking about——"

"That's not sure enough," said Bigman impatiently. "Send a man.

You need big ducts for an underwater city, don't you? Won't they hold a man?"

"They're not as big as all that," said Morriss.

Bigman swallowed painfully. It cost him a great deal to make the next statement. "I'm not as big as all that, either. Maybe I'll fit."

And Morriss, staring down wide-eyed at the pint-size Martian, said, "Venus! You might. You might! Come with me!"

From the appearance of the streets of Aphrodite, it seemed as though not a man or woman or child in the city was sleeping. Just outside the transite partition and surrounding the "rescue headquarters" building, people choked every avenue and turned them into black masses of chattering humanity. Chains had been set up, and behind them policemen with stunguns paced restlessly.

Lucky, having emerged from rescue headquarters at what amounted to a dead run, was brought up sharply by those chains. A hundred impressions burst in on him. There was a brilliant sign in lucite curlicues, set high in Aphrodite's sky with no visible support. It turned slowly and said: APHRODITE, BEAUTY SPOT OF VENUS, WELCOMES YOU.

Close by, a line of men were moving on in file. They were carrying odd objects—stuffed brief cases, jewel boxes, clothes slung over their arms. One by one, they were climbing into skimmers. It was obvious who and what they were: escapees from within the threatened zone, passing through the lock with whatever they could carry that seemed most important to them. The evacuation was obviously well under way. There were no women and children in the line.

Lucky shouted to a passing policeman, "Is there a skimmer I can use?"

The policeman looked up. "No, sir, all being used."

Lucky said impatiently, "Council business."

"Can't help it. Every skimmer in town is being used for those guys." His thumb jerked toward the moving file of men in the middle distance.

"It's important. I've got to get out of here."

"Then you'll have to walk," said the policeman.

Lucky gritted his teeth with vexation. There was no way of getting through the crowd on foot or on wheels. It had to be by air and it had to be *now*.

"Isn't there anything available I can use? Anything?" He was scarcely speaking to the policeman, more to his own impatient self, angry at having been so simply duped by the enemy.

But the policeman answered wryly, "Unless you want to use a hopper."

"A hopper? Where?" Lucky's eyes blazed.

"I was just joking," said the policeman.

"But *I'm* not. Where's the hopper?"

There were several in the basement of the building they had left. They were disassembled. Four men were impressed to help and the best-looking machine was assembled in the open. The nearest of the crowd watched curiously, and a few shouted jocularly, "Jump it, hopper!"

It was the old cry of the hopper races. Five years ago it had been a fad that had swept the solar system: races over broken, barrier-strewn courses. While the craze lasted, Venus was most enthusiastic. Probably half the houses in Aphrodite had had hoppers in the basement.

Lucky checked the micropile. It was active. He started the motor and set the gyroscope spinning. The hopper straightened immediately and stood stiffly upright on its single leg.

Hoppers are probably the most grotesque forms of transportation ever invented. They consist of a curved body, just large enough to hold a man at the controls. There was a four-bladed rotor above and a single metal leg, rubber-tipped, below. It looked like some giant wading bird gone to sleep with one leg folded under its body.

Lucky touched the leap knob and the hopper's leg retracted. Its body sank till it was scarcely seven feet from the ground while the leg moved up into the hollow tube that pierced the hopper just behind the control panel. The leg was released at the moment of maximum retraction with a loud click, and the hopper sprang thirty feet into the air.

The rotating blades above the hopper kept it hovering for long seconds at the top of its jump. For those seconds, Lucky could get a view of the people now immediately below him. The crowd extended outward for half a mile, and that meant several hops. Lucky's lips tightened. Precious minutes would vanish.

The hopper was coming down now, its long leg extended. The crowd beneath the descending hopper tried to scatter, but they didn't have to. Four jets of compressed air blew men aside just sufficiently, and the leg hurtled down harmlessly to the ground.

The foot hit concrete and retracted. For a flash Lucky could see the startled faces of the people about him, and then the hopper was moving up again.

Lucky had to admit the excitement of hopper racing. As a young-

ster, he'd participated in several. The expert "hop rider" could twist his curious mount in unbelievable patterns, finding leg room where none seemed to exist. Here, in the domed cities of Venus, the races must have been tame compared to the bonebreakers in the vast, open arenas of rocky, broken ground on Earth.

In four hops Lucky had cleared the crowd. He cut the motors, and in a series of small, dribbling jumps the hopper came to a halt. Lucky leaped out. Air travel might still be impossible, but now he could commandeer some form of groundcar.

But more time would be lost.

Bigman panted and paused for a moment to get his breath. Things had happened quickly; he had been rushed along in a tide that was still whirling him onward.

Twenty minutes before, he had made his suggestion to Morriss. Now he was enclosed in a tube that tightened about his body and drenched him with darkness.

He inched along on his elbows again, working his way deeper. Momentarily he would stop to use the small flash whose pinpoint illumination showed him milky walls ahead, narrowing to nothing. In one sleeve, against his wrist, he held a hastily scrawled diagram.

Morriss had shaken his hand before Bigman had half-clambered, half-jumped, into the opening at one side of a pumping station. The rotors of the huge fan had been stilled, the air currents stopped.

Morriss had muttered, "I hope *that* doesn't set him off," and then he had shaken hands.

Bigman had grinned back after a fashion, and then he crawled his way into the darkness while the others left. No one felt it necessary to mention the obvious. Bigman was going to be on the wrong side of the transite barrier, the side from which the others were now retreating. If, at any time, the lever at the dome lock plunged down, the incoming water would crush the duct and the walls through which it ran as though they were all so much cardboard.

Bigman wondered, as he squirmed onward, whether he would hear a roar first, whether the surging water would make any hint of its presence known before striking him. He hoped not. He wanted not even a second of waiting. If the water came in, he wanted its work done quickly.

He felt the wall begin to curve. He stopped to consult his map, his small flash lighting the space about him with a cool gleam. It was the second curve shown in the map they had drawn for him, and now the duct would curve upward.

Bigman worked himself over to his side and bent around the curve to the damage of his temper and the bruising of his flesh.

"Sands of Mars!" he muttered. His thigh muscles ached as he forced his knees against either side of the duct to keep himself from slipping downward again. Inch by inch he clawed his way up the gentle slope.

Morriss had copied the map off the hieroglyphic charts held up before a visiphone transmitter in the Public Works Department of Aphrodite. He had followed the curving colored lines, asked for an interpretation of the markings and symbols.

Bigman reached one of the reinforcing struts that stretched diagonally across the duct. He almost welcomed it as something he could seize, close his hands about, use to take some of the pressure off his aching elbows and knees. He pressed his map back up his sleeve and held the strut with his left hand. His right hand turned his small flash end for end and placed the butt against one end of the strut.

The energy of the enclosed micropile, which ordinarily fed electricity through the small bulb of the flash and turned it into cold light, could also, at another setting of the control, set up a short-range force field through its opposite end. That force field would slice instantaneously through anything composed of mere matter that stood in its way. Bigman set that control and knew that one end of the strut now hung loose.

He switched hands. He worked his slicer to the other end of the strut. Another touch, and it was gone. The strut was loose in his fingers. Bigman worked it past his body, down to his feet, and let it go. It slid and clattered down the duct.

The water still held off. Bigman, panting and squirming, was distantly aware of that. He passed two more struts, another curve. Then the slope leveled off, and finally he reached a set of baffles plainly marked on the map. In all, the ground he had covered was probably less than two hundred yards, but how much time had it taken him?

And still the water held off.

The baffles, blades jutting alternately from either side of the duct to keep the air stream turbulent, were the last landmark. He sliced off each blade with a rapid sweep of his flash butt, and now he had to measure nine feet from the farthest blade. Again he used his flash. It was six inches long and he would have to lay it along the wall, end over end, eighteen times.

Twice it slipped, and twice he had to turn back to the slightly

ragged marking of the last sheared baffle blade, scrambling backward and swearing "Sands of Mars!" in a whisper.

The third time the eighteenth measure landed truly. Bigman kept his finger on the spot. Morriss had said the desired place would be almost directly over his head. Bigman turned on his flash, ran his finger along the curved inner surface of the duct, twisted on to his back.

Using his slicer end and holding it, as nearly as he could judge in the dark, some quarter of an inch from actual contact (the force field must not slice in too far), he made a circle with it. Cleaved metal fell on him, and he pushed it to one side.

He turned his flash on the exposed wiring and studied it. Inches farther in would be the interior of a room not a hundred feet from where the man sat at the lock. Was he still sitting there? Obviously, he had not yet pulled the lever (what was he waiting for?) or Bigman would now be very water-logged, very dead. Had he been stopped then, somehow? Taken into custody, perhaps?

A wry grin forced itself onto Bigman's face as he thought that perhaps he was squirming through the interior of a metal worm for nothing.

He was following the wiring. Somewhere here should be a relay. Gently he pulled at the wires, first one, then another. One moved and a small, black, double cone came into view. Bigman sighed his relief. He gripped the flash with his teeth, freeing both hands.

Gingerly, very gingerly, he twisted the two halves of the cone in opposite directions. The magnoclasps yielded, and the two halves moved apart, exposing the contents. They consisted of a break relay: two gleaming contacts, one encased in its field selector and separated from the other by a nearly imperceptible gap. At an appropriate stimulus, such as the pulling of a small lever, the field selector set up the energies that would pull down the other contact, send energy streaming across the point of closure, and open a lock in the dome. It would all happen in a millionth of a second.

Bigman, sweating and half-expecting the final moment to come now, *now*, with his task a second from completion, fumbled in his vest pocket and withdrew a lump of insulating plastic. It was already soft from the warmth of his body. He kneaded it a moment and then brought it down delicately upon the point where the two contacts nearly met. He held it there while he counted three, then withdrew it.

The contacts might close now, but between them there would be

a thin film of this plastic, and through it the flow of current could not pass.

The lever could be pulled now: the lock would not open.

Laughing, Bigman scrambled backward, made his way over the remnants of the baffle, passed the struts he had cut away, slid down the slopes . . .

Bigman searched desperately for Lucky through the confusion that now flooded all the city. The man at the lever was in custody, the transite barrier had been lifted, and the population was flooding back (angry, for the most part, at the city administration for allowing the whole thing to happen) into the homes they had abandoned. To the crowds who had so ghoulishly waited for disaster, the removal of fear was the signal for a high holiday.

At the end Morriss appeared from nowhere and placed a hand on Bigman's sleeve. "Lucky's calling."

Bigman, startled, said, "Where from?"

"From my room in the Council offices. I've told him what you've done."

Bigman flushed with pleasure. Lucky would be proud! He said, "I want to talk to him."

But Lucky's face on the screen was grim. He said, "Congratulations, Bigman, I hear you were terrific."

"It was nothing," grinned Bigman. "But where've you been?"

Lucky said, "Is Dr. Morriss there? I don't see him."

Morriss squeezed his face into the viewer. "Here I am."

"You've captured the man at the lever, according to the news I hear."

"We did. We absolutely did, thanks to Bigman," said Morriss.

"Then let me make a guess. When you closed in on him, he did not try to pull the lever. He simply gave himself up."

"Yes," said Morriss, frowning. "But what makes you guess that?"

"Because the whole incident at the lock was a smoke screen. The real damage was slated to happen at this end. When I realized that, I left. I tried to come back here. I had to use a hopper to get through the crowd and a groundcar the rest of the way."

"And?" asked Morriss anxiously.

"And I was too late!" said Lucky.

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## Questions

The day was over. The crowd had dispersed. The city had taken on a quiet, almost sleepy atmosphere, with only an occasional knot of two or three still discussing the events of the past several hours.

And Bigman was annoyed.

With Morriss he had left the scene of the recent danger and zoomed out to Council headquarters. There Morriss had had his conference with Lucky, a conference to which Bigman was not allowed entry and from which the Venusian had emerged looking grimly angry. Lucky remained calm but uncommunicative.

Even when they were alone again, Lucky said merely, "Let's get back to the hotel. I need sleep, and so do you after your own little game today."

He hummed the Council March under his breath, as he always did when he was completely abstracted, and signaled a passing toll-car. The car stopped automatically when the sight of his outstretched hand with fingers spread wide registered on its photoelectric scanners.

Lucky pushed Bigman in before him. He turned the dials to indicate the co-ordinate position of the Hotel Bellevue-Aphrodite, put in the proper combination of coins, and let the machine's computer take over. With his foot he adjusted the speed lever to low.

The tollcar drifted forward with a pleasantly smooth motion. Bigman would have found it both comforting and restful if he had been in a less itchyly curious state of mind.

The little Martian flicked a glance at his large friend. Lucky seemed interested only in rest and thought. At least he leaned back on the upholstery and closed his eyes, letting the motion rock him while the hotel seemed to approach and then become a large mouth,



which swallowed them as the tollcar automatically found the entrance to the receiving dock of the hotel's garage.

Only when they were in their own room did Bigman reach the point of explosion. He cried, "Lucky, what's it all about? I'm going nuts trying to figure it out."

Lucky stripped off his shirt and said, "Actually, it's only a matter of logic. What kind of accidents occurred as a result of men's being mentally dominated before today? What kind did Morriss mention? A man giving away money. A man dropping a bale of weed. A man placing poison in a nutrient mixture for yeast. In each case, the action was a small one, but it was an *action*. It was something *done*."

"Well?" said Bigman.

"All right, what did we have today? It wasn't something small at all; it was something big. But it wasn't action. It was exactly the opposite of action: A man put his hand on a dome-lock lever and then did nothing. Nothing!"

Lucky vanished into the bathroom and Bigman could hear the needle shower and Lucky's muffled gasps under its invigorating jets. Bigman followed at last, muttering savagely under his breath.

"Hey," he yelled.

Lucky, his muscled body drying in churning puffs of warm air, said, "Don't you get it?"

"Space, Lucky, don't be mysterious, will you? You know I hate that."

"But there's nothing mysterious. The mentalists have changed their entire style, and there must be a reason. Don't you see the reason for having a man sit at a dome-lock lever and do nothing?"

"I said I didn't."

"Well, what *was* accomplished by it?"

"Nothing."

"Nothing? Great galaxy! Nothing? They only get half the population of Aphrodite and practically every official out to the threatened sector in double-speed time. They get me out there and you and Morriss. Most of the city was left bare, including Council headquarters. And I was such a lunk that it was only when Turner, the city's chief engineer, mentioned how easy it would be to get out of the city with the police force disrupted that it occurred to me what was happening."

"I still don't see it. So help me, Lucky, I'm going to——"

"Hold it, boy," Lucky seized Bigman's threatening fists in one large palm. "Here it is: I got back to Council headquarters as fast as possible and found that Lou Evans had already gone."

"Where did they take him?"

"If you mean the Council, they didn't take him anywhere. He escaped. He knocked down a guard, seized a weapon, used his Council wrist-mark to get a subship and escaped to sea."

"Was *that* what they were really after?"

"Obviously. The threat to the city was strictly a feint. As soon as Evans was safely out into the ocean, the man at the lock was released from control and, naturally, he surrendered."

Bigman's mouth worked. "Sands of Mars! All that stuff in the ventilating duct was for nothing. I was fifty kinds of clobbered fool."

"No, Bigman, you weren't," said Lucky, gravely. "You did a good job, a terrific job, and the Council is going to hear about it."

The little Martian flushed, and for a moment pride left no room in him for anything else. Lucky took the opportunity to get into bed.

Then Bigman said, "But Lucky, that means—— I mean, if Councilman Evans got away by a trick of the mentalists, then he's guilty, isn't he?"

"No," said Lucky vehemently, "he *isn't*."

Bigman waited, but Lucky had nothing more to say on the subject and instinct told Bigman to let the matter die. It was only after he had burrowed into the cool plastex sheets, having undressed and washed in his turn, that he tried again.

"Lucky?"

"Yes, Bigman."

"What do we do next?"

"Go after Lou Evans."

"*We* do? What about Morriss?"

"I'm in charge of the project now. I had Chief Councilman Conway put that across all the way from Earth."

Bigman nodded in the darkness. That explained why he himself had not been able to attend the conference. Friend though he might be of Lucky Starr a dozen times over, he was not a member of the Council of Science. And, in a situation where Lucky would have to move in over a fellow councilman's head and call in the authority of Earth and central headquarters to back him, non-councilmen were strictly not wanted as witnesses.

But now the old lust for action was beginning to stir in him. It would be into an ocean now, the vastest, most alien ocean on the inner planets. He said excitedly, "How early do we leave?"

"As soon as the ship they're outfitting is ready. Only first we see Turner."

"The engineer? What for?"

"I have the records on the men involved in the various mentalist incidents in the city up to today, and I want to know about the man at the lock dome, too. Turner is the man who's likely to know most about him. But before we see Turner——"

"Yes?"

"Before that, you Martian peanut, we sleep. Now shut up."

Turner's dwelling place turned out to be a rather large apartment house that seemed suited for people high in the administrative scheme of things. Bigman whistled softly when they passed into the lobby, with its paneled walls and trimensional seascapes. Lucky led the way into a trundle and pressed Turner's apartment number.

The trundle lifted them five floors, then took to the horizontal, skittering along on directed force beams and stopping outside the back entrance to Turner's apartment. They stepped out, and the trundle went off with a whirr, disappearing behind a turn in the corridor.

Bigman watched it wonderingly. "Say, I never saw one of those before."

"It's a Venusian invention," said Lucky. "They're introducing them into new apartment houses on Earth now. You can't do anything about the old apartment houses, though, unless you redesign the building to give each apartment a special trundle-served entrance."

Lucky touched the indicator, which promptly turned red. The door opened, and a woman looked out at them. She was slight of build, young and quite pretty, with blue eyes and blond hair drawn softly backward and over her ears in the Venusian fashion.

"Mr. Starr?"

"That's right, Mrs. Turner," said Lucky. He hesitated a trifle over the title; she was almost too young to be a housewife.

But she smiled at them in friendly fashion. "Won't you come in? My husband's expecting you, but he hasn't had more than two hours' sleep and he's not quite——"

They stepped in, and the door closed behind them.

Lucky said, "Sorry to have to trouble you so early, but it's an emergency, and I doubt that we'll bother Mr. Turner long."

"Oh, that's all right. I understand." She stepped fussily about the room, straightening objects that required no straightening.

Bigman looked about curiously. The apartment was completely feminine—colorful, frilly, almost fragile. Then, embarrassed to find his hostess's eyes upon him, he said clumsily, "It's a very nice place you have here, miss—uh—ma'am."

She dimpled and said, "Thank you. I don't think Lyman is very

fond of the way I have it arranged, but he never objects, and I just love little doodads and whatnots. Don't you?"

Lucky spared Bigman the necessity of answering by saying, "Have you and Mr. Turner been living here very long?"

"Just since we got married. Less than a year. It's a darling apartment house, just about the nicest in Aphrodite. It's got completely independent utilities, its own coaster garage, a central communo. It even has chambers underneath. Imagine! Chambers! Not that anyone ever uses them. Even last night. At least I think no one did, but I can't say, because I just slept right through all the excitement. Can you imagine? I didn't even hear about it till Lyman came home."

"Perhaps that was best," said Lucky. "You missed a fright."

"I missed excitement, you mean," she protested. "Everyone in the apartment was out in the thick of it, and I slept. Slept all through it. No one woke me. I think that was terrible."

"What was terrible?" came a new voice, and Lyman Turner stepped into the room. His hair was ruffled; there were creases on his homely face and sleep in his eyes. He had his precious computer under his arm and put it down under the chair when he sat down.

"My missing the excitement," said his young wife. "How are you, Lyman?"

"All right, considering. And never mind missing the excitement. I'm glad you did. . . . Hello, Starr. Sorry to delay you."

"I've only been here a few moments," said Lucky.

Mrs. Turner flew to her husband and pecked quickly at his cheek. "I'd better leave you men alone now."

Turner patted his wife's shoulder, and his eyes followed her affectionately as she left. He said, "Well, gentlemen, sorry you find me as you do, but I've had a rough time of it in the last few hours."

"I quite realize that. What's the situation with the dome now?"

Turner rubbed his eyes. "We're doubling the men at each lock, and we're making the controls a little less self-contained. That rather reverses the engineering trend of the last century. We're running power lines to various spots in the city so that we can shut the power off from a distance just in case any such thing ever happens again. And, of course, we will strengthen the transite barriers shielding the different sections of the city. . . . Does either of you smoke?"

"No," said Lucky, and Bigman shook his head.

Turner said, "Well, would you toss me a smoke from the dispenser, the thing that looks like a fish? That's right. It's one of my wife's notions. There's no holding her back when it comes to getting

these ridiculous gadgets, but she enjoys it." He flushed a little. "I haven't been married long, and I still pamper her, I'm afraid."

Lucky looked curiously at the odd fish, carved out of a stonelike, green material, from whose mouth a lighted cigarette had appeared when he pressed a dorsal fin.

Turner seemed to relax as he smoked. His legs crossed, and one foot moved back and forth in slow rhythm over his computer case.

Lucky said, "Anything new on the man who started it all? The man at the lock?"

"He's under observation. A madman, obviously."

"Does he have a record of mental imbalance?"

"Not at all. It was one of the things I checked into. As chief engineer, you know, the dome personnel are under me."

"I know. It's why I came here to you."

"Well, I wish I could help, but the man was just an ordinary employee. He's been on our rolls for some seven months and never gave any trouble before. In fact, he had an excellent record; quiet, unassuming, diligent."

"Only seven months?"

"That's right."

"Is he an engineer?"

"He has a rating as engineer, but actually his work consisted largely of standing guard at the lock. After all, traffic passes in and out of the city. The lock must be opened and closed, bills of lading checked, records kept. There's a lot more to managing the dome than just engineering."

"Did he have any actual engineering experience?"

"Just an elementary college course. This was his first job. He's quite a young man."

Lucky nodded. He said casually, "I understand there have been a whole series of queer accidents in the city lately."

"Have there?" Turner's weary eyes stared at Lucky, and he shrugged. "I rarely get a chance to look at the news-etheric tapes."

The communo buzzed. Turner lifted it and held it to his ear for a moment. "It's for you, Starr."

Lucky nodded. "I left word I'd be here." He took the communo but did not bother to activate the screen or to raise the sound above the ear-contact stage. He said, "Starr at this end."

Then he put it down and stood up. "We'll be going now, Turner."

Turner rose, too. "All right. If I can help you in the future, call on me any time."

"Thank you. Give our respects to your wife, will you?"

Outside the building Bigman said, "What's up?"

"Our ship is ready," said Lucky, flagging down a groundcar.

They got in, and again Bigman broke the silence. "Did you find out anything from Turner?"

"A thing or two," said Lucky curtly.

Bigman stirred uneasily and changed the subject. "I hope we find Evans."

"I hope so, too."

"Sands of Mars, he's in a spot. The more I think of it, the worse it seems. Guilty or not, it's rough having a request for removal on grounds of corruption sent in by a superior officer."

Lucky's head turned and he looked down at Bigman. "Morriss never sent any report on Evans to central headquarters. I thought you understood that from yesterday's conversation with him."

"He didn't?" said Bigman incredulously. "Then who did?"

"Great Galaxy!" said Lucky. "Surely it's obvious. Lou Evans sent that message himself, using Morriss's name."

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## Councilman Pursued!

Lucky handled the trim subsea craft with growing expertness as he learned the touch of the controls and began to get the feel of the sea about them.

The men who had turned the ship over to them had worriedly suggested a course of instruction as to its management, but Lucky had smiled and confined himself to a few questions while Bigman exclaimed with Bigmanian braggadocio, "There isn't anything that moves that Lucky and I can't handle." Braggadocio or not, it was very nearly true.

The ship, named the *Hilda*, drifted now with the engines cut off. It penetrated the inky blackness of the Venusian ocean with smooth ease. They were navigating blind. Not once had the ship's powerful beams been turned on. Radar, instead, plumbed the abyss ahead more delicately and more informatively than light possibly could.

Along with the radar pulses went the selected microwaves designed to attain maximum reflection from the metal alloy that formed the outer hull of a subship. Their range in the hundreds of miles, the microwaves plunged their probing fingers of energy this direction and that, seeking the particular design of metal that would send them careening back in their tracks.

So far, no reflecting message had come back, and the *Hilda* settled down in the ooze, half a mile of water above it, and motionless except for a slow rocking with the mighty sway of Venus's globe-girdling oceanic currents.

For the first hour Bigman had been scarcely aware of the microwaves and the object of their search. He had been lost in the spectacle to be seen from the portholes.

Venusian subsea life is phosphorescent, and the black ocean depths were dotted with colored lights thicker than the stars in space, larger, brighter, and most of all, *moving*. Bigman squashed his nose against the thick glass and stared, fascinated.

Some of the life forms were little round splotches, whose movement was a slow ripple. Others were darting lines. Still others were sea ribbons of the type Lucky and Bigman had seen in the Green Room.

Lucky joined him after a while. He said, "If I remember my xenozoology——"

"Your *what*?"

"That's the study of extraterrestrial animals, Bigman. I've just been looking through a book on Venusian life. I left it on your bunk in case you want to look at it."

"Never mind. I'll take it second hand from you."

"All right. We can start with those little objects. I think that represents a school of buttons."

"Buttons?" said Bigman. Then, "Sure, I see what you mean."

There were a whole series of yellow ovals of light moving across the black field visible through the porthole. Each had black markings on it in the form of two short parallel lines. They moved in brief spurts, settled down for a few moments, then moved again. The dozens in view all moved and rested simultaneously, so that Bigman had the queerly swimming sensation that the buttons weren't moving at all, but that every half minute or so the ship itself lurched.

Lucky said, "They're laying eggs, I think." He was silent for a long moment, then said, "Most of these things I can't make out. Wait! That must be a scarlet patch there. See it? The dark red thing with the irregular outline? It feeds on buttons. Watch it."

There was a scurrying among the yellow blotches of light as they became aware of the swooping predator, but a dozen buttons were blotted out by the angry red of the scarlet patch. Then the patch was the only source of light in the porthole's field of vision. On all sides of it, buttons had scattered away.

"The patch is shaped like a large pancake turned down at the edge," said Lucky, "according to the book. It's hardly anything but skin with a small brain in the center. It's only an inch thick. You can tear it through and through in a dozen places without bothering it. See how irregular the one we're watching is? Arrowfish probably chewed it up a bit."

The scarlet patch moved now, drifting out of sight. There was



little left where it had been except for one or two faint, dying glimmers of yellow. Little by little, buttons began moving back again.

Lucky said, "The scarlet patch just settles down to the bottom, holding on to the ooze with its edges and digesting and absorbing whatever it covers. There's another species called the orange patch which is a lot more aggressive. It can shoot a jet of water with enough force to stagger a man, even though it's only a foot wide and not much more than paper thin. The big ones are a lot worse."

"How big do they get?" asked Bigman.

"I haven't the slightest idea. The book says there are occasional reports of tremendous monsters—arrowfish a mile long, and patches that can cover Aphrodite City. No authentic cases, though."

"A mile long! I'll bet there aren't any authentic cases."

Lucky's eyebrows lifted. "It's not as impossible as all that. These things here are only shallow-water specimens. The Venusian ocean is up to ten miles deep in spots. There's room in it for a lot of things."

Bigman looked at him doubtfully. "Listen, you're trying to sell me a bale of space dust." He turned abruptly and moved away. "I think I'll look at the book after all."

The *Hilda* moved on and took a new position, while the microwaves shot out, searching and searching. Then again it moved. And again. Slowly Lucky was screening the underwater plateau on which the city of Aphrodite stood.

He waited grimly at the instruments. Somewhere down here his friend Lou Evans *must* be. Evans's ship could navigate neither air nor space, nor any ocean depth of more than two miles, so he *must* be confined to the relatively shallow waters of the Aphrodite plateau.

The first answering flash caught his eye even as he repeated the *must* to himself for the second time. The microwave feedback froze the direction finder in place, and the return pip was brightening the entire receiving field.

Bigman's hand was on Lucky's shoulder instantly. "That's it! That's it!"

"Maybe," said Lucky. "And maybe it's some other ship, or maybe it's only a wreck."

"Get its position, Lucky. Sands of Mars, get its position!"

"I'm doing it, boy, and we're moving."

Bigman could feel the acceleration, hear the churning of the propeller.

Lucky leaned closely over the radio transmitter and its unscram-

bler, and his voice was urgent. "Lou! Lou Evans! Lucky Starr at this end! Acknowledge signals! Lou! Lou Evans!"

Over and over again, the words pushed out along the ether. The returning microwave pip grew brighter as the distance between the two ships grew less.

No answer.

Bigman said, "That ship we're pipping isn't moving, Lucky. Maybe it *is* a wreck. If it were the councilman, he'd either answer or try to get away from us, wouldn't he?"

"Sh!" said Lucky. His words were quiet and urgent as he spoke into the transmitter: "Lou! There's no point in trying to hide. I know the truth. I know why you sent the message to Earth in Morriss's name asking for your own recall. And I know who you think the enemy is. Lou Evans! Acknowledge——"

The receiver crackled, static-ridden. Sounds came through the unscrambler and turned into intelligible words: "Stay away. If you know that, stay away!"

Lucky grinned his relief. Bigman whooped.

"You've got him," shouted the little Martian.

"We're coming in to get you," said Lucky into the transmitter. "Hold on. We'll lick it, you and I."

Words came back slowly, "You don't—understand—I'm trying to——" Then, almost in a shriek, "For Earth's sake, Lucky, stay away! Don't get any closer!"

No more came through. The *Hilda* bored toward the position of Evans's ship relentlessly. Lucky leaned back, frowning. He murmured, "If he's *that* afraid, why doesn't he run?"

Bigman didn't hear. He was saying jubilantly, "Terrific, Lucky. That was terrific the way you bluffed him into talking."

"I wasn't bluffing, Bigman," said Lucky, grimly. "I know the key fact involved in this whole mess. So would you, if you stopped to think about it."

Bigman said shakily, "What are you getting at?"

"Do you remember when Dr. Morriss and you and I entered the small room to wait for Lou Evans to be brought to us? Do you remember the first thing that happened?"

"No."

"You started laughing. You said I looked queer and deformed without a mustache. And I felt exactly the same way about you. I said so. Remember?"

"Oh, sure. I remember."

"Did it occur to you to wonder why that was? We'd been watch-

ing men with mustaches for hours. Why was it that the thought suddenly occurred to both of us at that particular time?"

"I don't know."

"Suppose the thought had occurred to someone else who had telepathic powers. Suppose the sensation of surprise flooded from his mind to ours."

"You mean the mentalist, or one of them, was in the room with us?"

"Wouldn't that explain it?"

"But it's impossible. Dr. Morriss was the only other man— Lucky! You don't mean Dr. Morriss!"

"Morriss had been staring at us for hours. Why should he be suddenly amazed at our not having mustaches?"

"Well, then, was someone hiding?"

"Not hiding," said Lucky. "There was one other living creature in the room, and it was in plain view."

"No," cried Bigman. "Oh, no." He burst into laughter. "Sands of Mars, you can't mean the V-frog?"

"Why not?" said Lucky calmly. "We're probably the first men without mustaches it ever saw. It was surprised."

"But it's impossible."

"Is it? They're all over the city. People collect them, feed them, love them. Now do they really love V-frogs? Or do the V-frogs inspire love by mental control so as to get themselves fed and taken care of?"

"Space, Lucky!" said Bigman. "There's nothing surprising about people liking them. They're cute. People don't have to be hypnotized into thinking that."

"Did you like them spontaneously, Bigman? Nothing made you?"

"I'm sure nothing *made* me like them. I just liked them."

"You just liked them? Two minutes after you saw your first V-frog, you fed it. Remember that?"

"Nothing wrong with that, is there?"

"Ah, but what did you feed it?"

"What it liked. Peas dipped in axle grease——" The little fellow's voice faded out.

"Exactly. That grease *smelled* like axle grease. There was no mistaking what it was. How did you come to dip the pea in it? Do you always feed axle grease to pet animals? Did you ever know any animal that ate axle grease?"

"Sands of Mars!" said Bigman weakly.

"Isn't it obvious that the V-frog wanted some, and that since you

were handy it maneuvered you into delivering some—that you weren't quite your own master?"

Bigman muttered. "I never guessed. But it's so clear when you explain it. I feel terrible."

"Why?"

"It's a hateful thing, having an animal's thoughts rolling around inside your head. It seems unsanitary." His puckish little face screwed up in an expression of revulsion.

Lucky said, "Unfortunately, it's worse than unsanitary."

He turned back to the instruments.

The interval between pip and return disclosed the distance between the two ships to be less than half a mile when, with surprising suddenness, the radar screen showed, unmistakably, the shadow of Evans's ship.

Lucky's voice went out over the transmitter. "Evans, you're in sight now. Can you move? Is your ship disabled?"

The answer came back clearly in a voice torn with emotion. "Earth help me, Lucky, I did my best to warn you. You're trapped! Trapped as I'm trapped."

And as though to punctuate the councilman's wail, a blast of force struck the subship *Hilda*, knocking it to one side and jarring its main motors out of commission!

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## Out of the Deep

In Bigman's memory afterward, the events of the next hours were as though viewed through the reverse end of a telescope, a faraway nightmare of confused events.

Bigman had been slammed against the wall by the sudden thrust of force. For what seemed long moments, but was probably little more than a second in actuality, he lay spread-eagled and gasping.

Lucky, still at the controls, shouted, "The main generators are out."

Bigman was struggling to his feet against the crazy slope of the deck. "What happened?"

"We were hit. Obviously. But I don't know how badly."

Bigman said, "The lights are on."

"I know. The emergency generators have cut in."

"How about the main drive?"

"I'm not sure. It's what I'm trying to test."

The engines coughed hoarsely somewhere below and behind. The smooth purr was gone, and in its place a consumptive rattle sounded that set Bigman's teeth on edge.

The *Hilda* shook herself, like a hurt animal, and turned upright. The engines died again.

The radio receiver was echoing mournfully, and now Bigman gathered his senses sufficiently to try to reach it.

"Starr," it said. "Lucky Starr! Evans at this end. Acknowledge signals."

Lucky got there first. "Lucky speaking. What hit us?"

"It doesn't matter," came the tired voice. "It won't bother you

any more. It will be satisfied to let you sit here and die. Why didn't you stay away? I asked you to."

"Is your ship disabled, Evans?"

"It's been stalled for twelve hours. No light, no power—just a little juice I can pump into the radio, and that's fading. Air purifiers are smashed, and the air supply is low. So long, Lucky."

"Can you get out?"

"The lock mechanism isn't working. I've got a subsea suit, but if I try to cut my way out, I'll be smashed."

Bigman knew what Lou Evans meant, and he shuddered. Locks on subsea vessels were designed to let water into the interlock chamber slowly, very slowly. To cut a lock open at the bottom of the sea in an attempt to get out of a ship would mean the entry of water under hundreds of tons of pressure. A human being, even inside a steel suit, would be crushed like an empty tin can under a pile driver.

Lucky said, "We can still navigate. I'm coming to get you. We'll join locks."

"Thanks, but why? If you move, you'll be hit again; and even if you aren't, what's the difference whether I die quickly here or a little more slowly in your ship?"

Lucky retorted angrily, "We'll die if we have to, but not one second *earlier* than we have to. Everyone has to die someday; there's no escaping that, but quitting isn't compulsory."

He turned to Bigman. "Get down into the engine room and check the damage. I want to know if it can be repaired."

In the engine room, fumbling with the "hot" micropile by means of long-distance manipulators, which luckily were still in order, Bigman could feel the ship inching painfully along the sea bottom and could hear the husky rasping of the motors. Once he heard a distant boom, followed by a groaning rattle through the framework of the *Hilda* as though a large projectile had hit sea bottom a hundred yards away.

He felt the ship stop, the motor noise drop to a hoarse rumble. In imagination, he could see the *Hilda's* lock extension bore out and close in on the other hull, welding itself tightly to it. He could sense the water between the ships being pumped out of that tube between them and, in actual fact, he saw the lights in the engine room dim as the energy drain on the emergency generators rose to dangerous heights. Lou Evans would be able to step from his ship to the *Hilda* through dry air with no need of artificial protection.

Bigman came up to the control room and found Lou Evans with

Lucky. His face was drawn and worn under its blond stubble. He managed a shaky smile in Bigman's direction.

Lucky was saying, "Go on, Lou."

Evans said, "It was the wildest hunch at first, Lucky. I followed up each of the men to whom one of these queer accidents had happened. The one thing I could find in common was that each was a V-frog fancier. Everyone on Venus is, more or less, but each one of *these* fellows kept a houseful of the creatures. I didn't quite have the nerve to make a fool of myself advancing the theory without some facts. If I only had. . . . Anyway, I decided to try to trap the V-frogs into exhibiting knowledge of something that existed in my own mind and in as few others as possible."

Lucky said, "And you decided on the yeast data?"

"It was the obvious thing. I had to have something that wasn't general knowledge or how could I be even reasonably sure they got the information from me? Yeast data was ideal. When I couldn't get any legitimately, I stole some. I borrowed one of the V-frogs at headquarters, put it next to my table, and looked over the papers. I even read some of it aloud. When an accident happened in a yeast plant within two days later involving the exact matter I had read about, I was positive the V-frogs were behind the mess. Only——"

"Only?" prompted Lucky.

"Only I hadn't been so smart," said Evans. "I'd let them into my mind. I'd laid down the red carpet and invited them in, and now I couldn't get them out again. Guards came looking for the papers. I was known to have been in the buildings, so a very polite agent was sent to question me. I returned the papers readily and tried to explain. I couldn't."

"You couldn't? What do you mean by that?"

"I *couldn't*. I was physically unable to. The proper words wouldn't come out. I was unable to say a word about the V-frogs. I even kept getting impulses to kill myself, but I fought them down. They couldn't get me to do something that far from my nature. I thought then: If I can only get off Venus, if I can only get far enough away from the V-frogs, I'd break their hold. So I did the one thing I thought would get me instantly recalled. I sent an accusation of corruption against myself and put Morriss's name to it."

"Yes," said Lucky grimly, "that much I had guessed."

"How?" Evans looked startled.

"Morriss told us his side of your story shortly after we got to Aphrodite. He ended by saying that he was preparing his report to central headquarters. He didn't say he had sent one—only that he

was preparing one. But a message had been sent; I knew that. Who else besides Morriss knew the Council code and the circumstances of the case? Only you yourself."

Evans nodded and said bitterly, "And instead of calling me home, they sent you. Is that it?"

"I insisted, Lou. I couldn't believe any charge of corruption against you."

Evans buried his head in his hands. "It was the worst thing you could have done, Lucky. When you subethered you were coming, I begged you to stay away, didn't I? I couldn't tell you why. I was physically incapable of that. But the V-frogs must have realized from my thoughts what a terrific character you were. They could read my opinion of your abilities and they set about having you killed."

"And nearly succeeded," murmured Lucky.

"And *will* succeed this time. For that I am heartily sorry, Lucky, but I couldn't help myself. When they paralyzed the man at the dome lock, I was unable to keep myself from following the impulse to escape, to get out to sea. And, of course, you followed. I was the bait and you were the victim. Again, I tried to keep you away, but I couldn't explain, I couldn't explain. . . ."

He drew a deep, shuddering breath. "I can speak about it now, though. They've lifted the block in my mind. I suppose we're not worth the mental energy they have to expend, because we're trapped, because we're as good as dead and they fear us no longer."

Bigman, having listened this far in increasing confusion, said, "Sands of Mars, what's going on? *Why* are we as good as dead?"

Evans, face still hidden in his hands, did not answer.

Lucky, frowning and thoughtful, said, "We're under an orange patch, a king-size orange patch out of the Venusian deeps."

"A patch big enough to cover the ship?"

"A patch two miles in diameter!" said Lucky. "Two miles across. What slapped the ship into almost a smashup and what nearly hit us a second time when we were making our way to Evans's ship was a jet of water. Just that! A jet of water with the force of a depth blast."

"But how could we get under it without seeing it?"

Lucky said, "Evans guesses that it's under V-frog mental control, and I think he's right. It could dim its fluorescence by contracting the photo cells in its skin. It could raise one edge of its cape to let us in; and now, here we sit."

"And if we move or try to blast our way out, the patch will let us have it again, and a patch never misses."

Lucky thought, then said suddenly, "But a patch *does* miss! It



missed us when we were driving the *Hilda* toward your ship and then we were only going at quarter speed." He turned to Bigman, his eyes narrowed. "Bigman, can the main generators be patched?"

Bigman had almost forgotten the engines. He recovered and said, "Oh— The micropile alignment hasn't been knocked off, so it can be fixed if I can find all the equipment I need."

"How long will it take?"

"Hours, probably."

"Then get to work. I'm getting out into the sea."

Evans looked up, startled. "What do you mean?"

"I'm going after that patch." He was at the sea-suit locker already, checking to make certain the tiny force-field linings were in order and well powered and that the oxygen cylinders were full.

It was deceptively restful to be out in the absolute dark. Danger seemed far away. Yet Lucky knew well enough that below him was the ocean bottom and that on every other side, up and all around, was a two-mile-wide inverted bowl of rubbery flesh.

His suit's pump jetted water downward, and he rose slowly with his weapon drawn and ready. He could not help but marvel at the subwater blaster he held. Inventive as man was on his home planet of Earth, it seemed that the necessity for adapting to the cruel environment of an alien planet multiplied his ingenuity a hundredfold.

Once the new continent of America had burst forth into a brilliance that the ancestral European homelands could never duplicate, and now Venus was showing *her* ability to Earth. There were the city domes, for instance. Nowhere on Earth could force fields have been woven into steel so cleverly. The very suit he wore could not resist the tons of water pressure for a moment without the microfields that webbed its interior braces (always provided those tons were introduced sufficiently slowly). In many other respects that suit was a marvel of engineering. Its jet device for underwater traveling, its efficient oxygen supply, its compact controls, were all admirable.

And the weapon he held!

But immediately his thoughts moved to the monster above. That was a Venusian invention, too. An invention of the planet's evolution. Could such things be on Earth? Not on land, certainly. Living tissue couldn't support the weight of more than forty tons against Earth's gravity. The giant brontosauri of Earth's Mesozoic Age had legs like tree trunks, yet had to remain in the marshes so that water could help buoy them up.

That was the answer: water's buoyancy. In the oceans any size

of creature might exist. There were the whales of Earth, larger than any dinosaur that ever lived. But this monstrous patch above them must weigh two hundred million *tons*, he calculated. Two million large whales put together would scarcely weigh that. Lucky wondered how old it was. How old would a thing have to be to grow as large as two million whales? A hundred years? A thousand years? Who could tell?

But size could be its undoing, too. Even under the ocean. The larger it grew, the slower its reactions. Nerve impulses took time to travel.

Evans thought the monster refrained from hitting them with another water jet because, having disabled them, it was indifferent to their further fate, or rather the V-frogs who manipulated the giant patch were. That might not be so! It might be rather that the monster needed time to suck its tremendous water sac full. It needed time to aim.

Furthermore, the monster could scarcely be at its best. It was adapted to the deeps, to layers of water six miles or more high above it. Here its efficiency must necessarily be cut down. It had missed the *Hilda* on its second try, probably because it had not fully recovered from the previous stroke.

But now it was waiting; its water sac was slowly filling; and as much as it could in the shallow water surrounding it, it was gathering its strength. He, Lucky, 190 pounds of man against two hundred million tons of monster, would have to stop it.

Lucky looked upward. He could see nothing. He pressed a contact on the inner lining in the left middle finger of the sheathed force-field-reinforced mitten that gauntleted his hand, and a jab of pure-white light poured out of the metal fingertip. It penetrated upward hazily and ended in nothingness. Was that the monster's flesh at the far end? Or just the petering out of the light beam?

Three times the monster had jetted water. Once and Evans's ship had been smashed. A second time and Lucky's ship had been mauled. (But not as badly; was the creature getting weaker?) A third time, prematurely, and the stroke had been a miss.

He raised his weapon. It was bulky, with a thick handgrip. Within that grip was a hundred miles of wire and a tiny generator that could put out huge voltages. He pointed it upward and squeezed his fist.

For a moment, nothing—but he knew the hair-thin wire was squirting out and upward through the carbonated ocean water. . . .

Then it hit and Lucky saw the results. For in the moment that the wire made contact, a flash current of electricity screamed along

it at the speed of light and flayed the obstruction with the force of a bolt of lightning. The hairlike wire gleamed brilliantly and vaporized steaming water into murky froth. It was more than steam, for the alien water writhed and bubbled horribly as the dissolved carbon dioxide gassed out. Lucky felt himself bobbing in the wild currents set up.

Above all that, above the steaming and bubbling, above the water's churning and the line of thin fire that reached upward, there was a fireball that exploded. Where the wire had touched living flesh there was a blaze of furious energy. It burned a hole ten feet wide and as many feet deep into the living mountain above him.

Lucky smiled grimly. That was only a pin prick in comparison to the monster's vast bulk, but the patch would feel it; or at least in ten minutes or so, it would feel it. The nerve impulses must first travel their slow way along the curve of its flesh. When the pain reached the creature's tiny brain, it would be distracted from the helpless ship on the ocean floor and turn upon its new tormentor.

But, Lucky thought grimly, the monster would not find him. In ten minutes he would have changed position. In ten minutes, he——

Lucky never completed the thought. Not one minute after his bolt had struck the creature, it struck back.

Not one minute had passed when Lucky's shocked and tortured senses told him that he was being driven down, down, down, in a turbulent jet of madly driving water. . . .

## The Mountain of Flesh

The shock sent Lucky's senses reeling. Any suit of ordinary metal would have bent and smashed. Any man of ordinary mettle would have been carried senseless down to the ocean floor, there to be smashed into concussion and death.

But Lucky fought desperately. Struggling against the mighty current, he brought his left arm up to his chest to check the dials that indicated the state of the suit machinery.

He groaned. The indicators were all lifeless things, their delicate workings jarred into uselessness. Still, his oxygen supply seemed unaffected (his lungs would have told him of any drop in pressure), and his suit obviously wasn't leaking. He could only hope that its jet action was still in order.

There was no use trying blindly to find his way out of the stream by main force. He almost certainly lacked the power. He would have to wait and gamble on one important thing: The stream of water lost velocity rapidly as it penetrated downward. Water against water was a high-friction action. At the rim of the jet, turbulence would grow and eat inward. A cutting stream five hundred feet across as it emerged from the creature's blowpipe might be only fifty feet wide when it hit bottom, depending upon its original velocity and the distance to the ocean floor.

And that original velocity would have slowed, too. That did not mean that the final velocity was anything to deride. Lucky had felt its force against the ship.

It all depended on how far from the center of the water gush he was, on how near a bull's-eye the creature scored.

The longer he waited, the better his chances—provided he did

not wait too long. With his metal-gloved hand on the jet controls, Lucky let himself be flung downward, trying to wait calmly, striving to guess how close to solid bottom he was, expecting each moment the one last concussion he would never feel.

And then, when he had counted ten, he flung his suit's jets open. The small, high-speed propellers on either shoulder blade ground in harsh vibration as they threw out water at right angles to the main current. Lucky could feel his body take on a new direction of fall.

If he was dead center, it wouldn't help. The energy he could pump up would not suffice to overcome the mighty surge downward. If he was well off center, however, his velocity would, by now, have slowed considerably and the growing zone of turbulence might not be far off.

And as he thought that, he felt his body bob and yank with nauseating violence, and he knew he was safe.

He kept his own jets in operation, turning their force downward now and, as he did so, he turned his finger light in the direction of the ocean floor. He was just in time to see the ooze, some fifty feet below, explode and obscure everything with its muck.

He had made his way out of the stream with but seconds to spare.

He was hurrying upward now, as fast as the jet motors of his suit would carry him. He was in desperate haste. In the darkness within his helmet (darkness within darkness within darkness) his lips were pressed into a narrow line and his eyebrows pulled down low.

He was doing his best not to think. He had thought enough in those few seconds in the water spout. He had underestimated the enemy. He had assumed it was the gigantic patch that was aiming at him, and it wasn't. It was the V-frogs on the water's surface that controlled the patch's body through its mind! The V-frogs had aimed. They did not have to follow the patch's sensations in order to know it had been hit. They needed only to read Lucky's mind, and they needed only to aim at the source of Lucky's thoughts.

So it was no longer a matter of pin-pricking the monster into moving away from the *Hilda* and lumbering down the long underwater declivity to the deeps that had spawned it. The monster had to be killed outright.

And quickly!

If the *Hilda* would not take another direct blow, neither would Lucky's own suit. The indicators were gone already; the controls might go next. Or the liquid-oxygen containers might suffer damage to their tiny force-field generators.

Up and still up went Lucky, up to the only place of safety. Al-

though he had never seen the monster's blowpipe, it stood to reason that it must be an extensible and flexible tube that could point this way and that. But the monster could scarcely point it at its own undersurface. For one thing, it would do itself damage. For another, the force of the water it expelled would prevent that blowpipe from bending at so great an angle.

Lucky had to move up then, close to the animal's undersurface, to where its weapon of water could not reach; and he had to do it before the monster could fill its water sac for another blow.

Lucky flashed his light upward. He was reluctant to do so, feeling instinctively that the light would make him an easy target. His mind told him his instinct was wrong. The sense that was responsible for the monster's rapid response to his attack was not sight.

Fifty feet or less above, the light ended on a rough, grayish surface, streaked with deep corrugations. Lucky scarcely attempted to brake his rush. The monster's skin was rubbery and his own suit hard. Even as he thought that, he collided, pressing upward and feeling the alien flesh give.

For a long moment, Lucky drew deep gasps of relief. For the first time since leaving the ship, he felt moderately safe. The relaxation did not last, however. At any time the creature could turn its attack (or the small mind-master that controlled it could) on the ship. That must not be allowed to happen.

Lucky played his finger flash about his surroundings with a mixture of wonder and nausea.

Here and there in the undersurface of the monster were holes some six feet across into which, as Lucky could see by the flow of bubbles and solid particles, water was rushing. At greater intervals were slits, which opened occasionally into ten-foot-long fissures that emitted frothing gushes of water.

Apparently this was the way the monster fed. It poured digestive juices into the portion of the ocean trapped beneath its bulk, then sucked in water by the cubic yard to extract the nutriment it contained, and still later expelled water, debris, and its own wastes.

Obviously, it could not stay too long over any one spot of the ocean or the accumulation of its own waste products would make its environment unhealthy. Of its own account, it would not have lingered here so long, but with the V-frogs driving it——

Lucky moved jerkily through no action of his own and, in surprise, turned the beam of light on a spot closer to himself. In a moment of stricken horror, he realized the purposes of those deep corrugations he had noticed in the monster's undersurface. One such

was forming directly to one side of him and was sucking inward, into the creature's substance. The two sides of the corrugation rubbed against one another, and the monster broke up and shredded particles of food too large to be handled directly by its intake pores.

Lucky did not wait. He could not risk his battered suit against the fantastic strength of the monster's muscles. The walls of his suit might hold, but portions of the delicate working mechanisms might not.

He swung his shoulder so as to turn the suit's jets directly against the flesh of the monster and gave them full energy. He came loose with a sharp smacking sound, then veered round and back.

He did not touch the skin again, but hovered near it and traveled along it, following the direction against gravity, mounting upward, away from the outer edges of the thing, toward its center.

He came suddenly to a point where the creature's undersurface turned down again in a wall of flesh that extended as far as his light would reach on either side. That wall quivered and was obviously composed of thinner tissue.

It was the blowpipe.

Lucky was sure that was what it was—a gigantic cavern a hundred yards across, out of which the fury of rushing water emerged. Cautiously Lucky circled it. Undoubtedly this was the safest place one could be, here at the very base of the blowpipe, and yet he picked his way gingerly.

He knew what he was looking for, however, and he left the blowpipe. He moved away in the direction in which the monster's flesh mounted still higher, until he was at the peak of the inverted bowl, and there it was!

At first, Lucky was aware only of a long-drawn-out rumble, almost too deep to hear. In fact, it was vibration that attracted his attention, rather than any sound. Then he spied the swelling in the monster's flesh. It writhed and beat; a huge mass, hanging thirty feet downward and perhaps as big around as the blowpipe.

That *must* be the center of the organism; its heart, or whatever passed for its heart, must be there. That heart must beat in powerful strokes, and Lucky felt dizzy as he tried to picture it. Those heartbeats must last five minutes at a time, during which thousands of cubic yards of blood (or whatever the creature used) must be forced through blood vessels large enough to hold the *Hilda*. That heartbeat must suffice to drive the blood a mile and back.

What a mechanism it must be, thought Lucky. If one could only capture such a thing alive and study its physiology!

Somewhere in that swelling must also be what brain the monster might have. Brain? Perhaps what passed for its brain was only a small clot of nerve cells without which the monster could live quite well.

Perhaps! But it couldn't live without its heart. The heart had completed one beat. The central swelling had contracted to almost nothing. Now the heart was relaxing for another beat five minutes or more from now, and the swelling was expanding and dilating as blood rushed into it.

Lucky raised his weapon and with his light beam full on that giant heart, he let himself sink down. It might be best not to be too close. On the other hand, he dared not miss.

For a moment a twinge of regret swept him. From a scientific standpoint it was almost a crime to kill this mightiest of nature's creatures.

Was that one of his own thoughts or a thought imposed upon him by the V-frogs on the ocean surface?

He dared wait no longer. He squeezed the handgrip of his weapon. The wire shot out. It made contact, and Lucky's eyes were blinded by the flash of light in which the near wall of the monster's heart was burnt through.

For minutes the water boiled with the death throes of the mountain of flesh. Its entire mass convulsed in its gigantic writhings. Lucky, thrown this way and that, was helpless.

He tried to call the *Hilda*, but the answer consisted of erratic gasps, and it was quite obvious that the ship, too, was being flung madly about.

But death, when it comes, must finally penetrate the last ounce of even a hundred-million-ton life. Eventually a stillness came upon the water.

And Lucky moved downward slowly, slowly, weary nearly to death.

He called the *Hilda* again. "It's dead," he said. "Send out the directional pulse and let me follow it down."

Lucky let Bigman remove his sea suit and managed a smile as the little Martian looked worriedly up at him.

"I never thought I'd see you again, Lucky," said Bigman, gulping noisily.

"If you're going to cry," said Lucky, "turn your head away. I didn't get in out of the ocean just to get all wet in here. How are the main generators coming along?"



"They'll be all right," put in Evans, "but it will still take time. The knocking around just at the end there ruined one of the welding jobs."

"Well," said Lucky, "we'll just have to get on with it." He sat down with a weary sigh. "Things didn't go quite as I expected."

"In what way?" demanded Evans.

"It was my notion," said Lucky, "to pin-prick the monster into moving off us. That didn't work, and I had to kill it. The result is that its dead body has settled down around the *Hilda* like a collapsed tent."

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## To the Surface?

“You mean we’re trapped?” said Bigman, with horror.

“You can put it that way,” said Lucky coolly. “You can also say that we’re safe, if you want to. Certainly we’re safer here than anywhere on Venus. Nobody can do anything to us physically with that mountain of dead meat over us. And when the generators are repaired, we’ll just force our way out. Bigman, get at those generators; and Evans, let’s pour ourselves some coffee and talk this thing over. There might not be another chance for a quiet chat.”

Lucky welcomed this respite, this moment when there was nothing to be done but talk and think.

Evans, however, was upset. His china-blue eyes crinkled at the corners.

Lucky said, “You look worried?”

“I am worried. What in space and time do we do?”

Lucky said, “I’ve been thinking about that. It seems to me that all we can do is get the V-frog story to someone who’s safe from any mental control by them.”

“And who’s that?”

“No one on Venus. That’s for sure.”

Evans stared at his friend. “Are you trying to tell me that everyone on Venus is under control?”

“No, but anyone *might* be. After all, there are different ways in which the human mind can be manipulated by these creatures.” Lucky rested one arm over the back of the pilot swivel and crossed his legs. “In the first place, complete control can be taken for a short period of time over a man’s mind. *Complete* control! During that

interval a human being can be made to do things contrary to his own nature, things that endanger his own life and others': the pilots on the coaster, for instance, when Bigman and I first landed on Venus."

Evans said grimly, "That type of thing hasn't been *my* trouble."

"I know. That's what Morriss failed to realize. He was sure you weren't under control simply because you showed no signs of amnesia. But there's a second type of control that you suffered from. It's less intense, so a person retains his memory. However, just because it's less intense, a person cannot be forced to do anything against his own nature; you couldn't be forced to commit suicide, for instance. Still, the power lasts longer—days rather than hours. The V-frogs make up in time what they lose in intensity. Well, there must be still a third kind of control."

"And that is?"

"A control that is still less intense than the second type. A control that is so mild the victim isn't even aware of it, yet strong enough so that the victim's mind can be rifled and picked of its information. For instance, there's Lyman Turner."

"The chief engineer on Aphrodite?"

"That's right. He's a case in point. Can you see that? Consider that there was a man at the dome lock yesterday who sat there with a lever in his hand, endangering the whole city, yet he was so tightly protected all around, so netted about with alarms that no one could approach him without warning until Bigman forced a passage through a ventilator shaft. Isn't that odd?"

"No. Why is it odd?"

"The man had only been on the job a matter of months. He wasn't even a real engineer. His work was more like that of a clerk or an office boy. Where did he get the information to protect himself so? How could he possibly know the force and power system in that section of the dome so thoroughly?"

Evans pursed his lips and whistled soundlessly. "Hey, that *is* a point."

"The point didn't strike Turner. I interviewed him on just that matter before getting on the *Hilda*. I didn't tell him what I was after, of course. He himself told me about the fellow's inexperience, but the incongruity of the matter never struck him. Yet who *would* have the necessary information? Who but the chief engineer? Who better than he?"

"Right. Right."

"Well, then, suppose Turner was under very gentle control. The information could be lifted out of his brain. He could be very gently

soothed into not seeing anything out of the way in the situation. Do you see what I mean? And then Morriss——”

“Morriss, too?” said Evans, shocked.

“Possibly. He’s convinced it’s a matter of Sirians after yeast. He can see it as nothing else. Is that a legitimate misjudgment or is he being subtly persuaded? He was ready to suspect you, Lou—a little too ready. One councilman ought to be a little less prepared to suspect another.”

“Space! Then who’s safe, Lucky?”

Lucky stared at his empty coffee cup and said, “No one on Venus. That’s my point. We’ve got to get the story and the truth somewhere else.”

“And how can we?”

“A good point. How can we?” Lucky Starr brooded over that.

Evans said, “We can’t leave physically. The *Hilda* is designed for nothing but ocean. It can’t navigate the air, let alone space. And if we go back to the city to get something more suitable, we’d never leave it again.”

“I think you’re right,” said Lucky, “but we don’t have to leave Venus in the flesh. Our information is all that has to leave.”

“If you mean ship’s radio,” said Evans, “that’s out, too. The set we’ve got on this tub is strictly intra-Venus. It’s not a subetheric, so it can’t reach Earth. Down here, as a matter of fact, the instrument won’t reach above the ocean. Its carrier waves are designed to be reflected down from the ocean surface so that they can get distance. Besides that, even if we could transmit straight up, we couldn’t reach Earth.”

“I don’t see that we have to,” said Lucky. “There’s something between here and Earth that would do just as well.”

For a moment, Evans was mystified. Then he said, “You mean the space stations?”

“Surely. Two space stations circle Venus. Earth may be anywhere from thirty to fifty million miles away, but the stations may be as close as two thousand miles to this point. Yet there can’t be V-frogs on the stations, I’m sure. Morriss said they dislike free oxygen, and one could scarcely rig up special carbon-dioxide chambers for V-frogs considering the economy with which space stations must be run. Now, if we could get a message out to the stations for relay to central headquarters on Earth, we’d have it.”

“That’s it, Lucky,” said Evans, excitedly. “It’s our way out. Their mental powers can’t possibly reach two thousand miles across space

to——” But then his face turned glum once more. “No, it won’t do. The subship radio still can’t reach past the ocean surface.”

“Maybe not from here. But suppose we go up to the surface and transmit from there directly into the atmosphere.”

“Up to the surface?”

“Well?”

“But *they* are there. The V-frogs.”

“I know that.”

“We’ll be put under control.”

“Will we?” said Lucky. “So far they’ve never tackled anyone who’s known about them, known what to expect and made up his mind to resist it. Most of the victims were completely unsuspecting. In your case you actually invited them into your mind, to use your own phrase. Now I am not unsuspecting, and I don’t propose to issue any invitations.”

“You can’t do it, I tell you. You don’t know what it’s like.”

“Can you suggest an alternative?”

Before Evans could answer, Bigman entered, rolling down his sleeves. “All set,” he said. “I guarantee the generators.”

Lucky nodded and stepped to the controls, while Evans remained in his seat, his eyes clouded with uncertainty.

There was the churning of the motors again, rich and sweet. The muted sound was like a song, and there was that strange feeling of suspension and motion under one’s feet that was never felt on a spaceship.

The *Hilda* moved through the bubble of water that had been trapped under the collapsing body of the giant patch and built up speed.

Bigman said uneasily, “How much room do we have?”

“About half a mile,” said Lucky.

“What if we don’t make it?” muttered Bigman. “What if we just hit it and stick, like an ax in a tree stump?”

“Then we pull out and try again,” said Lucky.

There was silence for a moment, and Evans said in a low voice, “Being closed in under here, under the patch—it’s like being in a chamber.” He was mumbling, half to himself.

“In a what?” said Lucky.

“In a chamber,” said Evans, still abstracted. “They build them on Venus. They’re little transite domes under sea-floor level, like cyclone cellars or bomb shelters on Earth. They’re supposed to be protection against incoming water in case of a broken dome, say by

Venusquake. I don't know that a chamber has ever been used, but the better apartment houses always advertise that they have chamber facilities in case of emergency."

Lucky listened to him, but said nothing.

The engine pitch rose higher.

"Hold on!" said Lucky.

Every inch of the *Hilda* trembled, and the sudden, almost irresistible deceleration forced Lucky hard against the instrument panel. Bigman's and Evans's knuckles went white and their wrists strained as they gripped the guard rails with all their strength.

The ship slowed but did not stop. With the motors straining and the generators protesting in a squeal that made Lucky wince in sympathy, the *Hilda* plowed through skin and flesh and sinew, through empty blood-vessels and useless nerves that must have resembled two-foot-thick cables. Lucky, jaw set and grim, kept the drive rod nailed at maximum against the tearing resistance.

The long minutes passed and then, in a long churn of triumphant engine, they were through—through the monster and out once more into the open sea.

Silently and smoothly the *Hilda* rose through the murky, carbon-dioxide-saturated water of Venus's ocean. Silence held the three, a silence that seemed enforced by the daring with which they were storming the very fortress of Venus's hostile life form. Evans had not said a word since the patch had been left behind. Lucky had locked ship's controls and now sat on the pilot swivel with fingers softly tapping his knee. Even the irrepressible Bigman had drifted glumly to the rear port with its bellying, wide-angle field of vision.

Suddenly Bigman called, "Lucky, look there."

Lucky strode to Bigman's side. Together they gazed in silence. Over half the field of the port there was only the starry light of small phosphorescent creatures, thick and soft, but in another direction there was a wall, a monstrous wall glowing in smears of shifting color.

"Do you suppose that's the patch, Lucky?" asked Bigman. "It wasn't shining that way when we came down here; and anyway, it wouldn't shine after it was dead, would it?"

Lucky said thoughtfully, "It is the patch in a way, Bigman. I think the whole ocean is gathering for the feast."

Bigman looked again and felt a little ill. Of course! There were hundreds of millions of tons of meat there for the taking, and the

light they viewed must be the light of all the small creatures of the shallows feeding on the dead monster.

Creatures darted past the port, moving always in the same direction. They moved sternward, toward the mountainous carcass the *Hilda* had left behind.

Pre-eminent among them were arrow fish of all sizes. Each had a straight white line of phosphorescence that marked its backbone (it wasn't a backbone really, but merely an unjointed rod of horny substance). At one end of that white line was a pale yellow V that marked the head. To Bigman it looked indeed as though a countless swarm of animated arrows were swarming past the ship, but in imagination he could see their needle-rimmed jaws, cavernous and ravenous.

"Great Galaxy!" said Lucky.

"Sands of Mars!" murmured Bigman. "The ocean will be empty. Every blasted thing in the ocean is gathering to this one spot."

Lucky said, "At the rate those arrow fish must be gorging themselves, the thing will be gone in twelve hours."

Evans's voice sounded from behind them. "Lucky, I want to speak to you."

Lucky turned. "Sure. What is it, Lou?"

"When you first suggested going to the surface, you asked if I could propose an alternative."

"I know. You didn't answer."

"I can answer now. I'm holding it, in fact, and the answer is that we're going back to the city."

Bigman called, "Hey, what's the idea?"

Lucky had no need to ask that question. His nostrils flared, and inwardly he raged at himself for those minutes he had spent at the porthole when all his heart, mind, and soul should have been concentrated on the business at hand.

For in Evans's clenched fist, as it lifted from his side, was Lucky's own blaster, and in Evans's narrowed eyes, there was hard determination.

"We're going back to the city," repeated Evans.

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## To the City?

Lucky said, "What's wrong, Lou?"

Evans gestured impatiently with his blaster. "Put the engines in reverse, start bottomward, and turn the ship's bow toward the city. Not you, Lucky. You let Bigman go to those controls; then you get in line with him, so I can watch both of you and the controls, too."

Bigman had his hands half-upraised, and his eyes turned to look at Lucky. Lucky kept his hands at his side.

Lucky said flatly, "Suppose you tell me what's biting you?"

"Nothing's biting me," said Evans. "Nothing at all. It's what's biting you. You went out and killed the monster, then came back and started talking about going to the surface. Why?"

"I explained my reasons."

"I don't believe your reasons. If we surface, I know the V-frogs will take over our minds. I've had experience with them, and because of that I know the V-frogs have taken over *your* mind."

"*What?*" exploded Bigman. "Are you nuts?"

"I know what I'm doing," said Evans, watching Lucky warily. "If you look at this thing coolly, Bigman, you'll see that Lucky must be under V-frog influence. Don't forget, he's my friend, too. I've known him longer than you have, Bigman, and it bothers me to have to do this, but there's no way out. It must be done."

Bigman stared uncertainly at both men, then said in a low voice, "Lucky, have the V-frogs really got you?"

"No," said Lucky.

"What do you expect him to say?" demanded Evans with heat. "Of course they have him. To kill the monster, he had to jet upward to its top. He must have gone fairly close to the surface where the



V-frogs were waiting, close enough for them to snatch him. They let him kill the monster. Why not? They would be glad to trade control of the monster for control of Lucky, so Lucky came back babbling of the need to go to the surface, where we'll all be among them, all trapped—the only men who know the truth helpless.”

“Lucky?” quavered Bigman, his tone pleading for reassurance.

Lucky Starr said calmly, “You’re quite wrong, Lou. What you’re doing now is only the result of your own captivity. You’ve been under control before, and the V-frogs know your mind. They can enter it at will. Maybe they’ve never entirely left it. You’re doing only what you’re being made to do.”

Evans’s grip on his blaster hardened. “Sorry, Lucky, but it won’t do. Let’s get the ship back to the city.”

Lucky said, “If you’re not under control, Lou—if you’re mind-free—then you’ll blast me down if I try to force us up to the surface, won’t you?”

Evans did not answer.

Lucky said, “You’ll have to. It will be your duty to the Council and to Mankind to do so. On the other hand, if you are under mental control, you may be forced to threaten me, to try to make me change ship’s course, but I doubt that you can be forced to kill me. Actually murdering a friend and fellow councilman would be too much against your basic ways of thought. —So give me your blaster.”

Lucky advanced toward the other, hand outstretched.

Bigman stared in horror.

Evans backed away. He said hoarsely, “I’m warning you, Lucky. I’ll shoot.”

“I say you won’t shoot. You’ll give me the blaster.”

Evans was back against the wall. His voice rose crazily. “I’ll shoot. I’ll shoot!”

Bigman cried, “Lucky, stop!”

But Lucky had already stopped and was backing away. Slowly, very slowly, he backed.

The life had suddenly gone out of Evans’s eyes, and he was standing now, a carved stone image, finger firm on trigger. Evans’s voice was cold. “Back to the city.”

Lucky said, “Get the ship on the city course, Bigman.”

Bigman stepped quickly to the controls. He muttered, “He’s really under now, isn’t he?”

Lucky said, “I was afraid it might happen. They’ve shifted him to intense control to make sure he shoots. And he will, too; no ques-

tion about it. He's in amnesia now. He won't remember this part afterward."

"Can he hear us?" Bigman remembered the pilots on the coaster in which they had landed on Venus and their apparent complete disregard of the external world about them.

"I don't think so," said Lucky, "but he's watching the controls and if we deviate from city-direction, he'll shoot. Make no mistake about that."

"Then what do we do?"

Words again issued from between Evans's pale, cold lips: "Back to the city. Quickly!"

Lucky, motionless, eyes fixed on the unwavering muzzle of his friend's blaster, spoke softly and quickly to Bigman.

Bigman acknowledged the words by the slightest of nods.

The *Hilda* moved back along the path it had come, back toward the city.

Lou Evans, councilman, stood against the wall, white-faced and stern, his pitiless eyes shifting from Lucky to Bigman to the controls. His body, frozen into utter obedience to those who controlled his mind, did not even feel the need of shifting the blaster from one hand to the other.

Lucky strained his ears to hear the low sound of Aphrodite's carrier beam as it sounded steadily on the *Hilda*'s direction finder. The beam radiated in all directions on a definite wave length from the topmost point of Aphrodite's dome. The route back to the city became as obvious as though Aphrodite were in plain sight and a hundred feet away.

Lucky could tell by the exact pitch of the beam's low whine that they were not approaching the city directly. It was a small difference indeed, and one that was not at all obvious to the ear. To Evans's controlled ears, it might pass unnoticed. Fervently, Lucky hoped so.

Lucky tried to follow Evans's blank glare when his eyes rested on the controls. He was certain that it was the depth indicator that those eyes rested upon. It was a large dial, a simple one that measured the water pressure. At the distance Evans stood it was simple enough to tell that the *Hilda* was not nosing surfaceward.

Lucky felt certain that, should the depth-indicator needle vary in the wrong direction, Evans would blast without a moment's hesitation.

Try as he might to think as little as possible about the situation, to allow as few specific thoughts as possible to be picked up by the

waiting V-frogs, he could not help but wonder why Evans did not shoot them out of hand. They had been marked for death under the giant patch, but now they were only being herded back to Aphrodite.

Or would Evans shoot them down just as soon as the V-frogs could overcome some last scruple in the captive's subjected mind?

The carrier beam moved a little further off pitch. Again Lucky's eyes flickered quickly in Evans's direction. Was he imagining it, or did a spark of something (not emotion, exactly, but something) show in Evans's eyes?

A split second later it was obviously more than imagination, for there was a definite tightening of Evans's biceps, a small lifting of his arm.

He was going to shoot!

And even as the thought passed quickly through Lucky's mind and his muscles tensed involuntarily and uselessly for the coming of the blast, the ship crashed. Evans, caught unaware, toppled backward. The blaster slithered from his sprawling fingers.

Lucky acted instantly. The same shock that threw Evans back threw him forward. He rode that shock and came down upon the other, clutching for his wrist and seizing it with steely fingers.

But Evans was anything but a pigmy, and he fought with the unearthly rage that was imposed upon him. He doubled his knees above him, caught Lucky in the thighs, and heaved. The still rocking ship fortuitously added its roll to the force of Evans's thrust and the captive councilman was on top.

Evans's fist pounded, but Lucky's shoulder fended the blow. He raised his own knees and caught Evans in an iron scissors hold just below the hips.

Evans's face distorted with pain. He twisted, but Lucky writhed with him and was on top once more. He sat up, his legs maintaining their hold, increasing it.

Lucky said, "I don't know if you can hear or understand me, Lou——"

Evans paid no regard. With one last contortion of his body, he flung himself and Lucky into the air, breaking Lucky's hold.

Lucky rolled as he hit the floor and came lithely to his feet. He caught Evans's arm as the latter rose and swung it over his shoulder. A heave and Evans came crashing down on his back. He lay still.

"Bigman!" said Lucky, breathing quickly and brushing back his hair with a quick motion of his hand.

"Here I am," said the little fellow, grinning and swinging Turner's blaster lightly. "I was all set, just in case."

"All right. Put that blaster away, Bigman, and look Lou over. Make sure there are no bones broken. Then tie him up."

Lucky was at the controls now, and with infinite caution he backed the *Hilda* off the remnants of the carcass of the giant patch he had killed hours before.

Lucky's gamble had worked. He had hoped that the V-frogs with their preoccupation with mentalities would have no real conception of the physical size of the patch, that with their lack of experience of subsea travel, they would not realize the significance of the slight off-course route Bigman had taken. The whole gamble had been in the quick phrase which Lucky had spoken to Bigman as the latter had turned the ship back to the city under the threat of Evans's blaster.

"Afoul of the patch," he had said.

Again the *Hilda*'s course changed. Its nose lifted upward.

Evans, bound to his bunk, stared with weary shamefacedness at Lucky. "Sorry."

"We understand, Lou. Don't brood about it," said Lucky lightly. "But we can't let you go for a while. You see that, don't you?"

"Sure. Space, put more knots on me. I deserve it. Believe me, Lucky, most of it I don't even remember."

"Look, you better get some sleep, fella," and Lucky's fist punched Evans lightly in the shoulder. "We'll wake you when we hit surface, if we have to."

To Bigman, a few minutes later, he said quietly, "Round up every blaster on the ship, Bigman, every weapon of every sort. Look through stores, the bunk lockers, everywhere."

"What are you going to do?"

"Dump them," said Lucky succinctly.

"What?"

"You heard me. You might go under. Or I might. If we do, I don't want anything with which we can expect a repetition of what has just happened. Against the V-frogs, physical weapons are useless, anyway."

One by one, two blasters, plus the electric whips from each sea suit, passed through the trash ejector. The ejector's hinged opening stood flush with the wall just next to the first-aid cupboard, and through it the weapons were puffed through one-way valves into the sea.

"It makes me feel naked," muttered Bigman, staring out through the port as though to catch sight of the vanished weapons. A dim

phosphorescent streak flashed across, marking the passing of an arrow fish. That was all.

The water pressure needle dropped slowly. They had been twenty-eight hundred feet under to begin with. They were less than two thousand now.

Bigman continued peering intently out the port.

Lucky glanced at him. "What are you looking for?"

"I thought," said Bigman, "it would get lighter as we got up toward the top."

"I doubt it," said Lucky. "The seaweed blankets the surface tightly. It will stay black till we break through."

"Think we might meet up with a trawler, Lucky?"

"I hope not."

They were fifteen hundred feet under now.

Bigman said with an effort at lightness, a visible attempt to change the current of his own thoughts, "Say, Lucky, how come there's so much carbon dioxide in the air on Venus? I mean, with all these plants? Plants are supposed to turn carbon dioxide into oxygen, aren't they?"

"On Earth they are. However, if I remember my course in xenobotany, Venusian plant life has a trick all its own. Earth plants liberate their oxygen into the air; Venusian plants store theirs as high-oxygen compounds in their tissues." He talked absently as though he himself was also using speech as a guard against too-deep thinking. "That's why no Venusian animal breathes. They get all the oxygen they need in their food."

"What do you know?" said Bigman in astonishment.

"In fact, their food probably has too much oxygen for them, or they wouldn't be so fond of low-oxygen food, like the axle grease you fed the V-frog. At least, that's my theory."

They were only eight hundred feet from the surface now.

Lucky said, "Good navigation, by the way. I mean the way you rammed the patch, Bigman."

"It's nothing," said Bigman, but he flushed with pleasure at the approval in Lucky's words.

He looked at the pressure dial. It was five hundred feet to the surface.

Silence fell.

And then there came a grating and scraping sound from overhead, a sudden interruption in their smooth climb, a laboring of their engines, and then a quick lightening of the view outside the porthole, together with an eye-blinking vision of cloudy sky and rolling water

surface oozing up between shreds and fibers of weed. The water was pockmarked with tiny splashings.

"It's raining," said Lucky. "And now, I'm afraid, we'll have to sit tight and wait till the V-frogs come for us."

Bigman said blankly, "Well—well—— Here they are!"

For moving into view just outside the porthole, staring solemnly into the ship out of dark, liquid eyes, its long legs folded tightly down and its dexterous toes clasping a seaweed stem in a firm grip, was a V-frog!

# 13

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## Minds Meet

The *Hilda* rode high in the tossing waters of the Venusian ocean. The splatter of strong, steady rain drummed its sound upon the outer hull in what was almost an Earthlike rhythm. To Bigman, with his Martian background, rain and ocean were alien, but to Lucky it brought memories of home.

Bigman said, "Look at the V-frog, Lucky. Look at it!"

"I see it," said Lucky calmly.

Bigman swept the glass with his sleeve and then found himself with his nose pressing against it for a better look.

Suddenly he thought, Hey, I better not get too close.

He sprang back, then deliberately put the little finger of each hand into the corners of his mouth and drew them apart. Sticking his tongue out, he crossed his eyes and wiggled his fingers.

The V-frog stared at him solemnly. It had not budged a muscle since it had first been sighted. It merely swayed solemnly with the wind. It did not seem to mind, or even to be aware of, the water that splashed about it and upon it.

Bigman contorted his face even more horribly and went "A-a-gh" at the creature.

Lucky's voice sounded over his shoulder. "What are you doing, Bigman?"

Bigman jumped, took his hands away, and let his face spring back into its own pixy-ish appearance. He said, grinning, "I was just showing that V-frog what I thought of it."

"And it was just showing you what it thought of you!"

Bigman's heart skipped a beat. He heard the clear disapproval in

Lucky's voice. In such a crisis, at a time of such danger, he, Bigman, was making faces like a fool. Shame came over him.

He quavered, "I don't know what got into me, Lucky."

"*They* did," said Lucky, harshly. "Understand that. The V-frogs are feeling you out for weak points. However they can do it, they'll crawl into your mind, and once there they may remain past your ability to force them to leave. So don't follow any impulse until you've thought it out."

"Yes, Lucky," muttered Bigman.

"Now, what next?" Lucky looked about the ship. Evans was sleeping, tossing fitfully and breathing with difficulty. Lucky's eyes rested on him for a bare moment, then turned away.

Bigman said almost timidly, "Lucky?"

"Well."

"Aren't you going to call the space station?"

For a moment Lucky stared at his little partner without comprehension. Then slowly the lines between his eyes smoothed away and he whispered, "Great Galaxy! I'd forgotten. Bigman, I'd forgotten! I never once thought of it."

Bigman cocked a thumb over his shoulder, pointing at the port into which the V-frog was still owlishly gazing. "You mean, it——?"

"I mean *they*. Space, there may be thousands of them out there!"

Half in shame Bigman admitted to himself the nature of his own feelings; he was almost glad that Lucky had been trapped by the creatures as well as he. It relieved him of some of the blame that might otherwise attach to him. In fact, Lucky had no right——

Bigman stopped his thoughts, appalled. He was working himself into a resentment against Lucky. That wasn't he. That was *they*!

Savagely he forced all thought from his mind and concentrated on Lucky, whose fingers were now on the transmitter, working them into the careful adjustment required to reach finely out into space.

And then Bigman's head snapped back at a sudden new and strange sound.

It was a voice, flat, without intonation. It said, "Do not tamper with your machine of far-reaching sound. We do not wish it."

Bigman turned. His mouth fell open and, for a moment, stayed so. He said, "Who said that? Where is it?"

Lucky said, "Easy, Bigman. It was inside your head."

"Not the V-frog!" said Bigman despairingly.

"Great Galaxy, what else can it be?"

And Bigman turned to stare out the port again, at the clouds, the rain, and the swaying V-frog.



\* \* \*

Once before in his life Lucky had felt the minds of alien creatures impressing their thoughts upon him. That had been on the day he had met the immaterial-energy beings that dwelt within the hollow depths of Mars. There his mind had been laid open, but the entry of thought had been painless, even pleasant. He had known his own helplessness, yet he had also been deprived of all fear.

Now he faced something different. The mental fingers inside his skull had forced their way in and he felt them with pain, loathing, and resentment.

Lucky's hand had fallen away from the transmitter, and he felt no urge to return to it. He had forgotten it again.

The voice sounded a second time. "Make air vibrations with your mouth."

Lucky said, "You mean, speak? Can you hear our thoughts when we do not speak?"

"Only very dimly and vaguely. It is very difficult unless we have studied your mind well. When you speak, your thoughts are sharper and we can hear."

"We hear you without trouble," said Lucky.

"Yes. We can send our thoughts powerfully and with strength. You cannot."

"Have you heard all I've said so far?"

"Yes."

"What do you wish of me?"

"In your thoughts we have detected an organization of your fellow beings far off, beyond the end, on the other side of the sky. You call it the Council. We wish to know more about it."

Inwardly Lucky felt a small spark of satisfaction. One question, at least, was answered. As long as he represented only himself, as an individual, the enemy was content to kill him. But in recent hours the enemy had discovered he had penetrated too much of the truth, and they were concerned about it.

Would other members of the Council learn as easily? What was the nature of this Council?

Lucky could understand the curiosity of the enemy, the new caution, the sudden desire to learn a little more from Lucky before killing him. No wonder the enemy had forbore forcing Evans to kill him even when the blaster was pointed and Lucky was helpless, forbore just an instant too long.

But Lucky buried further thought on the subject. They might, as

they said, be unable to clearly hear unspoken thoughts. Then again, they might be lying.

He said abruptly, "What do you have against my people?"

The flat, emotionless voice said, "We cannot say what is not so."

Lucky's jaw hardened at that. Had they picked up his last thought concerning their lying? He would have to be careful, very careful.

The voice continued. "We do not think well of your people. They end life. They eat meat. It is bad to be intelligent and to eat meat. One who eats meat must end life to live, and an intelligent meat eater does more harm than a mindless one since he can think of more ways to end life. You have little tubes that can end the lives of many at one time."

"But we do not kill V-frogs."

"You would if we let you. You even kill each other in large groups and small."

Lucky avoided comment on the last remark. He said, instead, "What is it you want of my people, then?"

"You grow numerous on Venus," said the voice. "You spread and take up room."

"We can take only so much," reasoned Lucky. "We can build cities only in the shallow waters. The deeps will always remain yours, and they form nine parts of the ocean's ten. Besides that, we can help you. If you have the knowledge of mind, we have the knowledge of matter. You have seen our cities and the machines of shining metal that go through air and water to worlds on the other side of the sky. With this power of ours, think how we can help you."

"There is nothing we need. We live and we think. We are not afraid and we do not hate. What more can we need? What should we do with your cities and your metal and your ships? How can it make life better for us?"

"Well, then, do you intend to kill us all?"

"We do not desire to end life. It is enough for us if we hold your minds so that we will know you will do no harm."

Lucky had a quick vision (his own? implanted?) of a race of men on Venus living and moving under the direction of the dominant natives, gradually being cut off from all connection with Earth, the generations growing more and more into complacent mental slaves.

He said, in words whose confidence he did not entirely feel, "Men cannot allow themselves to be controlled mentally."

"It is the only way, and you must help us."

"We will not."

"You have no choice. You must tell us of these lands beyond the

sky, of the organization of your people, of what they will do against us, and how we may guard ourselves."

"There is no way you can make me do that."

"Is there not?" asked the voice. "Consider, then. If you will not speak the information we require, we will then ask you to descend back into the ocean in your machine of shining metal, and there at the bottom you will open your machine to the waters."

"And die?" said Lucky grimly.

"The end of your lives would be necessary. With your knowledge it would not be safe to allow you to mingle with your fellows. You might speak to them and cause them to attempt reprisals. That would not be good."

"Then I have nothing to lose by not telling you."

"You have much to lose. Should you refuse what we ask, we would have to delve into your mind by force. That is not efficient. We might miss much of value. To diminish that danger, we would have to take your mind apart bit by bit, and that would be unpleasant for you. It would be much better for us and for you if you were to help us freely."

"No." Lucky shook his head.

A pause. The voice began again: "Although your people are given to ending life, they fear having their own lives end. We will spare you that fear if you help us. When you descend into the ocean to your life's end, we will remove fear from your mind. If, however, you do not choose to help us, we will force you into life's end anyhow, but we will not remove fear. We will intensify it."

"No," said Lucky, more loudly.

Another pause, a longer one. Then the voice said, "We do not ask your knowledge out of fear for our own safety, but to make it unnecessary for ourselves to take measures of an unpleasant nature. If we are left with but uncertain knowledge as to how to guard ourselves against your people from the other side of the sky, then we will be forced to put an end to the threat by ending life for all your people on this world. We will let the ocean into their cities as we have already almost done to one of them. Life will end for your people like the quenching of a flame. It will be snuffed out, and life will burn no more."

Lucky laughed wildly. "Make me!" he said.

"Make you?"

"Make me speak. Make me dive the ship. Make me do *anything*."

"You think we cannot?"

"I know you cannot."

"Look about you, then, and see what we have already accomplished. Your fellow creature who is bound is in our hands. Your fellow creature who stood at your side is in our hands."

Lucky whirled. In all this time, through all this conversation, he had not heard Bigman's voice once. It was as though he had completely forgotten Bigman's existence. And now he saw the little Martian lying twisted and crumpled at his feet.

Lucky dropped to his knees, a vast and fearful dismay parching his throat. "You've killed him?"

"No, he lives. He is not even badly hurt. But, you see, you are alone now. You have none to help you now. They could not withstand us, and neither can you."

White-faced, Lucky said, "No. You will not make me do anything."

"One last chance. Make your choice. Do you choose to help us, so that life may end peacefully and quietly for you? Or will you refuse to help us, so that it must end in pain and sorrow, to be followed, perhaps, by life's end for all your people in the cities below the ocean? Which is it to be? Come, your answer!"

The words echoed and re-echoed within Lucky's mind as he prepared to stand, alone and unfriended, against the buffets of a mental power he did not know how to fight save by an unbending stubbornness of will.

# 14

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## Minds Battle

How does one set up a barrier against mental attack? Lucky had the desire to resist, but there were no muscles he could flex, no guard he could throw up, no way he could return violence. He must merely remain as he was, resisting all those impulses that flooded his mind which he could not surely tell to be his own.

And how could he tell which were his own? What did he himself wish to do? What did he *himself* wish most to do?

Nothing entered his mind. It was blank. Surely there *had* to be something. He had not come up here without a plan.

*Up here?*

Then he had come up. Originally, he had been down.

Far down in the recesses of his mind, he thought, That's it.

He was in a ship. It had come up from the sea bottom. It was on the surface of the water now. Good. What next?

Why at the surface? Dimly he could remember it was safer underneath.

He bent his head with great difficulty, closed his eyes and opened them again. His thoughts were very thick. He had to get word somewhere . . . somewhere . . . about something.

He had to get word.

Get word.

And he broke through! It was as though somewhere miles inside of himself he had put a straining shoulder to a door and it had burst open. There was a clear flash of purpose, and he remembered something he had forgotten.

Ship's radio and the space station, of course.

He said, huskily, "You haven't got me. Do you hear that? I remember, and I'll keep on remembering."

There was no answer.

He shouted aloud, incoherently. His mind was faintly occupied with the analogy of a man fighting an overdose of a sleeping drug. Keep the muscles active, he thought. Keep walking. Keep walking.

In his case, he had to keep his mind active, he had to keep the mental fibers working. Do something. Do something. Stop, and they'll get you.

He continued shouting, and sound became words, "I'll do it. I'll do it."

Do what? He could feel it slipping from him again.

Feverishly, he repeated to himself, "Radio to station . . . radio to station . . ." but the sounds were becoming meaningless.

He was moving now. His body turned clumsily as though his joints were wood and nailed in place, but it was turning. He faced the radio. He saw it clearly for a moment, then it wavered and became foggy. He bent his mind to the task, and it was clear again. He could see the transmitter, see the range-setting toggle and the frequency condensers. He could recall and understand its workings.

He took a dragging step toward it and a sensation as of red-hot spikes boring into his temples overwhelmed him.

He staggered and fell to his knees, then, in agony, rose again.

Through pain-hazed eyes, he could still make out the radio. First one of his legs moved, then another.

The radio seemed a hundred yards away, hazy, surrounded by a bloody mist. The pounding in Lucky's head increased with each step.

He fought to ignore the pain, to see only the radio, to think only of the radio. He forced his legs to move against a rubbery resistance that was entangling them and dragging him down.

Finally, he put out his arm, and when his fingers were still six inches away from the ultrawave, Lucky knew that his endurance was at an end. Try as he might, he could drive his exhausted body no closer. It was all over. It was ended.

The *Hilda* was a scene of paralysis. Evans lay unconscious on his cot; Bigman was crumpled on the floor; and though Lucky remained stubbornly upright, his trembling fingertips were the only sign of life in him.

The cold voice in Lucky's mind sounded once again in its even, inexorable monotone: "You are helpless, but you will not lose consciousness as did your companions. You will suffer this pain until

you decide to submerge your ship, tell us what we wish to know, and end your life. We can wait patiently. There is no way you can resist us. There is no way you can fight us. No bribe! No threat!"

Lucky, through the endless torture, felt a striving within his sluggish, pain-soaked mind, the stirring of something new.

No bribe? No threat?

No bribe?

Even through the misty semiconsciousness, the spark in his mind caught fire.

He abandoned the radio, turned his thoughts away, and instantly the curtain of pain lifted a fraction. Lucky took a faltering step away from the radio, and it lifted a bit more. He turned away completely.

Lucky tried not to think. He tried to act automatically and without foreplanning. They were concentrating on preventing his reaching the radio. They must not realize the other danger they faced. The pitiless enemy must not deduce his intentions and try to stop him. He would have to act quickly. They must not stop him.

They *must* not!

He had reached the first-aid wall chest and flung open its door. He could not see clearly, and he lost precious seconds in fumbling.

The voice said, "What is your decision?" and the fierceness of pain began to clamp down upon the young councilman once more.

Lucky had it—a squat jar of bluish silicone. His fingers groped through what seemed deadening cotton for the little catch that would shut off the paramagnetic microfield that held the jar's lid closed and airtight.

He scarcely felt the little nudge as one fingernail caught the catch. He scarcely saw the lid move to one side and fall off. He scarcely heard it hit the floor with the sound of metastatic against metal. Fuzzily, he could see that the jar was open, and hazily, he lifted his arm toward the trash ejector.

The pain had returned in all its fury.

His left arm had lifted the hinged opening of the ejector; his right arm tremblingly raised the precious jar to the six-inch opening.

His arm moved for an eternity. He could no longer see. A red haze covered everything.

He felt his arm and the jar it held strike the wall. He pushed, but it would move no farther. The fingers on his left hand inched down from where they held the opening of the trash ejector, and touched the jar.

He daren't drop it now. If he did, he would never in his life find the strength to pick it up again.

He had it in both hands, and together both hands pulled at it. It inched upward, while Lucky hovered closer and closer to the edge of unconsciousness.

*And then the jar was gone!*

A million miles away, it seemed, he could hear the whistle of compressed air, and he knew the jar had been ejected into the warm Venusian ocean.

For a moment the pain wavered and then, in one giant stroke, lifted completely.

Lucky righted himself carefully and stepped away from the wall. His face and body were drenched in perspiration, and his mind still reeled.

As fast as his still faltering steps could take him, he moved to the radio transmitter, and this time nothing stopped him.

Evans sat in a chair with his head buried in his arms. He had gulped thirstily at water and kept saying over and over again, "I don't remember a thing. I don't remember a thing."

Bigman, bare to the waist, was mopping at his head and chest with a damp cloth, and a shaky grin came to his face. "I do. I remember everything. One minute I was standing there listening to you talking to the voice, Lucky, and then with no warning I was flat on the floor. I couldn't feel a thing, I couldn't turn my head, I couldn't even blink my eyes, but I could hear everything that was going on. I could hear the voice and what you said, Lucky. I saw you start for the radio . . ."

He puffed his breath out and shook his head.

"I never made it that first time, you know," said Lucky quietly.

"I couldn't tell. You passed out of my field of vision, and after that all I could do was lie there and wait to hear you start sending. Nothing happened, and I kept thinking they must have you, too. In my mind, I could see all three of us lying in living death. It was all over, and I couldn't nudge a thumbnail. It was all I could do just to breathe. Then you moved back past my eyes again, and I wanted to laugh and cry and yell all at the same time, but all I could do was lie there. I could just about make you out, Lucky, clawing at the wall. I couldn't tell what on Venus you were doing, but a few minutes later it was all over. Wow!"

Evans said wearily, "And we're really heading back for Aphrodite now, Lucky? No mistake?"

"We're heading back unless the instruments are lying, and I don't



think they are," said Lucky. "When we do get back and we can spare the time, we'll all of us get a little medical attention."

"Sleep!" insisted Bigman. "That's all I want. Just two days of solid sleep."

"You'll get that, too," said Lucky.

But Evans, more than the other two, was haunted by the experience. It showed quite plainly in the way he huddled in his own arms and slouched, almost cowered, in his chair. He said, "Aren't they interfering with us in any way at all any more?" There was the lightest emphasis on the word *they*.

"I can't guarantee that," said Lucky, "but the worst of the affair is over in a way. I reached the space station."

"You're sure? There's no mistake?"

"None at all. They even relayed me to Earth and I spoke to Conway directly. That part is settled."

"Then it's *all* settled," crowed Bigman joyously. "Earth is prepared. It knows the truth about the V-frogs."

Lucky smiled, but offered no comment.

Bigman said, "Just one thing, Lucky. Tell me what happened. How did you break their hold? Sands of Mars! What did you do?"

Lucky said, "Nothing that I ought not to have thought of long in advance and saved us all a great deal of needless trouble. The voice told us that all they needed in life was to live and to think. You recall that, Bigman? It said later on that we had no way of threatening them and no way of bribing them? It was only at the last moment that I realized you and I knew better."

"I know better?" said Bigman blankly.

"Certainly you do. You found out two minutes after you saw your first V-frog, that life and thought is *not* all they need. I told you on the way to the surface that Venusian plants stored oxygen so that Venusian animals got their oxygen from their food and didn't have to breathe. In fact, I said, they probably get too much oxygen and that's why they're so fond of low-oxygen food like hydrocarbons. Like axle grease, for instance. Don't you remember?"

Bigman's eyes were widening. "Sure."

"Just think how they must crave hydrocarbon. It must be like the craving of a child for candy."

Bigman said once again, "Sure."

"Now the V-frogs had us under mental control, but to maintain us under such control they had to concentrate. What I had to do was distract them, at least to distract those that were nearest the ship, and

whose power over us was strongest. So I threw out the obvious thing."

"But what? Don't play cute, Lucky."

"I threw out an open jar of petroleum jelly, which I got out of the medicine cabinet. It's pure hydrocarbon, of much higher grade than the axle grease. They couldn't resist. Even with so much at stake, they couldn't resist. Those nearest to the jar dived for it. Others farther away were in mental rapport, and their minds turned instantly to hydrocarbon. They lost control of us, and I was able to put through the call. That was all."

"Well, then," said Evans, "we're through with them."

"If it comes to that," said Lucky, "I'm not at all certain. There are a few things——"

He turned away, frowning, his lips clamped shut, as though he had already spoken too much.

The dome glimmered gorgeously outside the port, and Bigman felt his heart lift at the sight. He had eaten, even napped a bit, and his ebullient spirits bubbled as ever now. Lou Evans had recovered considerably from his own despondency. Only Lucky had not lost his look of wariness.

Bigman said, "I tell you the V-frogs are demoralized, Lucky. Look here, we've come back through a hundred miles of ocean, nearly, and they haven't touched us once. Well, have they?"

Lucky said, "Right now, I'm wondering why we don't get an answer from the dome."

Evans frowned in his turn. "They shouldn't take this long."

Bigman looked from one to the other. "You don't think anything can be wrong inside the city, do you?"

Lucky waved his hand for silence. A voice came in over the receiver, low and rapid.

"Identification, please."

Lucky said, "This is the Council-chartered subship *Hilda*, out of Aphrodite, returning to Aphrodite. David Starr in charge and speaking."

"You will have to wait."

"For what reason, please?"

"The locks are all in operation at the moment."

Evans frowned and muttered, "That's impossible, Lucky."

Lucky said, "When will one be free? Give me its location, and direct me to its vicinity by ultrasignal."

"You will have to wait."

The connection remained open, but the man at the other end spoke no more.

Bigman said indignantly, "Get Councilman Morriss, Lucky. That'll get some action."

Evans said hesitantly, "Morriss thinks I'm a traitor. Do you suppose he could have decided that you've thrown in with me, Lucky?"

"If so," said Lucky, "he'd be anxious to get us into the city. No, it's my thought that the man we've been speaking to is under mental control."

Evans said, "To stop us from getting in? Are you serious?"

"I'm serious."

"There's no way they can stop us from getting in in the long run unless they——" Evans paled and moved to the porthole in two rapid strides. "Lucky, you're right! They're bringing a cannon blaster to bear! They're going to blow us out of the water!"

Bigman was at the porthole, too. There was no mistake about it. A section of the dome had moved to one side, and through it, somewhat unreal as seen through water, was a squat tube.

Bigman watched the muzzle lower and center upon them, with fascinated horror. The *Hilda* was unarmed. It could never gain velocity fast enough to escape being blasted. There seemed no way out of instant death.

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## The Enemy?

But even as Bigman felt his stomach constrict at the prospect of imminent destruction, he could hear Lucky's even voice speaking forcefully into the transmitter:

"Subship *Hilda* arriving with cargo of petroleum . . . Subship *Hilda* arriving with cargo of petroleum . . . Subship *Hilda* arriving with cargo of petroleum . . . Subship *Hilda*——"

An agitated voice broke through from the other end. "Clement Heber at lock control at this end. What is wrong? Repeat. What is wrong? Clement Heber——"

Bigman yelled, "They're withdrawing the blaster, Lucky."

Lucky let out his breath in a puff, but only in that way did he show any sign of tension. He said into the transmitter, "Subship *Hilda* reporting for entrance to Aphrodite. Please assign lock. Repeat. Please assign lock."

"You may have lock number fifteen. Follow directional signal. There seems to be some confusion here."

Lucky rose and said to Evans, "Lou, take the controls and get the ship into the city as fast as you can." He motioned Bigman to follow him to the other room.

"What—what——" Bigman spluttered like a leaky popgun.

Lucky sighed and said, "I thought the V-frogs would try to arrange to have us kept out, so I was all set with the petroleum trick. But I didn't think things would get so bad they would point a cannon at us. That made it really tough. I wasn't as sure as all that that the petroleum notion would work."

"But how did it?"

"Hydrocarbon again. Petroleum is hydrocarbon. My word came

over the open radio and the V-frogs who had the dome guards under control were distracted."

"How come they knew what petroleum was?"

"I pictured it in my mind, Bigman, with every bit of imagination I had. They can read minds when you sharpen the mental pictures by speaking, you know.

"But never mind all that." His voice dropped to a whisper. "If they're ready to blow us out of the ocean, if they're ready for something as crudely violent as that, they're desperate; and we're desperate, too. We've got to bring this to an end right away, and we've got to do the right thing. One mistake at this stage could be fatal."

From his shirt pocket Lucky had unclipped a scribe, and he was writing rapidly on a piece of foil.

He held it out to Bigman. "That's what you're to do when I give the word."

Bigman's eyes widened, "But Lucky——"

"Sh! Don't refer to any of this in words."

Bigman nodded, "But are you sure you're right?"

"I hope so." Lucky's handsome face was drawn with anxiety. "Earth knows about the V-frogs now, so they'll never win over humanity; but they may still do damage here on Venus. We've got to prevent that somehow. Now do you understand what you're to do?"

"Yes."

"In that case . . ." Lucky rolled the foil together and kneaded it with his strong fingers. The pellet that remained he returned to his shirt pocket.

Lou Evans called out, "We're in the lock, Lucky. In five minutes we'll be in the city."

Lucky said, "Good. Get Morriss on the radio."

They were in Council headquarters in Aphrodite again, the same room, Bigman thought, in which he had first met Lou Evans; the same room in which he had first seen a V-frog. He shuddered at the thought of those mental tendrils infiltrating his mind for the first time without his knowledge.

That was the one way in which the room was different now. The aquarium was gone; the dishes of peas and of axle grease were gone; the tall tables stood bare at the false window.

Morriss had pointed that out mutely as soon as they entered. His plump cheeks sagged and the lines of strain about his eyes were marked. His pudgy handshake was uncertain.

Carefully Bigman put what he was carrying on top of one of the tables. "Petroleum jelly," he said.

Lou Evans sat down. So did Lucky.

Morriss did not. He said, "I got rid of the V-frogs in this building. That was all I could do. I can't ask people to do away with their pets without a reason. And I couldn't give the reason, obviously."

"It will be enough," said Lucky. "Throughout this discussion, though, I want you to keep your eyes on the hydrocarbon. Keep its existence firmly in your mind."

"You think that will help?" asked Morriss.

"I think it will."

Morriss stopped his pacing immediately before Lucky. His voice was a sudden bluster. "Starr, I can't believe this. The V-frogs have been in the city for years. They've been here almost since the city was built."

"You've got to remember——" began Lucky.

"That I'm under their influence?" Morriss reddened. "That isn't so. I deny it."

"There's nothing to be ashamed of, Dr. Morriss," said Lucky, crisply. "Evans was under their control for days, and Bigman and I have been controlled, too. It is possible to be honestly unaware that your mind has been continuously picked."

"There's no proof of it, but never mind," said Morriss violently. "Suppose you're right. The question is, what can we do? How do we fight them? Sending men against them will be useless. If we bring in a fleet to bombard Venus from space, they may force the dome locks open and drown every city on Venus in revenge. We could never kill every V-frog on Venus anyway. There are eight hundred million cubic miles of ocean for them to hide in, and they can multiply fast if they want to. Now your getting word to Earth was essential, I admit, but it still leaves us with many important problems."

"You're right," admitted Lucky, "but the point is, I didn't tell Earth everything. I couldn't until I was certain I knew the truth. I——"

The intercom signal flashed, and Morriss barked, "What is it?"

"Lyman Turner for his appointment, sir," was the answer.

"One second." The Venusian turned to Lucky and said in a low voice, "Are you sure we want him?"

"You had this appointment about strengthening the transite partitions within the city, didn't you?"

"Yes, but——"

"And Turner is a victim. The evidence would seem to be clear

there. He is the one highly-placed official beside ourselves who would definitely seem to be one. We would want to see him, I think."

Morriss into the intercom, "Send him up."

Turner's gaunt face and hooked nose made up a mask of inquiry as he entered. The silence in the room and the way the others stared at him would have filled even a far less sensitive man with foreboding.

He swung his computer case to the floor and said, "Is anything wrong, gentlemen?"

Slowly, carefully, Lucky gave him the bare outline of the matter.

Turner's thin lips parted. He said, weakly, "You mean, *my* mind——"

"How else would the man at the lock have known the exact manner in which to keep out intruders? He was unskilled and untrained, yet he barricaded himself in with electronic perfection."

"I never thought of that. I never thought of that." Turner's voice was almost an incoherent mumble. "How could I have missed it?"

"They wanted you to miss it," said Lucky.

"It makes me ashamed."

"You have company in that, Turner. Myself, Dr. Morriss, Councilman Evans——"

"Then what do we do about it?"

Lucky said, "Exactly what Dr. Morriss was asking when you arrived. It will need all our thought. One of the reasons I suggested you be brought into this gathering is that we may require your computer."

"Oceans of Venus, I hope so," said Turner fervently. "If I could do something to make up for——" And he put his hand to his forehead as though half in fear that he had a strange head on his shoulders, one not his own.

He said, "Are we ourselves now?"

Evans put in, "We will be as long as we concentrate on that petroleum jelly."

"I don't get it. Why should that help?"

"It does. Never mind how for the moment," said Lucky. "I want to get on with what I was about to say when you arrived."

Bigman swung back to the wall and perched himself on the table where the aquarium once stood. He stared idly at the open jar on the other table as he listened.

Lucky said, "Are we sure the V-frogs are the real menace?"

"Why, that's your theory," said Morriss with surprise.

"Oh, they're the immediate means of controlling the minds of

mankind, granted; but are they the real enemy? They're pitting their minds against the minds of Earthmen and proving formidable opponents, yet individual V-frogs seem quite unintelligent."

"How so?"

"Well, the V-frog you had in this place did not have the good sense to keep out of our minds. He broadcast his surprise at our being without mustaches. He ordered Bigman to get him peas dipped in axle grease. Was that intelligent? He gave himself away immediately."

Morriss shrugged, "Maybe not all V-frogs are intelligent."

"It goes deeper than that. We were helpless in their mental grip out on the ocean surface. Still, because I guessed certain things, I tried a jar of petroleum jelly on them, and it worked. It scattered them. Mind you, their entire campaign was at stake. They had to keep us from informing Earth concerning them. Yet they ruined everything for one jar of petroleum jelly. Again, they almost had us when we were trying to re-enter Aphrodite. The cannon was coming to an aim when the mere mention of petroleum spoiled their plans."

Turner stirred in his seat. "I understand what you mean by the petroleum now, Starr. Everyone knows the V-frogs have a craving for grease of all sorts. The craving is just too strong for them."

"Too strong for beings sufficiently intelligent to battle Earthmen? Would you abandon a vital victory, Turner, for a steak or a wedge of chocolate cake?"

"Of course I wouldn't, but that doesn't prove a V-frog wouldn't."

"It doesn't, I grant you. The V-frog mind is alien to us and we can't suppose that what works with us must work with them. Still, the matter of their being diverted by hydrocarbon is suspicious. It makes me compare V-frogs with dogs rather than with men."

"In what way?" demanded Morriss.

"Think about it," said Lucky. "A dog can be trained to do many seemingly intelligent things. A creature who had never seen or heard of a dog before, watching a seeing-eye dog guide a blind master in the days before Son-O-Taps, would have wondered whether the dog or the man was the more intelligent. But if he passed by them with a meaty bone and noted that the dog's attention was instantly diverted, he would suspect the truth."

Turner said, his pale eyes nearly bulging, "Are you trying to say that V-frogs are just the tools of human beings?"

"Doesn't that sound probable, Turner? As Dr. Morriss said just a while ago the V-frogs have been in the city for years, but it's only a matter of the last few months that they've been making trouble.



And then the trouble started with trivialities, like a man giving away money in the streets. It is almost as though some men learned how to use the V-frogs' natural capacity for telepathy as tools with which to inflict their thoughts and orders on human minds. It is as though they had to practice at first, learn the nature and limitations of their tools, develop their control, until the time came when they could do big things. Eventually, it would be not the yeast that they were after but something more; perhaps control of the Solar Confederation, even of the entire galaxy."

"I can't believe it," said Morriss.

"Then I'll give you another piece of evidence. When we were out in the ocean, a mental voice—presumably that of a V-frog—spoke to us. It tried to force us to give it some information and then commit suicide."

"Well?"

"The voice arrived via a V-frog, but it did not originate with one. It originated with a human being."

Lou Evans sat bolt upright and stared incredulously at Lucky.

Lucky smiled. "Even Lou doesn't believe that, but it's so. The voice made use of odd concepts such as 'machines of shining metal' instead of 'ships.' We were supposed to think that V-frogs were unfamiliar with such concepts, and the voice had to stimulate our minds into imagining we heard round-about expressions that meant the same thing. But then the voice forgot itself. I remember what I heard it say. I remember it word for word: 'Life will end for your people like the quenching of a flame. It will be snuffed out and life will burn no more.'"

Morriss stolidly said again, "Well?"

"You still don't see it? How could the V-frogs use a concept like the 'quenching of a flame' or 'life will burn no more'? If the voice pretends to be that of a V-frog with no concept of such a thing as a ship, how could it have one of fire?"

They all saw it, now, but Lucky drove on furiously. "The atmosphere of Venus is nitrogen and carbon dioxide. There is no oxygen. We all know that. Nothing can burn in Venus's atmosphere. There can be no flame. In a million years no V-frog could possibly have seen a fire, and none of them can know what it is. Even granted that some might have seen fire and flame within the city domes, they could have no understanding of its nature any more than they understood our ships. As I see it, the thoughts we received originated with no V-frog, but with a man who used the V-frog only as a channel to reach from his own mind to ours."

"But how could that be done?" asked Turner.

"I don't know," said Lucky. "I wish I did. Certainly it would take a brilliant mind to find a way. A man would have to know a great deal about the workings of a nervous system and about the electrical phenomena associated with it." Lucky looked coldly at Morriss. "It might take, for instance, a man who specialized in biophysics."

And all eyes turned on the Venusian councilman, from whose round face the blood was draining until his grizzled mustache seemed scarcely visible against his pale skin.

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## The Enemy!

Morriss managed to say, "Are you trying to——" and his voice ground hoarsely to a halt.

"I'm not making any definite statement," said Lucky smoothly. "I have merely made a suggestion."

Morriss looked helplessly about, turning from face to face of the four other men in the room, watching each pair of eyes meet his in fixed fascination.

He choked out, "This is mad, absolutely insane. I was the first to report all this—this—trouble on Venus. Find the original report in Council headquarters. My name is on it. Why should I call in the Council if I were—— And my motive? Eh? My motive?"

Councilman Evans seemed uneasy. From the quick glance he shot in Turner's direction, Bigman guessed that this form of inter-Council squabble in front of an outsider was not to his liking.

Still, Evans said, "It would explain the effort Dr. Morriss made to discredit me. I was an outsider, and I might stumble on the truth. I had found half of it, certainly."

Morriss was breathing heavily. "I deny that I ever did such a thing. All this is a conspiracy of some sort against me, and it will go hard in the end for any of you who join in this. I will have justice."

"Are you implying that you wish a Council trial?" asked Lucky. "Do you want to plead your case before a meeting of the assembled Central Committee of the Council?"

What Lucky was referring to, of course, was the procedure ordained for the trial of councilmen accused of high treason against the Council and the Solar Confederation. In all the history of the Council, not one man had ever had to stand such a trial.

At its mention, whatever shreds of control Morriss had used to restrain his feelings vanished. Roaring, he scrambled to his feet and hurtled blindly at Lucky.

Lucky rolled nimbly up and over the arm of the chair he occupied and, at the same time, gestured quickly at Bigman.

It was the signal that Bigman was waiting for. Bigman proceeded to follow the instructions Lucky had given him on board the *Hilda* when they were passing through the lock of Aphrodite's dome.

A blaster bolt shot out. It was at low intensity but its ionizing radiations produced the pungent odor of ozone in the air.

Matters remained so for a moment. All motion ceased. Morriss, his head against the overturned chair, made no move to get up. Bigman remained standing, like a small statue, with his blaster still held against his hip as though he had been frozen in the act of shooting.

And the target of the blaster bolt lay destroyed and in ruins upon the floor.

Lou Evans found his breath first, but it was only for a sharp exclamation, "What in space——"

Lyman Turner whispered, "What have you done?"

Morriss, panting from his recent effort, could say nothing, but he rolled his eyes mutely at Bigman.

Lucky said, "Nice shot, Bigman," and Bigman grinned.

And in a hundred fragments Lyman Turner's black computer case lay smashed and, for the most part, disintegrated.

Turner's voice rose. "My computer! You *idiot!* What have you done?"

Lucky said sternly, "Only what he had to do, Turner. Now, everyone quiet."

He turned to Morriss, helped that plump personage to his feet, and said, "All my apologies, Dr. Morriss, but I had to make certain that Turner's attention was completely misdirected. I had to use you for that purpose."

Morriss said, "You mean you *don't* suspect me of—of——"

"Not for one minute," said Lucky. "I never did."

Morriss moved away, his eyes hot and angry, "Then suppose you explain, Starr."

Lucky said, "Before this conference, I never dared tell anyone that I thought some man was behind the V-frogs. I couldn't even state it in my message to Earth. It seemed obvious to me that if I were to do so, the real enemy might be desperate enough to take some action—such as actually flooding one of the cities—and hold the possibility of a repetition over the heads of all of us as blackmail.

As long as he did not know that I went past the V-frog in my suspicions, I hoped he would hold off and play for time or, at most, try to kill only my friends and myself.

“At this conference I could speak of the matter because I believed the man in question to be present. However, I dared not take action against him without proper preparation for fear that he might place us under control despite the presence of the petroleum and for fear that his actions thereafter would be drastic. First I had to distract his attention thoroughly to make sure that, for a few seconds at least, he would be too absorbed in the surface activities of the group to detect, via his V-frog tools, the strong emotions that might be leaking out of Bigman’s mind and mine. To be sure, there are no V-frogs in the building, but he might well be able to use the V-frogs in other parts of the city as he was able to use V-frogs out on the ocean’s surface miles away from Aphrodite.

“To distract him then, I accused you, Dr. Morriss. I couldn’t warn you in advance because I wanted your emotions to be authentic—and they were admirably so. Your attack on me was all that was needed.”

Morriss withdrew a large handkerchief from a sleeve pocket and mopped his glistening forehead. “That was pretty drastic, Lucky, but I think I understand. Turner is the man, then?”

“He is,” said Lucky.

Turner was on his knees, scrabbling among the fused and shattered shards of his instrument. He looked up with hate-filled eyes, “You’ve destroyed my computer.”

“I doubt that it was a computer,” said Lucky. “It was too inseparable a companion of yours. When I first met you, you had it with you. You stated you were using it to compute the strength of the inner barriers of the city against the threatened flood. Right now you have it with you presumably to help you if you should require new computations for your discussions with Dr. Morriss on the strength of those same inner barriers.”

Lucky paused, then went on with a hard calmness in his voice. “But I came to see you in your apartment the morning after the threatened flood. I was merely planning to ask you some questions that involved no computing and you knew that. Yet you had your computer with you. You could not bring yourself to leave it in the next room. It had to be with you, at your feet. Why?”

Turner said desperately, “It was my own construction. I was fond of it. I always carried it with me.”

“I should judge it weighed some twenty-five pounds. Rather

heavy, even for affection. Could it be that it was the device you used to maintain touch with the V-frogs at all times?"

"How do you intend to prove that?" flashed back Turner. "You said I myself was a victim. Everyone here is witness to that."

"Yes," said Lucky, "the man who, despite inexperience, so expertly barricaded himself at the dome lock, got his information from you. But was that information stolen from your mind or did you yourself donate it freely?"

Morriss said angrily, "Let me put the question directly, Lucky. Are you or are you not responsible for the epidemic of mental control, Turner?"

"Of course I'm not," cried Turner. "You can't do anything just on the say-so of a young fool who thinks he can make guesses and have them stick because he's on the Council."

Lucky said, "Tell me, Turner, do you remember that night when a man sat at one of the dome locks with a lever in his hand? Do you remember it well?"

"Quite well."

"Do you remember coming to me and telling me that if the locks were opened the inner transite barrier would not hold and that all of Aphrodite would be flooded? You were quite frightened. Almost panicky."

"All right. I was. I still am. It's something to be panicky about." He added, with his lip curling, "Unless you're the brave Lucky Starr."

Lucky ignored that. "Did you come to me with that information in order to add a little to the already existing confusion, to make sure that we were all disconcerted long enough for you to maneuver Lou Evans out of the city in order that he might be safely killed in the ocean? Evans was hard to handle, and he had learned too much concerning the V-frogs. Perhaps, also, you were trying to frighten me out of Aphrodite and off Venus."

Turner said, "This is all ridiculous. The inner barriers *are* inadequate. Ask Morriss. He's already seen my figures."

Morriss nodded reluctantly. "I'm afraid Turner is right there."

"No matter," said Lucky. "Let's consider that settled. There was a real danger, and Turner was justifiably panicked. . . . You are married, Turner."

Turner's eyes flicked uneasily to Lucky's face and away again. "So?"

"Your wife is pretty and considerably younger than yourself. You have been married for not quite a year."

"What is that intended to prove?"

"That you probably have a deep affection for her. Immediately after marriage you move into an expensive apartment to please her; you allow her to decorate it according to her tastes even though your own taste differs. Surely you wouldn't neglect her safety, would you?"

"I don't understand. What are you talking about?"

"I think you know. The one time I met your wife she told me that she had slept through the entire excitement the night before. She seemed quite disappointed that she had. She also told me what a fine apartment house she lived in. She said it even possessed 'chambers.' Unfortunately, that meant nothing to me at the time, or I might have seen the truth then and there. It was only later, at the bottom of the ocean, that Lou Evans casually mentioned chambers and told me what they were. 'Chambers' is a word used on Venus to denote special shelters built to withstand the full force of the ocean in case a quake breaks a city dome. Now do you know what I'm talking about?"

Turner was silent.

Lucky went on. "If you were so frightened of city-wide catastrophe that night, why didn't you think of your wife? You spoke of rescuing people, of escaping the city. Did you never consider your wife's safety? There were chambers in the basement of her apartment house. Two minutes and she would have been safe. You had only to call her, give her one word of warning. But you didn't. You let her sleep."

Turner mumbled something.

Lucky said, "Don't say you forgot. That's completely unbelievable. You might have forgotten anything, but not your wife's safety. Let me suggest an alternative explanation. You were not worried about your wife because you knew she was in no real danger. You knew she was in no real danger because you knew the lock in the dome would never be opened." Lucky's voice was hard with anger. "You knew the lock in the dome would never be opened because you yourself were in mental control of the man at the lever. It was your very fondness for your wife that betrayed you. You could not bring yourself to disturb her sleep merely in order to make your phony act more plausible."

Turner said suddenly, "I'm not saying anything more without a lawyer. What you have isn't evidence."

Lucky said, "It's enough to warrant a full Council investigation, though. . . . Dr. Morriss, would you have him taken in custody in

preparation for flight under guard to Earth? Bigman and I will go with him. We'll see that he gets there safely."

At the hotel again, Bigman said worriedly, "Sands of Mars, Lucky, I don't see how we're going to get proof against Turner. All your deductions sound convincing and all that, but it isn't legal proof."

Lucky, with a warm yeast dinner inside himself, was able to relax for the first time since he and Bigman had penetrated the cloud barrier that encircles Venus. He said, "I don't think the Council will be mainly interested in legal proof or in getting Turner executed."

"Lucky! Why not? That cobber——"

"I know. He's a murderer several times over. He definitely had dictatorial ambitions, so he's a traitor, too. But more important than either of those things is the fact that he created a work of genius."

Bigman said, "You mean his machine?"

"I certainly do. We destroyed the only one in existence, probably, and we'll need him to build another. There are many questions we'd like answered. How did Turner control the V-frogs? When he wanted Lou Evans killed, did he instruct the V-frogs in detail, tell them every step of the procedure, order them to bring up the giant patch? Or did he simply say, 'Kill Evans,' and allow the V-frogs to do their jobs like trained dogs in whatever way they thought best?"

"Then, too, can you imagine the use to which an instrument such as that can be put? It may offer us an entirely new method of attack on mental diseases, a new way of combating criminal impulses. It may even, conceivably, be used to prevent wars in the future or to defeat the enemies of Earth quickly and bloodlessly if a war is forced upon us. Just as the machine was dangerous in the hands of one ambition-riddled man, it can be very useful and beneficial in the hands of the Council."

Bigman said, "Do you think the Council will argue him into building another machine?"

"I think so, and with proper safeguards, too. If we offer him pardon and rehabilitation, with an alternative of life imprisonment with no chance of ever seeing his wife again, I think he'll agree to help. And, of course, one of the first uses of the machine would be to investigate Turner's own mind, help cure it of his abnormal desire for power, and save for the service of humanity a first-class brain."

The next day they would be leaving Venus, heading once again for Earth. Lucky thought with pleasant nostalgia of the beautiful blue sky of his home planet, the open air, the natural foods, the space and scope of land life. He said, "Remember, Bigman, it is easy to 'protect



society' by executing a criminal, but that will not bring back his victims. If one can cure him instead and use him to make life better and brighter for that society, how much more has been accomplished!"



# **LUCKY STARR AND THE BIG SUN OF MERCURY**

# DEDICATION

To Robyn Joan,  
who did her best to interfere.

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# 1

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## The Ghosts of the Sun

Lucky Starr and his small friend, John Bigman Jones, followed the young engineer up the ramp toward the air lock that led to the surface of the planet Mercury.

Lucky thought: At least things are breaking fast.

He had been on Mercury only an hour. He had had scarcely time to do more than see his ship, the *Shooting Starr*, safely stowed in the underground hangar. He had met only the technicians who had handled the landing red tape and seen to his ship.

Those technicians, that is, and Scott Mindes, engineer in charge of Project Light. It had been almost as though the young man had been lying in wait. Almost at once he had suggested a trip to the surface.

To see some of the sights, he had explained.

Lucky did not believe that, of course. The engineer's small-chinned face had been haunted with trouble, and his mouth twitched as he spoke. His eyes slid away from Lucky's cool, level glance.

Yet Lucky agreed to visit the surface. As yet, all he knew of the troubles on Mercury was that they posed a ticklish problem for the Council of Science. He was willing to go along with Mindes and see where that led him.

As for Bigman Jones, he was always glad to follow Lucky anywhere and any time, for any reason and no reason.

But it was Bigman whose eyebrows lifted as all three were getting into their suits. He nodded almost unnoticeably toward the holster attachment on Mindes's suit.

Lucky nodded calmly in return. He, too, had noticed that protruding from the holster was the butt of a heavy-caliber blaster.

\* \* \*

The young engineer stepped out onto the surface of the planet first. Lucky Starr followed and Bigman came last.

For the moment, they lost contact with one another in the nearly total darkness. Only the stars were visible, bright and hard in the cold airlessness.

Bigman recovered first. The gravity here on Mercury was almost exactly equal to that on his native Mars. The Martian nights were almost as dark. The stars in its night sky were almost as brilliant.

His treble voice sounded brightly in the receivers of the others. "Hey, I'm beginning to make things out."

So was Lucky, and the fact puzzled him. Surely starlight could not be *that* bright. There was a faint, luminous haze that lay over the tumbled landscape and touched its sharp crags with a pale milkiness.

Lucky had seen something of the sort on the Moon during its two-week-long night. There, also, was the completely barren landscape, rough and broken. Never, in millions of years, either there on the Moon or here on Mercury, had there been the softening touch of wind or rain. The bare rock, colder than imagination could picture, lay without a touch of frost in a waterless world.

And in the Moon's night, too, there had been this milkiness. But there, over half the Moon at least, there had been Earth-light. When Earth was full it shone with sixteen times the brightness of the full Moon as seen from Earth.

Here on Mercury, at the Solar Observatory at the North Pole, there was no near-by planet to account for the light.

"Is that starlight?" he finally asked, knowing it wasn't.

Scott Mindes said wearily, "That's the coronal glimmer."

"Great Galaxy," said Lucky with a light laugh. "The corona! Of course! I should have known!"

"Known what?" cried Bigman. "What's going on? Hey, Mindes, come on, give!"

Mindes said, "Turn around. You've got your back to it."

They all turned. Lucky whistled softly between his teeth; Bigman yelped with surprise. Mindes said nothing.

A section of the horizon was etched sharply against a pearly region of the sky. Every pointed irregularity of that part of the horizon was in keen focus. Above it, the sky was in a soft glow (fading with height) a third of the way to the zenith. The glow consisted of bright, curving streamers of pale light.

"That's the corona, Mr. Jones," said Mindes.

Even in his astonishment Bigman was not forgetful of his own



conception of the proprieties. He growled, "Call me Bigman." Then he said, "You mean the corona around the Sun? I didn't think it was that big."

"It's a million miles deep or more," said Mindes, "and we're on Mercury, the planet closest to the Sun. We're only thirty million miles from the Sun right now. You're from Mars, aren't you?"

"Born and bred," said Bigman.

"Well, if you could see the Sun right now, you'd find it was thirty-six times as big as it is when seen from Mars, and so's the corona. And thirty-six times as bright too."

Lucky nodded. Sun and corona would be nine times as large as seen from Earth. And the corona could not be seen at all on Earth, except during periods of total eclipse.

Well, Mindes had not altogether lied. There were sights to be seen on Mercury. He tried to fill out the corona, to imagine the Sun it surrounded which was now hidden just below the horizon. It would be a majestic sight!

Mindes went on, an unmistakable bitterness in his voice. "They call this light 'the white ghost of the Sun.' "

Lucky said, "I like that. A rather good phrase."

"Rather good?" said Mindes savagely. "I don't think so. There's too much talk about ghosts on this planet. This planet's all jinx. Nothing ever goes right on it. The mines failed . . ." His voice trailed off.

Lucky thought: We'll let that simmer.

Aloud he said, "Where is this phenomenon we were to see, Mindes?"

"Oh yes. We'll have to walk a bit. Not far, considering the gravity, but watch your footing. We don't have roads here, and the coronal glimmer can be awfully confusing. I suggest the helmet lights."

He clicked his on as he spoke, and a shaft of light sprang out from above the face-plate, turning the ground into a rough patchwork of yellow and black. Two other lights flashed on, and the three figures moved forward on their thickly insulated boots. They made no sound in the vacuum, but each could sense the soft vibrations set up by each footfall in the air within their suits.

Mindes seemed to be brooding about the planet as he walked. He said in a low, tense voice, "I hate Mercury. I've been here six months, two Mercurian years, and I'm sick of it. I didn't think I'd be here more than six months to begin with, and here the time's up and nothing's done. Nothing. Everything about this place is wrong. It's the smallest planet. It's the closest to the Sun. Only one side

faces the Sun. Over there"—and his arm swung in the direction of the corona's gleam—"is the Sun-side, where it gets hot enough in places to melt lead and boil sulfur. Over there in the other direction"—again his arm swung—"is the one planetary surface in the whole Solar System that never sees the Sun. Everything about the place is miserable."

He paused to jump over a shallow, six-foot-wide rift in the surface, a reminder of some eons-old Mercury-quake, perhaps, which could not heal over without wind and weather. He made the jump clumsily, the picture of an Earthman who, even on Mercury, stayed close to the artificial gravity of the Observatory Dome.

Bigman clicked his tongue disapprovingly at the sight. He and Lucky negotiated the jump with scarcely anything more than a lengthening of stride.

A quarter mile farther on, Mindes said abruptly, "We can see it from here, and just in time too."

He stopped, teetering forward, with arms outflung for balance. Bigman and Lucky halted with a small hop which kicked up a spurt of gravel.

Mindès's helmet flash went out. He was pointing. Lucky and Bigman put out their own lights and there, in the darkness, where Mindes had pointed, was a small, irregular splotch of white.

It was brilliant, a more burning sunshine than Lucky had ever seen on Earth.

"This is the best angle for seeing it," said Mindes. "It's the top of Black and White Mountain."

"Is that its name?" asked Bigman.

"That's right. You see why, don't you? It stands just far enough nightward of the Terminator—— That's the boundary between the dark-side and the Sun-side."

"I know that," said Bigman indignantly. "You think I'm ignorant?"

"I'm just explaining. There's this little spot around the North Pole, and another around the South Pole, where the Terminator doesn't move much as Mercury circles the sun. Down at the Equator, now, the Terminator moves seven hundred miles in one direction for forty-four days and then seven hundred miles back in the next forty-four. Here it just moves half a mile or so altogether, which is why this is a good place for an observatory. The Sun and the stars stand still.

"Anyway, Black and White Mountain is just far enough away so

that only the top half of it is lit up at most. Then, as the Sun creeps away, the light moves up the mountain slopes.”

“And now,” interposed Lucky, “only the peak is lit up.”

“Only the top foot or two maybe, and that will be gone soon. It will be all dark for an Earth-day or two, and then the light starts coming back.”

Even as he spoke the white splotch shrank to a dot that burned like a bright star.

The three men waited.

“Look away,” advised Mindes, “so that your eyes get accustomed to darkness.”

And after slow minutes he said, “All right, look back.”

Lucky and Bigman did so and for a while saw nothing.

And then it was as though the landscape had turned bloody. Or a piece of it had, at any rate. First there was just the sensation of redness. Then it could be made out, a rugged mountain climbing up to a peak. The peak was brightly red now, the red deepening and fading as the eye traveled downward until all was black.

“What is it?” asked Bigman.

“The Sun,” said Mindes, “has sunk just low enough now so that, from the mountain peak, all that remains above the horizon is the corona and the prominences. The prominences are jets of hydrogen gas that lift thousands of miles above the Sun’s surface, and they’re a bright red in color. Their light is there all the time, but ordinary sunlight drowns it out.”

Again Lucky nodded. The prominences were again something which on Earth could be seen only during a total eclipse or with special instruments, thanks to the atmosphere.

“In fact,” added Mindes in a low voice, “they call this ‘the red ghost of the Sun.’ ”

“That’s two ghosts,” said Lucky suddenly, “a white one and a red one. Is it because of the ghosts that you carry a blaster, Mr. Mindes?”

Mindes shouted, “What?” Then, wildly, “What are you talking about?”

“I’m saying,” said Lucky, “that it’s time you told us why you really brought us out here. Not just for the sights, I’m sure, or you wouldn’t carry a blaster on an empty, desolate planet.”

It took a while for Mindes to answer. When he did, he said, “You’re David Starr, aren’t you?”

“That’s right,” said Lucky patiently.

"You're a member of the Council of Science. You're the man they call Lucky Starr."

Members of the Council of Science shunned publicity, and it was with a certain reluctance that Lucky said again, "That's right."

"Then I'm not wrong. You're one of their ace investigators, and you're here to investigate Project Light."

Lucky's lips thinned as they pressed together. He would much rather that were not so easily known. He said, "Maybe that's true, maybe it isn't. Why did you bring me here?"

"I know it's true, and I brought you here"—Mindes was panting—"to tell you the truth before the others could fill you—full of—lies."

"About what?"

"About the failures that have been haunting—I hate that word—the failures in Project Light."

"But you might have told me what you wanted to back at the Dome. Why bring me here?"

"For two reasons," said the engineer. His breathing continued rapid and difficult. "In the first place, they all think it's my fault. They think I can't pull the project through, that I'm wasting tax money. I wanted to get you away from them. Understand? I wanted to keep you from listening to them first."

"Why should they think it's your fault?"

"They think I'm too young."

"How old are you?"

"Twenty-two."

Lucky Starr, who wasn't very much older, said, "And your second reason?"

"I wanted you to get the feeling of Mercury. I wanted you to absorb the—the——" He fell silent.

Lucky's suited figure stood straight and tall on Mercury's forbidding surface, and the metal of one shoulder caught and reflected the milky light of the corona, "the white ghost of the Sun."

He said, "Very well, Mindes, suppose I accept your statement that you are not responsible for failures in the project. Who is?"

The engineer's voice was a vague mutter at first. It coalesced gradually into words. "I don't know——At least——"

"I don't understand you," said Lucky.

"Look," said Mindes desperately, "I've investigated. I spent waking and sleeping periods trying to pinpoint the blame. I watched everybody's movements. I noted times when accidents took place,

when there were breaks in the cables or when conversion plates were smashed. And one thing I'm sure of——”

“Which is?”

“That nobody at the Dome can be directly responsible. Nobody. There are only about fifty people in the Dome, fifty-two to be exact, and the last six times something has gone wrong I've been able to account for each one. Nobody was anywhere near the scenes of the accidents.” His voice had gone high-pitched.

Lucky said, “Then how do you account for the accidents? Mercury-quakes? Action of the Sun?”

“Ghosts!” cried the engineer wildly, flinging his arms about. “There's a white ghost and a red ghost. You've seen those. But there are two-legged ghosts too. I've seen them, but will anyone believe me?” He was almost incoherent. “I tell you—— I tell you——”

Bigman said, “Ghosts! Are you nuts?”

At once Mindes screamed, “You don't believe me either. But I'll prove it. I'll blast the ghost. I'll blast the fools who won't believe me. I'll blast everyone. Everyone!”

With a harsh screech of laughter he had drawn his blaster, and with frenzied speed, before Bigman could move to stop him, he had aimed it at Lucky at point-blank range and squeezed its trigger. Its invisible field of disruption lashed out——

## 2

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### Mad or Sane?

It would have been the end of Lucky if he and Mindes had been on Earth.

Lucky had not missed the gathering madness in Mindes's voice. He had been waiting carefully for some break, some action to suit the violence of the engineer's hard-breathed sentences. Yet he had not entirely expected an outright assault with the blaster.

When Mindes's hand flashed to his holster, Lucky leaped to one side. On Earth, that movement would have come too late.

On Mercury, however, matters were different. Mercury's gravity was two fifths that of Earth, and Lucky's contracting muscles threw his abnormally light body (even including the suit he wore) farther to one side. Mindes, unaccustomed to low gravity, stumbled as he turned too quickly in order that his blaster might follow Lucky's motion.

The blaster's energy, therefore, struck bare ground, inches from Lucky's sinking body. It gouged a foot-deep hole into the frigid rock.

Before Mindes could recover and aim again, Bigman had struck him at the end of a long, low tackle carried through with the natural grace of a born Martian accustomed to low gravity.

Mindes went down. He shrieked wordlessly and then was silent, whether unconscious as the result of the fall or as the climax of his fevered emotions could not be told.

Bigman did not believe either possibility. "He's shamming," he cried passionately. "The dirty cobbler is playing dead." He had wrenched the blaster from the fallen engineer's unresisting grip, and now he pointed it at the man's head.

Lucky said sharply, "None of that, Bigman."

Bigman hesitated. "He tried to kill you, Lucky." It was obvious that the little Martian would not have been half as angry if it had merely been himself who had been in danger of death. Yet he backed away.

Lucky was on his knees examining Mindes's face through the face-plate, shining his helmet light onto the other's pale, drawn features. He checked the pressure gauge of Mindes's suit, making sure the shock of the fall had not loosened any of its joints. Then, seizing the fallen figure by a wrist and ankle, he slung it across his shoulders and rose to his feet.

"Back to the Dome," he said, "and, I'm afraid, to a problem that's a little more complicated than the Chief thinks."

Bigman grunted and followed Lucky's long stride closely, his own smaller build forcing him into a gravity-lengthened half trot. He kept his blaster ready, maneuvering his position to enable him, in case of need, to strike at Mindes without blasting down Lucky.

The "Chief" was Hector Conway, head of the Council of Science. At more informal times he was called Uncle Hector by Lucky, since it was Hector Conway, along with Augustus Henree, who were the guardians of the young Lucky after the death of Lucky's parents as the result of a pirate attack near the orbit of Venus.

A week earlier Conway had said to Lucky with a casual air, almost as though he were offering him a vacation, "How would you like to go to Mercury, Lucky?"

"What's up, Uncle Hector?" asked Lucky.

"Nothing really," said Conway, frowning, "except some cheap politics. We're supporting a rather expensive project up at Mercury, one of those basic research things that may come to nothing, you know, and, on the other hand, may turn out to be quite revolutionary. It's a gamble. All those things are."

Lucky said, "Is it anything I know about?"

"I don't think so. It's quite recent. Anyway, Senator Swenson has pounced on it as an example of how the Council wastes taxpayers' money. You know the line. He's pressing for an investigation, and one of his boys went out to Mercury some months ago."

"Senator Swenson? I see." Lucky nodded. This was nothing new. The Council of Science over the past decades had slowly come to the fore of the fight against the dangers to Earth from both within and without the Solar System. In this age of Galactic civilization, with humanity spread through all the planets of all the stars in the Milky Way, only scientists could properly cope with mankind's prob-

lems. In fact, only the specially trained scientists of the Council were adequate.

Yet there were some men of Earth's government who feared the growing power of this Council of Science and others who used this suspicion to further their own ambitions. Senator Swenson was the foremost of the latter group. His attacks, usually directed against the Council's "wasteful" way of supporting research, were making him famous.

Lucky said, "Who's the man in charge of the project on Mercury? Anyone I know?"

"It's called Project Light, by the way. And the man in charge is an engineer named Scott Mindes. A bright boy, but he's not the man to handle this. The most embarrassing thing is that since Swenson kicked up this fuss all sorts of things have been going wrong with Project Light."

"I'll look into it if you wish, Uncle Hector."

"Good. The accidents and bad breaks are nothing, I'm sure, but we don't want Swenson to maneuver us into some bad-looking spot. See what he's up to. And watch out for that man of his. Urteil is his name and he has a reputation of being a capable and dangerous fellow."

So that was all it started out as. Just a bit of investigation to forestall political difficulties. Nothing more.

Lucky landed on Mercury's North Pole expecting nothing more, and in two hours found himself at the wrong end of a blaster bolt.

Lucky thought as he slogged back to the Dome with Mindes over his shoulders: There's more than just a bit of politics here.

Dr. Karl Gardoma stepped out of the small hospital room and faced Lucky and Bigman somberly. He was wiping his strong hands on a pad of fluffy plastosorb, which he tossed into the disposal unit when he finished. His dark-complexioned face, almost brown, was disturbed, his heavy eyebrows lowering. Even his black hair, cut close so that it stood up stiffly in thick array, seemed to accentuate his troubled appearance.

"Well, Doctor?" said Lucky.

Dr. Gardoma said, "I've got him under sedation. He'll be all right when he wakes. I don't know if he'll remember clearly what happened."

"Has he had attacks like this before?"

"Not since he came to Mercury, Mr. Starr. I don't know what



happened before then, but these last few months he's been under a great strain."

"Why?"

"He feels responsible for the accidents that have been interfering with the progress of Project Light."

"Is he responsible?"

"No, of course not. But you can see how he feels. He's sure everyone blames him. Project Light is vitally important. A great deal of money and effort has been put into it. Mindes is in charge of ten construction men, all five to ten years older than he is, and of an enormous amount of equipment."

"How does it happen he's so young?"

The doctor smiled grimly, but despite his grimness his white, even teeth made him look pleasant, even charming. He said, "Sub-etheric optics, Mr. Starr, is a completely new branch of science. Only young men, fresh out of school, know enough about it."

"You sound as though you know a bit about it yourself."

"Only what Mindes told me. We arrived in Mercury on the same ship, you know, and he fascinated me, quite won me over with what his project hopes to accomplish. Do you know about it?"

"Not a thing."

"Well, it involves hyperspace, that portion of space that lies outside the ordinary boundary of the space we know. The laws of nature that apply to ordinary space don't apply to hyperspace. For instance, in ordinary space it is impossible to move faster than the speed of light, so that it would take at least four years to reach the nearest star. In going through hyperspace any speed is possible——" The physician broke off with a sudden, apologetic smile. "You know all this, I'm sure."

"I suppose most people know that the discovery of hyperspatial flight made travel to the stars possible," said Lucky, "but what about Project Light?"

"Well," said Dr. Gardoma, "in ordinary space, light travels in straight lines in a vacuum. It can only be bent by large gravitational forces. In hyperspace, on the other hand, it can be bent as easily as if it were a cotton thread. It can be focused, dispersed, bent back upon itself. That's what the theory of hyperoptics says."

"And Scott Mindes, I suppose, is here to test that theory."

"That's right."

"Why here?" asked Lucky. "I mean, why on Mercury?"

"Because there's no other planetary surface in the Solar System where there is such a concentration of light over so large an area."

The effects Mindes is looking for can be detected most easily here. It would be a hundred times as expensive to set up the project on Earth, and results would be a hundred times as uncertain. So Mindes tells me.”

“Only now we’re having these accidents.”

Dr. Gardoma snorted. “They’re no accidents. And, Mr. Starr, they have to be stopped. Do you know what the success of Project Light would mean?” He drove on, caught up in the vision. “Earth would no longer be the slave of the Sun. Space stations circling Earth could intercept sunlight, push it through hyperspace, and spread it evenly over the Earth. The desert heat and the polar cold would vanish. The seasons would be rearranged to our liking. We could control the weather by controlling the distribution of sunlight. We could have eternal sunlight where we wanted it; night of any length where we wanted it. Earth would be an air-conditioned paradise.”

“It would take time, I imagine.”

“A great deal of it, but this is the beginning. . . . Look, I may be out of order here, but aren’t you the David Starr who cleared up the matter of the food poisonings on Mars?”

There was an edge to Lucky’s voice as he answered, and his brows contracted slightly. “What makes you think so?”

Dr. Gardoma said, “I am a physician, after all. The poisonings seemed at first to be a disease epidemic, and I was much interested in it at the time. There were rumors about a young Councilman’s having played the chief role in straightening the mystery, and names were mentioned.”

Lucky said, “Suppose we let it go at that.” He was displeased, as always, at any intimation that he was becoming well known. First Mindes, now Gardoma.

Dr. Gardoma said, “But if you are that Starr, you’re here, I hope, to stop these so-called accidents.”

Lucky did not seem to hear. He said, “When will I be able to talk to Scott Mindes, Dr. Gardoma?”

“Not for at least twelve hours.”

“And will he be rational?”

“I’m certain of that.”

A new guttural baritone voice broke in. “Are you, Gardoma? Is that because you know our boy Mindes was never irrational?”

Dr. Gardoma whirled at the sound and made no effort to hide the look of acute dislike on his face. “What are you doing here, Urteil?”

"Keeping my eyes and ears open, though I suppose you'd rather I kept them closed," the newcomer said.

Both Lucky and Bigman were staring at him curiously. He was a large man; not tall, but broad of shoulder and thick-muscled. His cheeks were blue with stubble, and there was a rather unpleasant air of self-assurance about him.

Dr. Gardoma said, "I don't care what you do with your eyes and ears, but not in my office, if you don't mind."

"Why not in your office?" demanded Urteil. "You're a doctor. Patients have a right to come in. Maybe I'm a patient."

"What's your complaint?"

"How about these two? What are their complaints? Hormone deficiency, for one thing, I suppose." His eyes fell lazily on Bigman Jones as he said that.

There was a breathless interlude in which Bigman turned a deathly white and then seemed to swell. Slowly he rose from his seat, his eyes round and staring. His lips moved as though forming the words "hormone deficiency," as though he were trying to convince himself that he had actually heard the words and that it was no illusion.

Then, with the speed of a cobra striking, Bigman's five foot two of cord-whip muscle launched itself at the broad, sneering figure before him.

But Lucky moved faster. His hands shot downward, catching Bigman at each shoulder. "Easy, Bigman."

The small Martian struggled desperately. "You heard him, Lucky. You heard him."

"Not now, Bigman."

Urteil's laugh was a series of sharp barks. "Let him go, fella. I'll smear the little boy over the floor with my finger."

Bigman howled and writhed in Lucky's grip.

Lucky said, "I wouldn't say anything else, Urteil, or you may be in a kind of trouble your senator friend won't be able to get you out of."

His eyes had become brown ice as he spoke and his voice was smooth steel.

Urteil's glance locked with Lucky's for a moment, then fell away. He mumbled something about joking. Bigman's harsh breathing calmed somewhat, and as Lucky slowly released his grip the Martian took his seat, still trembling with almost unbearable fury.

Dr. Gardoma, who had watched the bit of byplay tensely, said, "You know Urteil, Mr. Starr?"

"By reputation. He's Jonathan Urteil, Senator Swenson's roving investigator."

"Well, call it that," muttered the physician.

"And I know you too, David Starr, Lucky Starr, whatever you call yourself," said Urteil. "You're the roving wonder-boy for the Council of Science. Mars poisonings. Asteroid pirates. Venusian telepathy. Do I have the list correct?"

"You have," said Lucky tonelessly.

Urteil grinned triumphantly. "There isn't much the senator's office doesn't know about the Council of Science. And there isn't much I don't know about things happening here. For instance, I know about the attempt on your life, and I've come here to see you about it."

"Why?"

"To give you a little warning. Just a friendly little warning. I suppose the medic here has been telling you what a nice guy Mindes is. Just a momentary splash of unbearable strain, he's been telling you, I suppose. They're great friends, Mindes and he."

"I just said——" began Dr. Gardoma.

"Let *me* say," said Urteil. "Let me say this. Scott Mindes is about as harmless as a two-ton asteroid heading for a space-ship. He wasn't temporarily insane when he pointed a blaster at you. He knew what he was doing. He tried to kill you in cold blood, Starr, and if you don't watch out, he'll succeed next time. Because you can bet your small friend's Martian hip boots he'll try again."

# 3

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## Death Waits in a Room

The silence that followed seemed pleasant for no one but Urteil.

Then Lucky said, "Why? What's his motive?"

Urteil said calmly, "Because he's afraid. He's out here with millions of cash invested, cash that's been given him by a lax Council of Science, and he can't make his experiments work. He's calling his incompetence bad breaks. Eventually he'll go back to Earth and cry about Mercury's jinx. Then he'll get more money out of the Council, or, rather, out of the taxpayers, for some other fool scheme. Now you're coming to Mercury to investigate, and he's afraid that the Council, in spite of itself, may learn a little of the truth— You take it from there."

Lucky said, "If this is the truth, you know it already."

"Yes, and I hope to prove it."

"But you're the danger to Mindes, then. By your reasoning, it is *you* he should try to kill."

Urteil grinned and his plump cheeks broadened until his jowly face looked wider than it was long. He said, "He *has* tried to kill me. True enough. But I've been through many tough sieges working for the senator. I can handle myself."

"Scott Mindes never tried to kill you or anybody," said Dr. Gardoma, his face pinched and white. "You know it, too."

Urteil made no direct answer. He spoke instead to Lucky. "And keep an eye on the good doctor too. As I said, he's great friends with Mindes. If I were you, I wouldn't let him treat me for as much as a headache. Pills and injections can——" He snapped his fingers with a sharp cracking noise.

Dr. Gardoma, words coming thickly, said, "Someday, someone will kill you for——"

Urteil said carelessly, "Yes? Are you planning on being the one?" He turned to go, then said over his shoulder, "Oh, I forgot. I hear that old man Peverale wants to see you. He's very disturbed at there being no official welcome. He's upset. So go see him and pat his poor old head for him—— And, Starr, another hint. After this, don't use any protective suits of any kind without checking them for leaks. Know what I mean?" With that, finally, he left.

Long moments passed before Gardoma was near normality again, before he could talk without choking. Then he said, "He riles me more every time I see him. He's a mean-mouthed, lying——"

"A mighty shrewd fellow," said Lucky dryly. "It seems obvious that one of his methods of attack is deliberately to say exactly what is calculated most to anger his opponent. An angry opponent is a half-helpless one. . . . And, Bigman, that goes for you. You can't just flail away at anyone who hints you're under six feet."

"Lucky," wailed the pint-sized Martian, "he said I was hormone-deficient."

"Then learn to wait for the appropriate moment to convince him otherwise."

Bigman grumbled rebelliously, and one clenched fist beat softly against the tough plastic of his silver-and-vermilion hip boots (the colorfully designed hip boots that no one but a Martian farmboy would wear and which no Martian farmboy would be without. Bigman owned a dozen, each more glaring than the last).

Lucky said, "Well, we'll look up Dr. Peverale. He's the head of the Observatory, isn't he?"

"The head of the whole Dome," said the doctor. "Actually, he's getting old and he's lost touch. I'm glad to say that he hates Urteil as much as any of us do, but there's nothing he can do about it. He can't buck the senator. I wonder if the Council of Science can?" he ended gloomily.

Lucky said, "I think so. Now remember, I'll want to see Mindes when he wakes up."

"All right. Take care of yourself."

Lucky stared at him curiously. "Take care of myself? How do you mean?"

Dr. Gardoma flushed. "Just an expression. I always say it. I don't mean anything by it."

"I see. Well, then, we'll be meeting again. Come along, Bigman, and stop frowning."

\* \* \*

Dr. Lance Peverale shook them both by the hand with a vigor that was surprising in a man so old. His dark eyes were lit with concern and appeared the darker for the white eyebrows that topped them. His hair, still abundant, retained a considerable amount of its original color and had not faded past an iron gray. His lined and leathery cheeks, above which sharp cheekbones stood out prominently, did most to give him the appearance of age.

He spoke slowly and gently. "I am sorry, gentlemen, most concerned that you should have had such a distressing experience so soon after arriving at the Observatory. I blame myself."

"You have no reason to, Dr. Peverale," said Lucky.

"The fault is mine, sir. Had I been here to greet you as I ought to have— But there, we were following an important and quite anomalous prominence, and I'm afraid I allowed my profession to tempt me from the proper expression of hospitality."

"In any case, you are forgiven," said Lucky, and he glanced sidewise with some amusement at Bigman, who was listening, open-mouthed, to the old man's stately flow of words.

"I am past forgiveness," said the astronomer, "but it pleases me that you make the attempt. Meanwhile, I have ordered that quarters be placed at your disposal." He linked arms with both of them, urging them along the well-lit but narrow corridors of the Dome. "Our facilities are crowded, particularly since Dr. Mindes and his engineers have arrived and—and others. Still, I imagine you will find it welcome to have an opportunity to refresh yourselves and to sleep, perhaps. You will wish for food, I am sure, and it will be sent to you. Tomorrow will be time enough for you to meet us all socially, and for us to find out your purpose in coming here. For myself, the fact that the Council of Science vouches for you is sufficient. We will have a kind of banquet in your honor."

The corridor level was sinking as they walked, and they were burrowing into Mercury's vitals toward the residential level of the Dome.

Lucky said, "You are very kind. Perhaps I will also have the opportunity to inspect the Observatory."

Peverale seemed delighted at that. "I will be at your service in the matter, and I am sure you will not regret time spent in such an inspection. Our major equipment is mounted on a movable platform designed to move with the advancing or receding Terminator. In that fashion, a particular portion of the Sun can be kept continually in view despite Mercury's motions."

"Wonderful! But now, Dr. Peverale, one question. What is your opinion of Dr. Mindes? I'd appreciate a frank answer without any consideration for such things as diplomacy."

Peverale frowned. "Are you a sub-temporal engineer too?"

"Not quite," said Lucky, "but I was asking about Dr. Mindes."

"Exactly. Well"—and the astronomer looked thoughtful—"he is a pleasant young man, quite competent, I should think, but nervous, very nervous. He is easily offended, too easily offended. It has shown up as time has gone on and things have not been quite right with his project, and it is making him a little difficult to get along with. A pity, for as I say, he is a pleasant young man, otherwise. I am his superior, of course, while he is here at the Dome, but I don't really interfere with him. His project has no connection with our Observatory work."

"And your opinion of Jonathan Urteil?"

The old astronomer stopped walking on the instant. "What about him?"

"How does he get along here?"

"I am not interested in discussing the man," said Peverale.

They walked on in silence for a short while. The astronomer's face was lowering.

Lucky said, "Are there any other outsiders at the Dome? There are you and your men, Mindes and his men, and Urteil. Anyone else?"

"The doctor, of course. Dr. Gardoma."

"You do not consider him one of your own men?"

"Well, he's a doctor and not an astronomer. He supplies the one service the Dome must have and can't use machinery for. He cares for our health. He's new here."

"How new?"

"He replaced our old doctor after the latter's one-year shift. Dr. Gardoma arrived on the same ship that carried Mindes's group, as a matter of fact."

"One-year shift? Is that common for doctors here?"

"And most of the men. It makes it difficult to keep up continuity, and it is hard to train a man and have him leave; but then, Mercury is not an easy place to remain, and our men must be replaced frequently."

"Then in the last six months how many new men have you received here?"

"Perhaps twenty. The exact figures are in our records, but twenty is about it."



"Surely you yourself have been here quite a while."

The astronomer laughed. "Many years. I hate to think how many. And Dr. Cook, my assistant director, has been here for six years. Of course we take vacations frequently. . . . Well, here are your quarters, gentlemen. If there is anything you should wish, do not hesitate to inform me."

Bigman looked about him. The room was a small one, but it held two beds that could fold up into a wall recess when not in use; two chairs of which the same was true; a one-piece desk-chair combination; a small closet; and an adjoining wash room.

"Hey," he said, "a lot better than the ship, anyway, huh?"

"Not bad," said Lucky. "This is probably one of their better rooms."

"Why not?" said Bigman. "I guess he knows who *you* are."

"I guess not, Bigman," said Lucky. "He thought I might be a sub-temporal engineer. All he knows is that the Council sent me."

"Everyone else knows who you are," said Bigman.

"Not everyone. Mindes, Gardoma, and Urteil. . . . Look, Bigman, why don't you use the washroom? I'll have some food sent up and have them bring in the general utility kit from the *Shooting Starr*."

"Suits me," said Bigman cheerily.

Bigman sang loudly through the shower. As usual on a waterless world, the bath water was strictly rationed, with stern warnings on the wall as to the amount it was permissible to use. But Bigman had been born and bred on Mars. He had a huge respect for water and would no more think of splashing idly in it than in beef stew. So he urged detergent copiously and water carefully and sang loudly.

He stepped in front of the forced-hot-air dryer which tingled his skin with its jets of bone-dry air and slapped his body with his hands to enhance the effect.

"Hey, Lucky," he yelled, "is there food on the table? I'm hungry."

He heard Lucky's voice speaking softly but could make out no words.

"Hey, Lucky," he repeated, and stepped out of the washroom. The desk had two steaming platters of roast beef and potatoes on it. (A slight sharpness in the aroma indicated the meat, at least, to be really a yeast imitation from the sub-sea gardens of Venus.) Lucky, however, was not eating, but sat on the bed and spoke into the room's Talkie.

Dr. Peverale's face was gazing out of the receiving plate.

Lucky said, "Well, then, was it general knowledge that this was to be our room?"

"Not general knowledge, but I gave the order to prepare your room over an open hookup. There was no reason for secrecy as far as I could see. I suppose anyone might have overheard. Furthermore, your room is one of a few such that are reserved for distinguished guests. There is no secret about it."

"I see. Thank you, sir."

"Is anything wrong?"

"Not at all," said Lucky, smiling, and broke connection. His smile disappeared and he looked thoughtful.

"Nothing wrong, my foot," exploded Bigman. "What's up, Lucky? Don't tell *me* there isn't anything wrong."

"Something is wrong, yes. I've been looking at the equipment here. These are special insulated suits for use on the Sun-side, I imagine."

Bigman lifted one of the suits hanging in a special wall recess. It was amazingly light for its bulk, nor could that be attributed to Mercurian gravity, since gravity here in the Dome was maintained at Earth-normal.

He shook his head. As usual, if he had to use a suit supplied him out of stock rather than one built to specifications, he would have to reduce all fittings to the minimum and even so find it inconvenient to use. He sighed resignedly. It was the penalty he paid for not being exactly tall. He always thought of it that way: "not exactly tall." He never thought of his five foot two as being actually "short."

He said, "Sands of Mars, they've got everything here for us, all set and waiting. Bed. Bath. Food. Suits."

"And something else too," said Lucky gravely. "Death is waiting in this room. See here."

Lucky lifted one arm of the larger suit. The ball joint at the shoulder moved easily, but where it joined the shaft of the shoulder there was a tiny, all but unnoticeable gap. It would have been completely unnoticeable if Lucky's fingers had not spread it apart.

It was a slash! Man-made, obviously! Insulation showed.

"On the inner surface," said Lucky, "there's a similar slash. This suit would have lasted just long enough to get me out on the Sun-side, and then it would have killed me neatly."

# 4

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## Over the Banquet Table

“Urteil!” cried Bigman at once, with a ferocity that stiffened every muscle of his small body. “That dirty cobbler——”

“Why Urteil?” asked Lucky softly.

“He warned us to watch our suits, Lucky. Remember?”

“Of course. And it’s exactly what I did.”

“Sure. He set it up for us. We find a slashed suit and we think he’s a great guy. Then we’re cold meat for him next time around. Don’t fall for that, Lucky. He’s a——”

“Now wait, Bigman, wait! Don’t make your mind up so fast. Look at it this way. Urteil said Mindes had tried to kill him, too. Suppose we believe him. Suppose Mindes had tried to gimmick Urteil’s suit and Urteil had spotted it in time. Urteil would warn us to watch out for the same trick. Maybe Mindes did this.”

“Sands of Mars, Lucky, that can’t be. This guy, Mindes, is ladled full of sleeping pills, and before that he wasn’t out of our sight from the minute we got onto this miserable rock.”

“All right. How do we know Mindes is asleep and under medication?” asked Lucky.

“Gardoma says——” began Bigman, and fell silent.

“Exactly. Gardoma says! We haven’t seen Mindes, though. We only know what Dr. Gardoma said, and Dr. Gardoma is a great friend of Mindes’s.”

“The two of them are in it together,” said Bigman, with instant conviction. “Jumping comets——”

“Wait, wait, don’t *you* jump so. Great Galaxy, Bigman, I’m just trying to straighten out my thoughts, and you take me up on everything.” His tone was as disapproving as it could ever be with respect

to his small friend. He went on, "Now you've complained a dozen times that I don't tell you everything on my mind until everything's done with. This is why, you blaster-happy nitwit. As soon as I advance a theory, you're off on a charge, all your weapons cocked and ready."

"I'm sorry, Lucky," said Bigman. "Go ahead."

"All right. Now Urteil is easy to suspect. Nobody likes him. Even Dr. Peverale doesn't. You saw how he reacted just to the mention of his name. We've met him only once and you dislike him——"

"I'll say," muttered Bigman.

"—while I don't exactly like him, either. Anyone can slash this suit and hope that suspicion will fall on Urteil if it should happen to be discovered, and it would be surely discovered after it's killed someone, if not before."

"I see all that, Lucky."

"On the other hand," went on Lucky smoothly, "Mindes has already tried to get rid of me with a blaster. If that were a serious attempt, he doesn't seem the type to do anything as indirect as suit-slashing. As for Dr. Gardoma, I don't see him involving himself in the murder of a Councilman just out of friendship for Mindes."

"Then what's the decision?" cried Bigman impatiently.

"There isn't any so far," said Lucky, "except maybe that we go to sleep." He turned down the bed sheets and stepped into the wash-room.

Bigman looked after him and shrugged his shoulders.

Scott Mindes was sitting up in bed when Lucky and Bigman entered his quarters the next morning. He was pale and looked tired.

"Hello," he said. "Karl Gardoma told me what happened. You don't know how sorry I am."

Lucky passed it off with a shrug. "How do you feel?"

"Wrung out but all right, if you know what I mean. I'll be at the dinner party old Peverale is giving tonight."

"Is that wise?"

"I won't leave Urteil there holding the fort," said Mindes, hatred suddenly flooding his face with momentary color, "telling everyone I'm crazy. Or Dr. Peverale, either, for that matter."

"Dr. Peverale doubts your sanity?" asked Lucky softly.

"Well—— Look, Starr, I've been scouting the Sun-side in a small rocket-scooter ever since the accidents started getting bad. I had to do it. It's my project. Twice, now, I—I've seen something."

Mindes paused and Lucky prodded him. "Seen what, Dr. Mindes?"

"I wish I could say for sure. I saw it only from a distance each time. Something moving. Something that looked human. Something in a space-suit. Not one of our inso-suits, our special insulated jobs, you know. It looked more like an ordinary space-suit. Ordinary metal, you know."

"Did you try to get closer?"

"Yes, and I lost it. And the photographs showed nothing either. Just spots of light and dark that might have been something, or nothing. But it was something, all right. Something that moved under the Sun as though it didn't care a thing for the heat and radiation. It would even stand still in the Sun for minutes at a time. That's what got me."

"Is that strange? Standing still, I mean?"

Mindes laughed shortly. "On the Mercury Sun-side? It sure is. Nobody stands still. Insulated suit and all, you go about your business as fast as you can and get out from under as fast as you can. This near the Terminator the heat isn't so bad. It's the radiation, though. It's just good practice to take as little of it as possible. The inso-suits aren't complete protection against gamma rays. If you must stand still, you move into the shade of a rock."

"What's your explanation of it all?"

Mindes's voice fell to an almost shamed whisper. "I don't think it's a man."

"You're not going to say it's a two-legged ghost, are you?" said Bigman suddenly, before Lucky could nudge him into silence.

But Mindes only shook his head. "Did I use that phrase on the surface? I seem to remember—— No, I think it's a Mercurian."

"What?" cried Bigman, sounding as if he thought that were worse.

"How else could it endure the Sun's radiation and heat so?"

"Why would it need a space-suit then?" asked Lucky.

"Well, I don't know." Mindes's eyes flashed, and a restless wildness settled upon them. "But it's *something*. When I got back to the Dome, every man and every suit could be accounted for each time. Dr. Peverale won't authorize an expedition to make a real search. He says we're not equipped for it."

"Have you told him what you told me?"

"He thinks I'm crazy. I'm sure of it. He thinks I'm seeing reflections and building men out of them in my imagination. But that's not so, Starr!"

Lucky said, "Have you contacted the Council of Science?"

"How can I? Dr. Peverale wouldn't back me. Urteil would say I was mad and they would listen to *him*. Who would listen to me?"

"I would," said Lucky.

Mindes sat up in bed with a jerk. His hand shot out as though it were ready to grasp the other's sleeve but then held back. He said, in a choked voice, "Then you'll investigate it?"

"In my way," promised Lucky, "I will."

The others were already at the banquet table that evening when Lucky and Bigman arrived. Above the hum of greeting that rose as they entered and the beginning of the introductions, there were obvious signs that the gathering was not entirely a pleasant one.

Dr. Peverale sat at the head of the table, his thin lips set and his sunken cheeks quivering, the picture of dignity maintained under difficulty. At his left was the broad-shouldered figure of Urteil, lounging back in his chair, thick fingers playing delicately with the rim of a drinking glass.

Toward the foot of the table was Scott Mindes, looking painfully young and tired as he stared with angry frustration at Urteil. Next to him was Dr. Gardoma, watching with an anxious and thoughtful eye as though ready to interfere in case Mindes grew rash.

The remaining seats, except for two empty ones at Dr. Peverale's right, were occupied by several of the senior men of the Observatory. One in particular, Hanley Cook, second in command at the Dome, leaned his tall, lean body forward and took Lucky's hand firmly in his own.

Lucky and Bigman took their seats and the salads were served.

Urteil said at once in a harsh voice that effectively took over the conversation, "We were wondering just before you came in whether young Mindes ought not to tell you of the great wonders in store for Earth as a result of his experiments."

"No such thing," snapped Mindes, "and I'll do my own talking if you don't mind."

"Oh, come on, Scott," said Urteil, grinning broadly, "don't be bashful. Well, then, look here, *I'll* tell the man."

Dr. Gardoma's hand fell, as though by accident, on Mindes's shoulder, and the young engineer swallowed a cry of indignation and remained silent.

Urteil said, "Now I warn you, Starr, this is going to be good. It——"

Lucky interrupted, "I know something of the experiments. The grand result of an air-conditioned planet is quite possible, I think."

Urteil scowled. "That so? I'm glad you're optimistic. Poor Scott can't even make the pilot experiment work. Or at least he says he can't, don't you, Scott?"

Mindes half rose, but again Dr. Gardoma's hand was on his shoulder.

Bigman's eyes traveled from speaker to speaker, resting on Urteil with black distaste. He said nothing.

The arrival of the main course stopped the conversation momentarily, and Dr. Peverale tried desperately to turn it into less explosive channels. For a while he succeeded, but then Urteil, with the last of his helping of roast beef impaled on his fork, leaned toward Lucky and said, "So you go for the project Mindes is running, do you?"

"I think it's a reasonable one."

"You have to think that, being a member of the Council of Science. But what if I told you that the experiments here were phony; they could be run on Earth for one per cent of the cost if the Council were only interested enough in the taxpayers' money to save a little of it. What would you say if I told you that?"

"The same thing I would say if you told me anything at all," retorted Lucky composedly. "I would say, Mr. Urteil, that the chances are that you're lying. It's your greatest talent and, I believe, pleasure."

Instantly a great silence fell on the banqueters, even on Urteil. His thick cheeks seemed to sag in surprise and his eyes to bulge. With sudden passion, he leaned directly across Dr. Peverale's place, rising from his seat and bringing his right hand down hard and flat just short of Lucky's platter.

"No Council lackey—" he began in a roar.

And as he did that, Bigman moved, too. No eye at the table saw the details of that move, since it flashed with the speed of a striking snake, but Urteil's roar ended in a shout of dismay.

Urteil's hand, which had come down with such hard finality, now showed the carved metallic haft of a force-knife growing out of it.

Dr. Peverale scraped his chair back suddenly, and there was a cry or an exclamation from every man there but Bigman himself. Even Lucky seemed startled.

Bigman's tenor voice rose in delight. "Spread your fingers, you tub of mineral oil. Spread them and then grease back down into your seat."

Urteil stared at his small tormenter without understanding for a moment and then very slowly spread his fingers. His hand was not

hurt, not a sliver of skin had been removed. The force-knife stood quivering in the hard plastic table top, an inch of its waveringly luminescent force-blade (it wasn't matter, merely a thin field of immaterial force) in sight. The knife had entered the table, working its way neatly and unerringly between the second and third finger of Urteil's hand.

Urteil snatched his hand away as though it were suddenly in flames.

Bigman crowed with delight and said, "And next time you reach a hand in Lucky's direction or in mine, you cobber, I chop it right off. What would you say if I told you that? And whatever you say, say it politely." He reached out for the force-knife, deactivating the blade as he seized the haft, and returned it to its inconspicuous holster on his belt.

Lucky said, with a light frown, "I wasn't aware that my friend was armed. I'm sure he's sorry for having disturbed the meal, but I believe Mr. Urteil may take this incident to heart."

Someone laughed and there was a tight smile on Mindes's face.

Urteil looked with hot eyes from face to face. He said, "I won't forget this treatment. It's obvious to me that the senator is receiving little cooperation, and he'll hear of that. And meanwhile, I'm staying right here." He folded his arms as though daring anyone to make him leave.

Little by little the conversation grew general.

Lucky said to Dr. Peverale, "You know, sir, it seems to me that your face is familiar."

"Is it?" The astronomer smiled in a strained fashion. "I don't think I ever met you before."

"Well, were you ever on Ceres?"

"Ceres?" The old astronomer looked at Lucky with some surprise. He had obviously not yet recovered from the force-knife episode. "The largest observatory in the Solar System is on that asteroid. I worked there as a young man, and I frequently visit it even now."

"Then I wonder if I didn't perhaps see you there."

Lucky couldn't help thinking, as he spoke, of those exciting days when the chase was on for Captain Anton and the pirates who were making their lair in the asteroids. And particularly the day when the pirate ships raided the very heart of Council territory, onto the surface of Ceres itself, winning out temporarily by the very daring of their undertaking.

But Dr. Peverale was shaking his head in gentle good humor. "I



would have been certain, sir, had I had the pleasure of seeing you there. I am sure I did not."

"Too bad," said Lucky.

"The loss is mine, I assure you. But then it was my season for loss. As a result of an intestinal ailment, I missed all the excitement in connection with the pirate raid. I knew of it only through the conversations I overheard among my nurses."

Dr. Peverale looked about the table now, his good humor restored. The dessert was being served by the mechanical tray-carrier. He said, "Gentlemen, there has been some discussion of Project Light."

He paused to smile benignly, then went on. "It isn't exactly a happy subject under the circumstances, but I have been thinking a good deal about the accidents that have disturbed so many of us. It seems it would be a good time for me to give you all my thoughts on the matter. After all, Dr. Mindes is here. We have had a good meal. And, finally, I have something interesting to say."

Urteil broke a long silence to ask grimly, "*You*, Dr. Peverale?"

The astronomer said mildly, "Why not? I have had interesting things to say many times in my life. And I *will* say what's on my mind now." There was a sudden gravity about him. "I believe I know the whole truth, the exact truth. I know who is causing the destruction in connection with Project Light and why."

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## The Direction of Danger

The old astronomer's gentle face seemed pleased as he looked about the table, perhaps at having gained so absolutely the attention of all. Lucky looked about the table too. He caught the expressions that greeted Dr. Peverale's statement. There was contempt on Urteil's broad features, a puzzled frown on Dr. Gardoma's face, a sulkier one on that of Mindes. The others were held in various attitudes of curiosity and interest.

One man caught Lucky's attention particularly. It was Hanley Cook, Dr. Peverale's second in command. He stared at his finger ends, and there was something like weary disgust about him. When he looked up, his expression had changed and settled into a cautious blankness.

Nevertheless Lucky thought: "I'll have to talk to the man."

And then his attention shifted back to Dr. Peverale.

Dr. Peverale was saying, "The saboteur can't be one of us, of course. Dr. Mindes tells me that he has investigated and is sure of that. Even without investigation, I am sure that none of us is capable of such criminal action. Yet the saboteur must be intelligent, since the destruction is too purposeful, too exclusively directed against Project Light, to be the result of chance or of anything nonintelligent. Therefore——"

Bigman interrupted excitedly. "Hey, you mean Mercury has native life? It's Mercurians doing this?"

There was a sudden buzz of confused comment and some laughter, at which Bigman reddened. "Well," said the small Martian, "isn't that what Dr. Peverale is saying?"

"Not quite," said Dr. Peverale gently.

"There is no life of any kind native to Mercury," said one of the astronomers with emphasis. "That's one thing we're sure of."

Lucky interposed, "How sure? Has anyone looked?"

The astronomer who had spoken seemed taken aback. He said, "There have been exploring parties. Certainly."

Lucky smiled. He had met intelligent beings on Mars that no other man knew of. He had discovered semi-intelligent beings on Venus where none had been thought to exist. He, for one, was not ready to admit that any planet lacked life, or even intelligence.

He said, "How many exploring parties? How thorough was each exploration? Has every square mile been searched?"

The astronomer did not answer. He looked away, raising his eyebrows as though to say: What's the use?

Bigman grinned, his little face wrinkling into a caricature of gnomish good humor.

Dr. Peverale said, "My dear Starr, explorations have uncovered nothing. While we grant that the possibility of Mercurian life is not completely excluded, the probability of its existence is very low. Suppose we assume that the only intelligent life in the Galaxy is the human race. Certainly, it's the only one we know of."

With the Martian mind-beings in his memory, Lucky did not agree with that, but he kept silent and let the old man continue.

It was Urteil, little by little having recovered his self-possession, who intervened. "What do you think you're getting at," he asked, and it was characteristic of the man that he could not resist adding, "if anything?"

Dr. Peverale did not answer Urteil directly. He looked from face to face, deliberately ignoring the Congressional investigator. He said, "The point is, there are humans elsewhere than on Earth. There are humans in many star systems." A queer change came across the astronomer's face. It pinched in, grew white, and his nostrils flared as though he were suddenly overpowered with anger. "For instance, there are humans on the planets of Sirius. What if they are the saboteurs?"

"Why should they be?" asked Lucky at once.

"Why not? They have committed aggression against Earth before."

So much was true. Lucky Starr himself had helped, not too long before, to repel a Sirian invasion flotilla that had landed on Gany-mede, but in that case they had left the Solar System without pushing matters to a showdown. Yet, on the other hand, it was a common

thing for many Earthmen to blame Sirians for anything that went wrong.

Dr. Peverale was saying with energy, "I've *been* there. I've *been* to Sirius only five months ago. It took a great deal of red tape because Sirius welcomes neither immigrants nor visitors, but it was a matter of an interstellar astronomical convention, and I managed to get a visa. I was determined to see for myself, and I must say I wasn't disappointed.

"The planets of Sirius are thinly populated and they are extremely decentralized. They live in isolated individual family units, each with its own energy source and services. Each has its group of mechanical slaves—there's no other word possible—slaves in the shape of positronic robots, which do the labor. The Sirian humans maintain themselves as a fighting aristocracy. Every one of them can handle a space-cruiser. They'll never rest till they destroy the Earth."

Bigman shifted restlessly in his seat. "Sands of Mars, let them try. Let them try, is all I say."

"They will when they are quite ready," said Dr. Peverale, "and, unless we do something quickly to meet the danger, they will win. What have we got to oppose them? A population in the billions, true, but how many can handle themselves in space? We are six billion rabbits and they are one million wolves. Earth is helpless and grows more helpless every year. We are fed by grain from Mars and yeast from Venus. We get our minerals from the asteroids, and we used to get them from Mercury, too, when the mines here were working.

"Why, Starr, if Project Light succeeds, Earth will be dependent on space stations for the manner in which it gets its very sunshine. Don't you see how vulnerable that makes us? A Sirian raiding party, by attacking the outposts of the System, could panic and starve Earth without ever having to fight us directly.

"And can we do anything to them in return? No matter how many of them we kill, the remaining Sirians are always self-contained and self-sufficient. Any of them could continue the war."

The old man was almost breathless with passion. There was no questioning his sincerity. It was as though he were getting something out of himself that had been stifling him.

Lucky's eye wandered back to Dr. Peverale's second, Hanley Cook. The man was resting his forehead on the bony knuckles of one large hand. His face was flushed, but to Lucky it did not seem like a flush of either anger or indignation. Rather, it seemed one of embarrassment.

Scott Mindes spoke up skeptically. "What would be the point,

Dr. Peverale? If they're getting along on Sirius, why should they come to Earth? What would they get out of us? Even supposing they conquer Earth, they would only have to support us——"

"Nonsense!" rapped out the senior astronomer. "Why should they? They would want Earth's resources, not Earth's population. Get that through your head. They'd let us starve. It would be part of their policy."

"Oh, come," said Gardoma. "That's unbelievable."

"Not out of cruelty," said Dr. Peverale, "out of policy. They despise us. They consider us scarcely more than animals. The Sirians themselves are very race-conscious. Since Earthmen first colonized Sirius, they have been breeding themselves carefully until they are free of diseases and of various characteristics which they consider undesirable.

"They are of uniform appearance, while Earthmen are of all shapes, sizes, colors, varieties. The Sirians consider us inferior. That's why they won't let us emigrate to Sirius. They wouldn't let me attend the convention till the government pulled every string possible. Astronomers from other systems were all welcome but not from Earth.

"And human life, any kind of human life, doesn't mean much to them, anyway. They're machine-centered. I've watched them with their metal men. They're more considerate of a Sirian robot, almost, than of a Sirian man. They would regard a robot as worth a hundred men of Earth. They pamper those robots. They love them. Nothing's too good for them."

Lucky murmured, "Robots are expensive. They have to be treated carefully."

"Maybe so," said Dr. Peverale, "but men who become accustomed to worrying about the needs of machines become callous about the needs of men."

Lucky Starr leaned forward, elbows on the table, dark eyes serious and the smooth vertical lines of his handsome, still subtly boyish face set gravely. He said, "Dr. Peverale, if the Sirians are race-conscious and are breeding themselves into uniformity, they will defeat themselves in the long run. It is variety in the human race that brings about progress. It is Earth and not Sirius that is in the forefront of scientific research. Earthmen settled Sirius in the first place, and it is we, not our Sirian cousins, who are advancing in new directions every year. Even the positronic robots you mention were invented and developed on Earth by Earthmen."

"Yes," said the astronomer, "but Earthmen don't make use of the robot. It would upset our economy, and we place the comfort and

security of today above the safety of tomorrow. We use our scientific advance to make ourselves weaker. Sirius uses its to make itself stronger. That's the difference and that's the danger."

Dr. Peverale threw himself back in his chair, looking grim. The mechanical tray-carrier cleared the table.

Lucky pointed at it. "That's a sort of a robot, if you like," he said.

The mechanical tray-carrier went quietly about its task. It was a flat-surfaced thing moving smoothly on a diamagnetic field, so that its gently curved base never actually touched the floor. Its limber tentacles removed dishes with careful delicacy, placing some on its upper surface, others within a cabinet in its side.

"That's a simple automaton," snorted Dr. Peverale. "It has no positronic brain. It cannot adapt itself to any change in its task."

"Well, then," said Lucky, "are you saying that the Sirians are sabotaging Project Light?"

"Yes. I am."

"Why should they?"

Dr. Peverale shrugged. "Perhaps it's just part of a larger plan. I don't know what trouble there is elsewhere in the Solar System. These may be the first random probings to prepare for ultimate invasion and conquest. Project Light in itself means nothing, the Sirian danger everything. I wish I could rouse the Council of Science and the government and the people to that truth."

Hanley Cook coughed, then spoke for the first time. "The Sirians are human like the rest of us. If they're on the planet, *where* are they?"

Dr. Peverale said coldly, "That's for an exploring expedition to find out. A well-prepared, well-equipped expedition."

"Wait a minute," said Mindes, his eyes glinting with excitement, "I've been out on the Sun-side, and I'll swear——"

"A well-prepared, well-equipped expedition," repeated the old astronomer firmly. "Your one-man flights mean nothing, Mindes."

The engineer stuttered a moment and slumped into an embarrassed silence.

Lucky said suddenly, "You seem to be unhappy about this, Urteil. What is your opinion of Dr. Peverale's view?"

The investigator lifted his eyes and met those of Lucky for a long moment in hatred and open defiance. It was obvious he had not forgotten, nor would forget, the earlier exchange at this table.

He said, "I'm keeping my opinion to myself. But I will say this, I'm not fooled by anything that's going on here tonight."

His mouth clamped shut and Lucky, having waited a moment for further remarks, turned to Peverale and said, "I wonder if we do need a complete expedition, sir. If we suppose that the Sirians are here on Mercury, can we perhaps deduce where they might be?"

"Go ahead, Lucky," crowed Bigman at once. "Show them how."

Dr. Peverale said, "How do you mean?"

"Well, what would be the best for the Sirians? If they've been sabotaging Project Light at frequent intervals over a period of months, it would be most convenient for them to have a base near the project. Yet at the same time, the base must not be easily detected. They've certainly been successful in the second requirement, anyway. Now where could such a handy, but secret, base be?"

"Let's divide up Mercury into two parts, Sun-side and dark-side. It seems to me that they would be foolish to set up a base on Sun-side. Too hot, too much radiation, too inhospitable."

Cook grunted. "No more inhospitable than the dark-side."

"No, no," said Lucky at once, "you're wrong there. The Sun-side presents an environment which is quite unusual. Humans aren't accustomed to it at all. The dark-side is something very familiar. It is simply ground which is exposed to space, and the conditions of space are very familiar. The dark-side is cold but no colder than space. It is dark and airless but no darker than any portion of space not in direct sunlight and certainly no more airless. Men have learned to live comfortably in space, and they can live on the dark-side."

"Go on," said Dr. Peverale, his old eyes gleaming with interest. "Go on, Mr. Starr."

"But establishing a base that would serve over a period of months is not a simple thing. They must have a ship or ships to get back to Sirius someday. Or if they're to be picked up by a ship from outside they must still have ample stores of food and water, as well as an energy source. All this takes up room, and yet they must be certain they will not be detected. It leaves only one place where they can be."

"Where, Lucky?" asked Bigman, nearly jumping up and down in his eagerness. He, at least, had no doubts that whatever Lucky said was so. "Where?"

"Well," said Lucky, "when I first arrived here, Dr. Mindes made mention of mines on Mercury which had failed. Just a few moments ago, Dr. Peverale spoke of mines on Mercury that were once working. From that I gather that there must be empty mine shafts and corridors on the planet, and they must be either here or at the South Pole, since

the polar regions are the only places where the temperature extremes are not too great. Am I right?"

Cook faltered. "Yes, there are mines here. Before the Observatory was established, the Dome was the mining center."

"Then we're sitting on top of a large empty hole in Mercury. If the Sirians are successfully hiding a large base, where else would it be? *There* is the direction of danger."

A murmur of appreciation passed around the table, but it was shattered abruptly by Urteil's guttural tones.

"All very pretty," he said, "but what does it all come to? What are you going to do about it?"

"Bigman and I," said Lucky, "intend to enter the mines just as soon as we can get ready. If there's anything there, we'll find it."



# 6

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## Preparations

Dr. Gardoma said sharply, "Do you intend to go alone?"

"Why not?" interposed Urteil. "The heroics are cheap enough. Of course they'll go alone. There's nothing and nobody there, and they know it."

"Care to join us?" asked Bigman. "If you leave your big mouth behind you can fit into a suit."

"You wouldn't crowd one even with yours," snarled Urteil.

Dr. Gardoma said again, "There's no point in going alone if——"

"A preliminary investigation," said Lucky, "will do no harm. Actually, Urteil may be right. There may be no one there. At the worst, we'll keep in touch with you at the Dome and hope that we can handle any Sirians we meet. Bigman and I are used to handling tight situations."

"Besides which," added Bigman, his gnomish face puckering into a grin, "Lucky and I like tight situations."

Lucky smiled and rose to his feet. "If we may be excused——"

Urteil at once rose, turned, and stamped away. Lucky's eyes followed him thoughtfully.

Lucky stopped Hanley Cook as the latter passed him. He touched his elbow gently.

Cook looked up, his eyes all concern. "Yes. What is it, sir?"

Lucky said quietly, "May I see you in our quarters as soon as possible?"

"I'll be there in fifteen minutes. Is that all right?"

"Fine."

Cook was very little later than that. He stepped into their quarters softly, wearing the look of concern that seemed a constant part of him. He was a man in his late forties with an angular face and light brown hair that was beginning to be touched with gray.

Lucky said, "I had forgotten to tell you where our quarters were. I'm sorry."

Cook looked surprised. "I knew where you were assigned."

"Well, good. Thank you for coming at our request."

"Oh," Cook paused. Then he said hurriedly, "Glad to. Glad to."

Lucky said, "There's a small matter of the insulation suits in this room. The ones intended for use on the Sun-side."

"The inso-suits? We didn't forget the instruction film, did we?"

"No, no. I viewed that. It's quite another thing."

Cook said, "Something wrong?"

"Something wrong?" crowed Bigman. "Look for yourself." He spread the arms in order to display the slashes.

Cook looked blank, then flushed slowly and grew round-eyed with horror. "I don't see—— It's impossible—— Here at the Dome!"

Lucky said, "The main thing is to get it replaced."

"But who would do such a thing? We must find out."

"No use disturbing Dr. Peverale."

"No, no," said Cook, at once, as though he had not thought of it before.

"We'll find out the details in due time. Meanwhile I would like to get it replaced."

"Certainly. I'll attend to it promptly. No wonder you wanted to see me. Great Space——" He got to his feet in a kind of speechlessness and made as though to go.

But Lucky stopped him. "Wait, this is a minor thing. There are other things we must discuss. By the way, before we get to that—I take it you did not agree with Dr. Peverale's views on the Sirians."

Cook frowned. "I'd rather not discuss that."

"I watched you as he was speaking. You disapproved, I think."

Cook sat down again. His bony fingers clutched one another in a tight clasp and he said, "He's an old man. He's been all mixed up about the Sirians for years. Psychopathic, almost. He sees them under his bed. He blames them for everything. If our plates are over-exposed, he blames them. Since he's been back from Sirius he's worse than ever, because of what he claims he went through."

"What was it he went through?"

"Nothing terrible, I suppose. But they quarantined him. They assigned him a separate building. They were too polite sometimes.

They were too rude other times. There was no way of suiting him, I suppose. Then they forced a positronic robot on him to take care of personal services."

"Did he object to that too?"

"He claims it was because they wouldn't come near him themselves. That's what I mean. He took *everything* as an insult."

"Were you with him?"

Cook shook his head. "Sirius would only accept one man, and he's senior. I ought to have gone. He's too old, really—too old."

Cook was talking in a brooding sort of way. He looked up suddenly. "This is all confidential, by the way."

"Completely," Lucky assured him.

"What about your friend?" said Cook uncertainly. "I mean, I know he's honorable, but he's a little, uh, hotheaded."

"Hey," began Bigman, stiffening.

Lucky's affectionate hand came down on the little fellow's head and brushed his hair down on his forehead. "He's hotheaded, all right," he said, "as you saw at the banquet table. I can't always stop him in time and sometimes, when he's riled, he uses his tongue and his fist instead of his head. That's something I always have to keep in mind. Still, when I ask him specifically to keep quiet about something, he is quiet, and that's all there is to it."

"Thank you," said Cook.

Lucky went on. "To get back to my original question: Do you agree with Dr. Peverale concerning the Sirians in this present case?"

"I don't. How would they know about Project Light, and why should they care? I don't see them sending ships and men and risking trouble with the Solar System just so they can break a few cables. Of course, I tell you this, Dr. Peverale has been feeling hurt for quite a while now——"

"In what way?"

"Well, Mindes and his group were established here while he was at Sirius. He came back and found them here. He knew they were coming eventually. It's been planned for years. Still, coming back and actually finding them here was a shock."

"Has he tried to get rid of Mindes?"

"Oh no, nothing like that. He's even been friendly. It's just that it makes him feel that someday he'll be replaced altogether, maybe someday soon, and I suppose he hates the thought. So it's pleasant for him to take charge and start a big affair about Sirians. That's *his* baby, you see."

Lucky nodded, then said, "Tell me, have you ever been on Ceres?"

Cook looked surprised at the change in subject but said, "Occasionally. Why?"

"With Dr. Peverale? Alone?"

"With him, usually. He goes more frequently than I do."

Lucky grinned. "Were you there at the time the pirates made their raid on Ceres last year?"

Cook smiled too. "No, but the old man was. We've heard the story several times. He was very angry about it. He's practically never sick, and this one time he was just completely out. He missed everything."

"Well, that's the way it goes. . . . And, now, I think we'd better get to the main business. I didn't like to bother Dr. Peverale. As you say, he's an old man. You're his second and quite a bit younger——" Lucky smiled.

"Yes, of course. What can I do?"

"It's about the mines. I assume that somewhere at the Dome there are records, maps, charts, something which will tell us the arrangements of the main shafts and so on. Obviously, we can't wander at random."

"I'm sure there are," agreed Cook.

"And you can get them and perhaps go over them with us?"

"Yes, of course."

"Now as far as you know, Dr. Cook, the mines are in good shape, I hope. I mean, there's no danger of collapse or anything like that?"

"Oh no, I'm sure there's nothing of the sort possible. We're built right over some of the shafts, and we had to look into the engineering when the Observatory was first being set up. The shafts are well-buttressed and completely safe, particularly in Mercury's gravity."

"How come," asked Bigman, "the mines were shut down, if they're in such good shape?"

"A good question," said Cook, and a small smile broke through his expression of settled melancholy. "Do you want the true explanation or the interesting one?"

"Both," said Bigman at once.

Cook offered smokes to the others which were refused, then lit a cigarette after tamping it on the back of one hand in an abstracted manner. "The truth is this. Mercury is quite dense, and there were hopes that it would be a rich source of the heavy metals: lead, silver, mercury, platinum. It was, too; not as rich as might be, perhaps, but rich enough. Unfortunately, it was uneconomic. Supporting the mines

here and transporting the ore back to Earth or even the Moon for processing raised the price too high.

"As for the interesting explanation, that's another thing completely. When the Observatory was first set up fifty years ago, the mines were still a going concern, though they were already closing down some of the shafts. The original astronomers heard stories from the miners and passed it on to the newcomers. It's part of the Mercurian legendry."

"What are the stories?" asked Bigman.

"It seems miners died in the shafts."

"Sands of Mars!" cried Bigman testily. "They die anywhere. You think anybody lives forever?"

"These were frozen to death."

"So?"

"It was a mysterious freezing. The shafts were fairly well heated in those days, and their suit power units were in operation. The stories accumulate embroidery, you know, and, eventually miners wouldn't go into the main shafts in anything but gangs, wouldn't go into the side shafts at all, and the mines shut down."

Lucky nodded. He said, "You'll get the plans for the mines?"

"Right off. And replacements for that inso-suit too."

Preparations proceeded as though for a major expedition. A new inso-suit, replacing the one that had been slashed, was brought and tested, then laid to one side. After all, it would be ordinary space-suits for the dark-side.

The charts were brought and studied. Together with Cook, Lucky sketched out a possible route of exploration, following the main shafts.

Lucky left Bigman to take care of packing the adjunct-units with homogenized food and with water (which could be swallowed while still in the suit), make sure of the charge of the power units and the pressure on the oxygen tanks, inspect the working efficiency of the waste disposal unit and the moisture recirculator.

He himself made a short trip to their ship, the *Shooting Starr*. He made the trip via the surface, carrying a field pack, the contents of which he did not discuss with Bigman. He returned without it but carrying two small objects that looked like thick belt buckles, slightly curved, in dull-steel finish and centered by a rectangle in glassy red.

"What's that?" asked Bigman.

"Microergometers," said Lucky. "Experimental. You know, like the ergometers on board the ship except that those are bolted to the floor."

“What can these things detect?”

“Nothing at a couple of hundred thousand miles like a ship’s ergometer, but it can detect atomic power sources at ten miles, maybe. Look, Bigman, you activate it here. See?”

Lucky’s thumbnail exerted pressure against a small slit in one side of the mechanism. A sliver of metal moved in, then out, and instantly the red patch on the surface glowed brightly. Lucky turned the small ergometer in this direction and that. In one particular position, the red patch glowed with the energy of a nova.

“That,” said Lucky, “is probably the direction of the Dome’s power plant. We can adjust the mechanism to zero that out. It’s a little tricky.” He worked painstakingly on the adjustment of two small controls so smoothly inset as nearly to be invisible.

He smiled as he worked, his engagingly youthful face lighting with pleasure. “You know, Bigman, there isn’t a time I visit Uncle Hector but that he doesn’t load me up with the Council’s latest gadgets. He claims that with the chances you and I are always taking (you know the way he talks) we need them. Sometimes, though, I think he just wants us to act as field-testers for the gadgets. This one, though, may be useful.”

“How, Lucky?”

“For one thing, Bigman, if there are Sirians in the mines, they’ll have a small atomic power plant. They’ll have to. They’ll need power for heat, for electrolyzing water, and so on. This ergometer should detect that at ample distance. And for another thing——”

He fell silent, and Bigman’s lips compressed in chagrin. He knew what that silence meant. Lucky had thoughts which later he would claim had been too vague to talk about.

“Is one of the ergometers for me?” he asked.

“You bet,” said Lucky, tossing one of the ergometers toward him. Bigman snatched it out of the air.

Hanley Cook was waiting for them when they stepped out of their quarters, wearing their suits but with headpieces tucked under their arms.

He said, “I thought I’d lead you as far as the nearest entrance to the shafts.”

“Thank you,” said Lucky.

It was the tail end of the sleeping period in the Dome. Human beings always established an Earth-like alternation of waking and sleeping, even where there was no day and night to guide them. Lucky had chosen this time on purpose, since he did not want to

enter the mines at the head of a curious procession. In this Dr. Peverale had co-operated.

The corridors of the Dome were empty. The lighting was dimmed. And as they walked, a heavy silence seemed to fall about them while the clank of their footsteps sounded even louder.

Cook stopped. "This is Entry Two."

Lucky nodded. "All right. I hope we'll be seeing one another again soon."

"Right."

Cook operated the lock with his usual gloomy gravity, while Lucky and Bigman put on their headpieces, clamping them firmly along the paramagnetic seams. Lucky took his first breath of canned air with what was almost pleasure, he was so accustomed to it.

Lucky first, then Bigman, stepped into the air lock. The wall closed behind them.

Lucky said, "Ready, Bigman?"

"You bet, Lucky." His words rang in Lucky's radio receiver, and his small form was a shadow in the extremely dim light of the lock.

Then the opposing wall opened. They could feel the puff of air escaping into vacuum, and they stepped forward through the opening once again.

A touch at the outer controls and the wall closed behind them again. This time, light was shut off altogether.

Standing in absolute darkness, they found themselves inside the silent and empty mines of Mercury.

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## The Mines of Mercury

They flicked on their suit-lights and the darkness was alleviated over a little space. They lit a tunnel that stretched out before them, dimly and more dimly and ending in darkness. The light beam had the usual sharp edge inevitable in a vacuum. Everything outside the direct beam remained completely black.

The tall man from Earth and his short companion from Mars faced that darkness and marched forward into the bowels of Mercury.

In the radiance of their suit-lights, Bigman looked curiously about at the tunnel, which resembled those he had seen on the Moon. Rounded out smoothly by the use of blasters and disintegrating procedures, it stretched out straight and even. The walls were curved and merged into the rocky ceiling. The oval cross section, slightly flattened above and quite flattened below, made for the greatest structural strength.

Bigman could hear his own steps through the air in his suit. He could sense Lucky's steps only as a small shock of vibration along rock. It was not quite sound, but to a person who had passed as much of his life in vacuum and near-vacuum as had Bigman it was almost as meaningful.

He could "hear" the vibration of solid material much as ordinary Earthmen could hear the vibration of air which is called "sound."

Periodically they passed columns of rock which had been left unblasted and which served as buttresses for the layers of rock between the tunnel and the surface. Again this was like the mines on the Moon, except that the buttresses were both thicker and more numerous here, which was reasonable, since Mercury's gravity, small as it was, was two and a half times that of the Moon.



Tunnels branched off the main shaft along which they traveled. Lucky, who seemed in no hurry, paused at each opening in order to compare matters with the chart he carried.

To Bigman, the most melancholy aspect of the mines was the vestiges of one-time human occupancy: the bolts where illumo-plates must once have been attached to keep the corridors blazing with the light of day, the faint markings where paramagnetic relays must once have afforded traction for ore cars, occasional side pockets where rooms or laboratories must have existed, where miners might pause to eat at field kitchens or where samples of ore might be assayed.

All dismantled now, all torn down, only bare rock left.

But Bigman was not the man to brood overlong on such matters. Rather, he grew concerned at the lack of action. He had not come out here merely for the walk.

He said, "Lucky, the ergometer doesn't show a thing."

"I know, Bigman. Cover."

He said it quietly, with no special emphasis, but Bigman knew what it meant. He shoved his radio control to the particular notch which activated a shield for the carrier wave and scrambled the message. It was not regulation equipment on a space-suit, but it was routine for Lucky and Bigman. Bigman had added the scrambler to the radio controls when preparing the suits almost without giving the matter a conscious thought.

Bigman's heart was beating a little faster. When Lucky called for a tight, scrambled beam between the two of them, danger was near. Nearer, at any rate. He said, "What's up, Lucky?"

"It's time to talk." Lucky's voice had a faintly far-off sound, as though it was coming indeterminately from all directions. That was due to the inevitable lack of perfection of the part of the receiving unscrambler, which always left a small fraction of "noise."

Lucky said, "This is Tunnel 7a, according to the chart. It leads back by a fairly simple route to one of the vertical shafts leading to the surface. I'll be going there."

Bigman said, amazed, "You will? Why, Lucky?"

"To get to the surface," and Lucky laughed lightly. "Why else?"

"What for?"

"In order to travel along the surface to the hangar and the *Shooting Starr*. When I went to the ship last time, I took the new inso-suit with me."

Bigman chewed that over and said slowly, "Does that mean you'll be heading for Sun-side?"

"Right. I'll be heading for the big Sun. I can't get lost, at least,

since I need only follow the coronal glow on the horizon. It makes it very simple.”

“Come off it, Lucky, will you? I thought it was the mines that have the Sirians in them. Didn’t you prove that at the banquet?”

“No, Bigman, I didn’t prove it. I just fast-talked it into sounding as though it were proven.”

“Then why didn’t you say so to me?”

“Because we’ve argued this out before, I don’t want to go into it. I can’t risk your losing your temper at the wrong time. If I had told you our coming down here was part of a deeper plan and if, for any reason, Cook had irritated you, you might have blurted it right out.”

“I would not, Lucky. It’s just that you hate to say anything at all till you’re all ready.”

“There’s that too,” admitted Lucky. “Anyway, that’s the situation. I wanted everyone to think I was going into the mines. I wanted everyone to think I hadn’t the foggiest notion of heading for Sun-side. The safest way of seeing to it was to make sure nobody, but nobody, not even you, Bigman, thought any differently.”

“Can you tell me why, Lucky? Or is that still all a big secret?”

“I can tell you this. I have a strong notion that someone at the Dome is behind the sabotage. I don’t believe in the Sirian theory.”

Bigman was disappointed. “You mean there’s nothing down here in the mines?”

“I could be wrong. But I agree with Dr. Cook. It is just too unlikely that Sirius would put all the effort that would be involved in setting up a secret base on Mercury just to achieve a bit of sabotage. It would be much more likely that, if they wanted to do such a thing, they would bribe an Earthman to do it. After all, who slashed the inso-suit? That, at least, can’t be blamed on Sirians. Even Dr. Peverale hasn’t suggested there are Sirians inside the Dome.”

“Then you’re looking for a traitor, Lucky?”

“I’m looking for the saboteur. He may be a traitor in the pay of Sirius, or he may be working for reasons of his own. I hope the answer is on the Sun-side. And I hope, furthermore, that my smoke screen concerning an invasion of the mines will keep the guilty person from having time to cover up or from preparing an uncomfortable reception for me.”

“What answer do you expect?”

“I’ll know when I find it.”

“Okay,” said Bigman. “I’m sold, Lucky. On our way. Let’s go.”

“Hold on, there,” cried Lucky in honest perturbation. “Great Gal-

axy, boy! I said *I'm* going. There's only one inso-suit. You'll stay here."

For the first time, the significance of the pronouns Lucky had used sank into Bigman's consciousness. Lucky had said, "I," "I." Not once had he said "we." And yet Bigman, with the easy confidence of long association, had assumed that "I" meant "we."

"Lucky!" he cried, torn between outrage and dismay. "Why do I have to stay?"

"Because I want the men at the Dome to be sure that we're here. You keep the chart and follow the route we talked about or something like it. Report back to Cook every hour. Tell them where you are, what you see, tell the truth; you don't have to make anything up—except that you say I'm with you."

Bigman considered that. "Well, what if they want to talk to you?"

"Tell them I'm busy. Yell that you think you've just seen a Sirian. Say you've got to cut off. Make up something, but keep them thinking I'm here. See?"

"All right. Sands of Mars, you'll go to Sun-side and have all the fun, and I'll just wander around in the dark playing games on the suit radio."

"Cheer up, Bigman, there *may* be something in the mines. I'm not always right."

"I'll bet you are this time. There's *nothing* down here."

Lucky couldn't resist a joke. "There's the freezing death Cook spoke about. You could investigate that."

Bigman didn't see the humor. He said, "Aw, shut up."

There was a short pause. Then Lucky placed his hand on the other's shoulder. "All right, that wasn't funny, Bigman, and I'm sorry. Now cheer up, really. We'll be together again in no time. You know that."

Bigman pushed Lucky's arm to one side. "All right. Drop the soft soap. You say I've got to do it, so I'll do it. Only you'll probably get sunstroke without me there keeping an eye on you, you big ox."

Lucky laughed. "I'll try to be careful." He turned down tunnel 7a but had not taken two steps when Bigman called out.

"Lucky!"

Lucky stopped. "What?"

Bigman cleared his throat. "Listen. Don't take stupid chances, will you? I mean, I'm not going to be around to drag you out of trouble."

Lucky said, "Now you sound like Uncle Hector. Suppose you take some of your own advice, eh?"

It was as close as they ever got to expressing their real affection for one another. Lucky waved his hand and stood glimmering for a moment in Bigman's suit-light. Then he turned and went off.

Bigman looked after him, following his figure as it gradually melted into the surrounding shadows until it turned about a curve in the tunnel and was lost to him.

He felt the silence, and the loneliness doubled. If he had not been John Bigman Jones, he might have weakened with the sense of loss, been overwhelmed at finding himself alone.

But he was John Bigman Jones, and he set his jaw and clamped his teeth and marched farther down the main shaft with unshaken tread.

Bigman made his first call to the Dome fifteen minutes later. He was miserable.

How could he have believed that Lucky seriously expected adventure in the mines? Would Lucky have arranged to make radio calls for the Sirians to pick up and keep tabs on?

Sure, it was a tight beam, but the messages weren't scrambled, and no beam was so tight that it couldn't be tapped with patience.

He wondered why Cook allowed such an arrangement, and almost at once the thought occurred to him that Cook disbelieved in the Sirians too. Only Bigman had believed. Big-brain!

At the moment, he could have chewed through a spaceship hull.

He gathered in Cook and used the agreed-upon signal for all clear.

Cook's voice at once shot back. "All clear?"

"Sands of Mars! Yes. Lucky's up ahead twenty feet, but there's no sign of anything. Look, if I've buzzed all clear, take my word for it next time."

"Let me talk to Lucky Starr."

"What for?" Bigman kept it casual with an effort. "Get him next time."

Cook hesitated, then said, "All right."

Bigman nodded to himself grimly. There'd be no next time. He'd buzz all clear and that would be all. . . . Only how long was he supposed to wander about in the darkness before he heard from Lucky? An hour? Two? Six? Suppose six hours went by and there was no word? How long should he stay? How long *could* he stay?

And what if Cook demanded specific information? Lucky had said to describe things, but what if Bigman accidentally failed to keep up the act? What if he tipped the boat and let slip the fact that Lucky

had gone into the Sun-side? Lucky would never trust him again! With anything!

He put the thought aside. It would do him no good to concentrate on it.

If there were only something to distract him. Something besides darkness and vacuum, besides the faint vibration of his own footsteps and the sound of his own breath.

He stopped to check his position in the main shaft. The side passages had letters and numbers ground sharply into their walls, and time had done nothing to dull their sharpness. Checking wasn't difficult.

However, the low temperature made the chart brittle and difficult to handle, and that didn't sweeten his mood. He turned his suit-light on his chest controls in order that he might adjust the dehumidifier. The inner surface of his face-plate was beginning to mist over faintly from the moisture in his breath, probably because the temperature within rose with his temper, he told himself.

He had just completed the adjustment when he moved his head sharply to one side as though he were suddenly cocking an ear to listen.

It was exactly what he was doing. He strained to sense the rhythm of faint vibration that he "heard" now only because his own steps had ceased.

He held his breath, remained as motionless as the rocky wall of the tunnel.

"Lucky?" he breathed into the transmitter. "Lucky?" The fingers of his right hand had adjusted the controls. The carrier wave was scrambled. No one else would make sense out of that light whisper. But Lucky would, and soon his voice would come in answer. Bigman was ashamed to admit to himself how welcome that voice would be.

"Lucky?" he said again.

The vibration continued. There was no answer.

Bigman's breathing quickened, first with tension, then with the savage joy born of excitement that always came over him when danger was in the offing.

There was someone else in the mines of Mercury with him. Someone other than Lucky.

Who, then? A Sirian? Had Lucky been right after all though he had thought he was merely putting up a smoke screen?

Maybe.

Bigman drew his blaster and put out his suit-light.

Did they know he was there? Were they coming to get him?

The vibrations weren't the blurred nonrhythmic "sound" of many people, or even two or three. To Bigman's keen ear, the distinctly separated "thrum-thrum" of vibration was the "sound" of one man's legs, rhythmically advancing.

And Bigman would meet any one man, anywhere, under any conditions.

Quietly, he put out his hand, touching the nearer wall. The vibrations sharpened noticeably. The other was in that direction then.

He moved forward quietly in the pitch-dark, his hand keeping a light touch on the wall. The vibrations being set up by the other were too intense, too careless. Either the other believed himself alone in the mines (as Bigman himself had until a moment before) or, if he were following Bigman, he wasn't wise in the ways of the vacuum.

Bigman's own footsteps had died to a murmur as he advanced catlike, yet the other's vibrations showed no change. Again, if the other had been following Bigman by sound, the sudden change in Bigman's progress should have been reflected in a change in the other's. It wasn't. The same conclusion, then as before.

He turned right at the next side-tunnel entrance and continued. His hand on the wall at once kept him along the way and guided him toward the other.

And then there was the blinding flash of a suit-light far ahead in the darkness as the motion of another's body whipped the beam across him. Bigman froze against the wall.

The light vanished. The other had passed across the tunnel Bigman was on. He was not advancing along it. Bigman hurried forward lightly. He would find that cross tunnel and then he would be behind the other.

They would meet then. He, Bigman, representing Earth and the Council of Science, and the enemy representing—whom?

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## The Enemy in the Mines

Bigman had calculated correctly. The other's light was bobbing along ahead of him, as he found the opening. Its owner was unaware of him. He *must* be.

Bigman's blaster was ready. He might have shot unerringly, but a blaster would not have left much behind. Dead men tell no tales and dead enemies explain no mysteries.

He pursued with catlike patience, cutting down the distance between them, following the light, trying to estimate the nature of the enemy.

His blaster always ready, Bigman moved to make first contact. First, radio! His fingers set the controls quickly for general local transmission. The enemy might have no equipment to receive that on the wave lengths Bigman could deliver. Unlikely, but possible! Very unlikely and barely possible!

Yet it didn't matter. There was always the alternative of a light blaster bolt against the wall. It would make his point clearly enough. A blaster carried authority and had a plain way of speaking that was understood in any language anywhere.

He said, his tenor voice carrying all the force it could muster, "Stop, you! Stop where you are and don't turn around! There's a blaster beaded in on you!"

Bigman flashed on his suit-light, and in its glare the enemy froze. Nor did he make any effort to turn around, which was proof enough for Bigman that he had received the message.

Bigman said, "Now turn around. Slowly!"

The figure turned. Bigman kept his right hand in the path of his

suit-light. Its metal sheath was clamped tightly about the large-caliber blaster. In the glow of the light, its outline was comfortingly clear.

Bigman said, "This blaster is fully charged. I've killed men with it before, and I'm a dead shot."

The enemy obviously had radio. He was obviously receiving, for he glanced at the blaster and made a motion as though to raise a hand to block off the blaster's force.

Bigman studied what he could see of the enemy's suit. It looked quite conventional (did the Sirians use such familiar models?).

Bigman said curtly, "Are you keyed in for radio transmission?"

There was sudden sound in his ears and he jumped. The voice was a familiar one, even under the disguising distortion of the radio; it said, "It's Peewee, isn't it?"

Never in his life had Bigman needed greater self-control to keep from using his blaster.

As it was, the weapon leaped convulsively in his hand and the figure facing him leaned quickly to one side.

"Urteil!" yelled Bigman.

His surprise turned to disappointment. No Sirian! Only Urteil!

Then the sharp thought: What was Urteil doing here?

Urteil said, "It's Urteil all right. So put away the bean-shooter."

"That gets put away when I feel like it," said Bigman. "What are you doing here?"

"The mines of Mercury are not your private property, I think."

"While I have the blaster they are, you fat-faced clobber." Bigman was thinking hard and, to a certain extent, futilely. What was there to do with this poisonous skunk? To take him back to the Dome would reveal the fact that Lucky was no longer in the mines. Bigman could tell them that Lucky had lingered behind, but then they would become either suspicious or concerned when Lucky failed to report. And of what crime could he accuse Urteil? The mines were free to all, at that.

On the other hand, he could not remain indefinitely pointing a blaster at the man.

If Lucky were here, he would know—

And as though a telepathic spark had crossed the vacuum between the two men, Urteil suddenly said, "And where's Starr, anyway?"

"That," said Bigman, "is nothing you have to worry about." Then, with sudden conviction, "You were following us, weren't you?" and he shoved his blaster forward a little as though encouraging the other to talk.



In the glare of Bigman's suit-light, the other's glassite-hidden face turned downward slightly as though to follow the blaster. He said, "What if I were?"

Again there was the impasse.

Bigman said, "You were going along a side passage. You were going to swing in behind us."

"I said— What if I were?" Urteil's voice had almost a lazy quality about it, as though its owner were thoroughly relaxed, as though he enjoyed having a blaster pointed at him.

Urteil went on. "But where's your friend? Near here?"

"I know where he is. No need for you to worry."

"I insist on worrying. Call him. Your radio is on local transmission or I wouldn't hear you so well. . . . Do you mind if I turn on my fluid jet? I'm thirsty." His hand moved slowly.

"Careful," said Bigman.

"Just a drink."

Bigman watched tensely. He did not expect a weapon to be activated by chest control, but the suit-light could be suddenly raised to blinding intensity, or—or—— Well, anything.

But Urteil's fingers finished their motion while Bigman stood irresolute, and there was only the sound of swallowing.

"Scare you?" asked Urteil calmly.

Bigman could find nothing to say.

Urteil's voice grew sharp. "Well, call the man. Call Starr!"

Under the impact of the order, Bigman's hand began a movement and stopped.

Urteil laughed. "You almost adjusted radio controls, didn't you? You needed distance transmission. He's nowhere near here, is he?"

"No such thing," cried Bigman hotly. He was burning with mortification. The large and poisonous Urteil was clever. There he stood, the target of a blaster, yet winning the battle, proving himself master of the situation, while with every passing second Bigman's own position, in which he could neither shoot nor lower his blaster, leave nor stay, grew more untenable.

Wildly the thought gnawed at him: Why not shoot?

But he knew he could not. He would be able to advance no reason. And even if he could, the violent death of Senator Swenson's man would make tremendous trouble for the Council of Science. And for Lucky!

If only Lucky were here——

Partly because he wished that so ardently, his heart leaped as

Urteil's light lifted slightly and focused beyond him, and he heard Urteil say, "No, I'm wrong after all and you're right. Here he comes."

Bigman whirled. "Lucky——"

In his right mind, Bigman would have waited calmly enough for Lucky to reach them, for Lucky's arm to be on his shoulder, but Bigman was not quite in his right mind. His position was impossible, his desire for a way out overwhelming.

He had time only for that one cry of "Lucky" before going down under the impact of a body fully twice as massive as his own.

For a few moments he retained the grip on his blaster, but another arm was tearing at his hand, strong fingers were wrenching and twisting his. Bigman's breath was knocked out of him, his brain was whirling with the suddenness of the attack, and his blaster went flying.

The weight lifted from him, and when he turned to struggle to his feet Urteil was towering over him and Bigman was staring into the muzzle of his own blaster.

"I have one of my own," said Urteil, grimly, "but I think I'd rather use yours. Don't move. Stay that way. On hands and knees. That's right."

Never in his life had Bigman so hated himself. To be tricked and hoodwinked this way. He almost deserved death. He would almost rather die than ever have to face Lucky and say, "He looked behind me and said you were coming so I turned——"

He said in a strangled voice, "Shoot, if you have the nerve for it. Shoot, and Lucky will track you down and see to it that you spend the rest of your life chained to the smallest, coldest asteroid ever used as a prison."

"Lucky will do that? Where is he?"

"Find him."

"I will because you'll tell me where he is. And tell me, too, why he came down to the mines in the first place. What's he doing here?"

"To find Sirians. You heard him."

"To find comet gas," growled Urteil. "That senile fool, Peverale, may talk Sirians, but your friend never believed any of it. Not even if he only has the brains you do. He came down for another reason. You tell me."

"Why should I?"

"To save your miserable life."

"That's not enough reason for me," said Bigman, and he rose to his feet and took a step forward.

Urteil moved backward till he was leaning against the wall of

the tunnel. "One more motion and I'll blast you with pleasure. I don't need your information very badly. It will save time, but not much. If I spend more than five minutes with you, it's a waste.

"Now let me tell you exactly what I think. Maybe it will teach you that you and your tin hero, Starr, are fooling nobody. Neither one of you is good for anything more than tricks with force-knives against an unarmed man."

Bigman thought gloomily: *That's* what's griping the clobber. I made him look like a jackass in front of the boys, and he's waiting for me to crawl.

"If you're going to do all that talking," he said, squeezing as much contempt into his voice as he could manage, "you might as well shoot. I'd rather be blasted than talked to death."

"Don't race for it, little fellow, don't race for it. In the first place, Senator Swenson is breaking the Council of Science. You're just an item, a tiny one. Your friend Starr is just another item, and not a much bigger one. I'm the one who's going to do the breaking. We've got the Council where we want it. The people of Earth know it's riddled with corruption, that its officers waste the taxpayers' money and line their own pockets——"

"That's a filthy lie," broke in Bigman.

"We'll let the people decide that. Once we puncture the phony propaganda the Council puts out, we'll see what the people think."

"You try that. Go ahead and try!"

"We intend to. We'll succeed too. And this will be exhibit number one: you two in the mines. I know why you're here. The Sirians! Huh! Starr either put Peverale up to telling the story, or he just took advantage of it. I'll tell you what you two are doing down here. You're faking the Sirians. You're setting up a Sirian camp to show people.

" 'I chased them off singlehanded,' Starr will say. 'I, Lucky Starr, big hero.' The sub-etherics make a big deal out of it and the Council calls off its Project Light on the sly. They've milked it for all it's worth, and they're getting out with their skins. . . . Except that they won't be because I'll catch Starr in the act and he'll be so much mud under shoe and so will the Council."

Bigman was sick with fury. He longed to tear at the other with his bare hands, but somehow he managed to hold himself in leash. He knew why Urteil was talking as he was. It was because the man *didn't* know as much as he pretended. He was trying to get more out of Bigman by making him blind-mad.

In a low voice, Bigman tried to turn the tables. "You know, you

putrid cobber, if anyone ever punctured you and let out the comet gas, your peanut-sized soul would show itself clear. Once they let the rot out of you, you'd collapse to nothing but a loose sack of dirty skin."

Urteil shouted, "That's enough——"

But Bigman shouted over him, his high-pitched voice ringing. "Shoot, you yellow pirate. You showed yellow at the dinner table. Stand up to me, man to man, with bare fists and you'll show yellow again, bloated as you are."

Bigman was tense now. Let Urteil act in rash haste now. Let Urteil aim on impulse and Bigman would jump. Death was probable, but there would be a chance——

But Urteil seemed only to stiffen and grow colder.

"If you don't talk, I'll kill you. And nothing will happen to me. I'll claim self-defense and make it stick."

"Not with Lucky, you won't."

"He'll have his own troubles. When I'm through with him, his opinions won't mean a thing." The blaster in Urteil's hand was steady. "Are you going to try to run for it?"

"From you?" Bigman said.

"It's up to you," said Urteil coldly.

Bigman waited, waited without saying a word while Urteil's arm grew stiff and Urteil's headpiece dropped slightly as though he were taking aim, though at point-blank range he could not miss.

Bigman counted the moments, trying to choose the one in which to make his desperate jump for life as Lucky had when Mindes had similarly aimed at him. But here there was no second party to tackle Urteil as Bigman had tackled Mindes on that occasion. And Urteil was no panicky, mind-sick Mindes. He would laugh and aim again.

Bigman's muscles tensed for that final jump. He did not expect to live for more than five more seconds, perhaps.

# 9

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## Dark and Light

But with his body taut, his leg muscles almost vibrating in the first part-instant of contraction, there was a sudden hoarse cry of utter surprise in Bigman's ears.

They were standing there, both of them, in a gray, dark world in which their beams of light etched one another out. Outside the beams of light, nothing, so that the sudden blob of motion that flashed across the line of sight made no sense at first.

His first reaction, his first thought was: Lucky! Had Lucky returned? Had he somehow mastered the situation, turned the tables?

But there was motion again, and the thought of Lucky faded away.

It was as though a fragment of the rocky wall of the shaft had worked itself loose and was drifting downward in the lazy fall that was characteristic of Mercury's low gravity.

A rope of rock that was somehow flexible, that struck Urteil's shoulder and—clung. One such encircled his waist already. Another moved slowly, bringing itself down and around as though it were part of an unreal world of slowed motion. But as its edge circled Urteil's arm and touched the metal covering Urteil's chest, arm and chest closed upon one another. It was as though the sluggish and seemingly brittle rock contained the irresistible strength of a boa constrictor.

If Urteil's first reaction had been one of surprise, there was now nothing but complete terror in his voice.

"Cold," he croaked harshly. "They're cold."

Bigman's whirling mind was having trouble encompassing the new situation. A piece of that rock had encircled Urteil's lower arm and wrist. The butt of the blaster was clamped in place.

A final rope came floating down. They were so rocklike in appearance that they were invisible until one actually detached itself from the wall.

The ropes were connected one with another as a single organism, but there was no nucleus, no "body." It was like a stony octopus consisting of nothing but tentacles.

Bigman had a kind of explosion of thought.

He thought of rock developing life through the long ages of Mercurian evolution. A completely different form of life from anything Earth knew. A life that lived on scraps of heat alone.

Why not? The tentacles might crawl from place to place, seeking any bit of heat that might exist. Bigman could see them drifting toward Mercury's North Pole when mankind was first established there. First the mines and then the Observatory Dome supplied them with unending trickles of heat.

Man could be their prey too. Why not? A human being was a source of heat. Occasionally an isolated miner might have been trapped. Paralyzed with sudden cold and terror, he would be unable to call for help. Minutes later his power unit would be too low to make a radio call possible in any case. Still later, he would be dead, a frozen relic.

Cook's mad story of the deaths in the mines made sense.

All this passed through Bigman's mind almost in one flash while he remained unmoving, still struggling with a sense of stunned amazement at the sudden new turn of events.

Urteil's voice was somewhere between a moan and a harsh gasp. "I—can't—— Help me—help—— It's cold—cold——"

Bigman yelled, "Hold on. I'm coming."

Gone in a moment was any thought that this man was an enemy, that moments before he had been on the point of killing Bigman in cold blood. The little Martian recognized but one thing; here was a man, helpless in the grip of something nonhuman.

Since man had first left Earth and ventured into the dangers and mysteries of outer space, there had grown up a stern, unwritten law. Human feuds must be forgotten when man faced the common enemy, the nonhuman and inhuman forces of the other worlds.

It might be that not everyone adhered to that law, but Bigman did.

He was at Urteil's side in a bound, tearing at his arm.

Urteil mumbled, "Help me——"

Bigman grasped at the blaster Urteil still held, trying to avoid the tentacle that encircled Urteil's clutching fist. Bigman noted ab-

sently that the tentacle didn't curve smoothly like a snake would. It bent in sections as though arranged in numerous stiff segments hinged together.

Bigman's other hand, groping for purchase on Urteil's suit, made momentary contact with one of the tentacles and sprang away reflectively. The cold was an icy shaft, penetrating and burning his hand.

Whatever method the creatures had of withdrawing heat, it was like nothing he had ever heard of.

Bigman yanked desperately at the blaster, heaving and wrenching. He did not notice at first the alien touch on his back, then—iciness lay over him and did not go away. When he tried to jump away he found he could not. A tentacle had reached out for him and embraced him.

The two men might have grown together, so firmly were they bound.

The physical pain of the cold grew, and Bigman wrenched at the blaster like a man possessed. Was it giving?

Urteil's voice startled him as it murmured, "No use——"

Urteil staggered and then, slowly, under the weak pull of Mercury's gravity, he toppled over to one side, carrying Bigman with him.

Bigman's body was numb. It was losing sensation. He could scarcely tell whether he was still holding the muzzle of the blaster or not. If he was, was it yielding to his wild, sidewise wrenches, or was it a last gasp of wishful thinking?

His suit-light was dimming as his power-unit drained much of its energy into the voracious power-sucking ropes.

Death by freezing could not be far away.

Lucky, having left Bigman in the mines of Mercury, and having changed to an inso-suit in the quiet of the hangared *Shooting Starr*, stepped out onto the surface of Mercury and turned his face toward the "white ghost of the Sun."

For long minutes he stood motionless, taking in once again the milky luminescence of the Sun's corona.

Absently, as he watched, he flexed his smoothly-muscled limbs one at a time. The inso-suit worked more smoothly than an ordinary space-suit. That, combined with its lightness, lent it an unusual sensation of not being there altogether. In an environment obviously airless, it was disconcerting, but Lucky brushed aside any feeling of uneasiness he might have had and surveyed the sky.

The stars were as numerous and brilliant as in open space, and

he paid them little attention. It was something else he wanted to see. It was two days now, standard Earth time, since he had last seen these skies. In two days, Mercury had moved one forty-fourth of the way along its orbit around the Sun. That meant over eight degrees of sky had appeared in the east and over eight degrees had disappeared in the west. That meant new stars could be seen.

New planets too. Venus and Earth ought both to have risen above the horizon in the interval.

And there they were. Venus was the higher of the two, a diamond-bright bit of white light, much more brilliant than it ever appeared to be on Earth. From Earth, Venus was seen at a disadvantage. It was between Earth and the Sun, so that when Venus was closest, Earth could see only its dark side. On Mercury, Venus could be seen at the full.

At the moment, Venus was thirty-three million miles from Mercury. At the closest, however, it could approach to within almost twenty million miles, and then keen eyes could actually see it as a tiny disk.

Even as it was, its light almost rivaled that of the corona, and, staring at the ground, Lucky thought he could make out a double shadow extending from his feet, one cast by the corona (a fuzzy one) and one by Venus (a sharp one). He wondered if, under ideal circumstances, there might not be a triple shadow, the third being cast by Earth itself.

He found Earth, too, without difficulty. It was quite near the horizon, and, though it was brighter than any star or planet in its own skies, it was pale in comparison to the glorious Venus. It was less brightly lit by its more distant Sun; it was less cloudy and therefore reflected less of the light it did give. Furthermore, it was twice as far from Mercury as Venus was.

Yet in one respect it was incomparably more interesting. Where Venus's light was a pure white, Earth's light was a blue-green glow.

And more than that, there was near it, just skirting the horizon, the smaller yellow light of Earth's Moon. Together, Earth and Moon made a unique sight in the skies of the other planets inside the orbit of Jupiter. A double planet, traveling majestically across the skies in each other's company, the smaller circling the larger in a motion which, against the sky, looked like a slow wobble from side to side.

Lucky stared at the sight perhaps longer than he should have, yet he could not help it. The conditions of his life took him far from his home planet on occasion, and that made it all the dearer to him. All the quadrillions of human beings throughout the Galaxy had origi-



nated on Earth. Through almost all of man's history, Earth had been his only home, in fact. What man could look on Earth's speck of light without emotion?

Lucky tore his eyes away, shaking his head. There was work to be done.

He set out with firm stride toward the coronal glow, skimming close to the surface as was proper in low gravity, keeping his suit-light on and his gaze fixed at the ground before him in order to guard against its rough unevenness.

He had an idea of what he might find, but it was purely a notion, backed as yet by no definite fact. Lucky had a horror of discussing such notions, which were sometimes nothing more than intuitions. He even disliked lingering on them in his own mind. There was too great a danger of growing used to the idea, of beginning to depend upon it as truth, of closing the mind unintentionally to alternate possibilities.

He had seen this happen to the ebullient, ready-to-believe, ready-to-act Bigman. He had watched vague possibilities become firm convictions in Bigman's mind more than once——

He smiled gently at the thought of the little bantam. Injudicious he might be, levelheaded never, but he was loyal and ablaze with fearlessness. Lucky would rather have Bigman at his side than a fleet of armored space-cruisers manned by giants.

He missed the gnome-faced Martian now, as he leaped flatly along the Mercurian terrain, and it was partly to wipe out that uncomfortable sensation that Lucky returned to thoughts of the problem at hand.

The trouble was that there were so many crosscurrents.

First, there was Mindes himself, nervous, unstable, unsure of himself. It had never been entirely settled, really, how far his attack on Lucky had been momentary madness and how far settled calculation. There was Gardoma, who was Mindes's friend. Was he a dedicated idealist caught up in the dream of Project Light, or was he with Mindes for purely practical reasons? If so, what were they?

Urteil, himself, was a main focus of disturbance. He was intent on ruining the Council, and the object of his main attack was Mindes. Yet his arrogance naturally spread hate of himself wherever he went. Mindes hated him, of course, and so did Gardoma. Dr. Peverale hated him in a much more restrained fashion. He would not even discuss the man with Lucky.

At the banquet, Cook had seemed to shrink from talking to Urteil, never let his eyes as much as move in his direction. Was this simply

because Cook was anxious to avoid the sharp, flailing edge of Urteil's tongue, or were there more specific reasons?

Cook thought little of Peverale too. He was ashamed of the old man's preoccupation with Sirius.

And there was one question that remained to be answered aside from all these things. Who had slashed Lucky's inso-suit?

There were too many factors. Lucky had a line of thought that threaded through them, but as yet that line was weak. Again he avoided concentrating on that line. He must retain an open mind.

The ground was sloping upward and he had adjusted his stride to suit it automatically. So preoccupied was he with his thoughts that the sight that caught his eyes as he topped that rise found him unprepared and struck him with amazement.

The extreme upper edge of the Sun was above the broken horizon, yet not the Sun itself. Only the prominences that edged the Sun showed, a small segment of them.

The prominences were brilliant red in color, and one, in the very center of those visible, was made up of blazing streamers moving upward and outward with inching slowness.

Sharp and bright against the rock of Mercury, undimmed by atmosphere, unhazed by dust, it was a sight of incredible beauty. The tongue of flame seemed to be growing out of Mercury's dark crust as though the planet's horizon were on fire or a volcano of more than giant size had suddenly erupted and been trapped in mid-blaze.

Yet those prominences were incomparably more than anything that could have appeared on Mercury. The one he watched, Lucky knew, was large enough to swallow a hundred Earths whole, or five thousand Mercuries. And there it burned in atomic fire, lighting up Lucky and all his surroundings.

He turned off his suit-light to see.

Those surfaces of the rocks that faced directly toward the prominences were awash with ruddy light, all other surfaces were black as coal. It was as though someone had painted a bottomless pit with streaks of red. Truly it was the "red ghost of the Sun."

The shadow of Lucky's hand on his chest made a patch of black. The ground ahead was more treacherous, since the patches of light that caught every fragment of unevenness fooled the eye into a false estimate of the nature of the surface.

Lucky turned on his suit-light once again and moved forward toward the prominences along the curve of Mercury, the Sun rising six minutes of arc for every mile he went.

That meant that in less than a mile, the body of the Sun would be visible and he would be on Mercury's Sun-side.

Lucky had no way of knowing then that at that moment Bigman was facing death by freezing. His thought as he faced the Sun-side was only this: There lies the danger and the crux of the problem, and there lies the solution too.

# 10

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## The Sun-Side

More of the prominences were now visible. Their redness brightened. The corona did not vanish (there was no atmosphere to scatter the prominence light and wash out dimmer glows), but it seemed less important now. The stars were still out and would stay out, Lucky knew, even when Mercury's sun was full in the sky, but who could pay attention to them now?

Lucky ran forward eagerly in the steady stride which he could maintain for hours without feeling unduly tired. Under the circumstances, he felt he could have maintained such a stride even under Earth's gravity.

And then, with no warning, no premonitory glow in the sky, no hint from any atmosphere, *there was the Sun!*

Rather, there was a hairline that was the Sun. It was an unbearable line of light edging a notch of broken rock on the horizon, as though some celestial painter had outlined the gray stone in brilliant white.

Lucky looked backward. Across the uneven ground that lay behind him there were the splotches of prominence-red. But now, just at his feet, there was a wash of white, catching crystal formations in glinting highlights.

He moved onward again, and the line of light became first a small splotch and then a larger one.

The boundary of the Sun was clearly visible, lifting a bit above the horizon in its center, curving gently down on each side. The curve was awesomely flat to one whose eyes were accustomed to the curvature of Earth's Sun.

Nor did the Sun's blaze drown out the prominences which

crawled along its edge like flaming red snakehair. The prominences were all over the Sun, of course, but only at the edge could they be seen. On the Sun's face, they were lost amid the glare below.

And over all was the corona.

Lucky marveled, even as he watched, at the manner in which the inso-suit had been adapted to its purpose.

A glance at the edge of Mercury's Sun would have been blinding to unprotected eyes, blinding forever. The visible light was bad enough in its intensity, but it was the hard ultra-violet, unfiltered by atmosphere, that would have meant death to vision . . . and to life itself, eventually.

Yet the glass of the inso-suit's face-plate was so arranged molecularly as to grow less transparent in direct proportion to the brightness of the light that fell upon it. Only a small fraction of a percent of the Solar blaze penetrated the plate, and he could stare at the Sun without danger, almost without discomfort. Yet at the same time, the light of the corona and the stars come through undiminished.

The inso-suit protected him in other ways. It was impregnated with lead and bismuth, not enough so as to raise its weight unduly, but enough to block out ultraviolet and x-radiation from the Sun. The suit carried a positive charge to deflect most of the cosmic rays to one side. Mercury's magnetic field was weak, but Mercury was close to the Sun and the cosmic ray density was large. Still, cosmic rays are composed of positively-charged protons, and like charges repel like.

And, of course, the suit protected him against the heat, not only by its insulating composition but by its mirrorlike reflecting surface, a pseudo-liquid molecular layer that could be activated by a touch on the controls.

In fact, Lucky reflected, when the advantages of the inso-suit were considered, it seemed a pity that it was not standard protection under all conditions. Unfortunately, he realized, its structural weakness, as a result of lacking metal in real quantity, made it impractical for use except where protection against heat and radiation were paramount considerations.

Lucky was a mile into the Sun-side now and not conscious of undue heat.

This did not surprise him. To stay-at-homes who confined their knowledge of space to the sub-etheric thriller shows, the Sun-side of any airless planet was simply a solid mass of undeviating heat.

This was an oversimplification. It depended on how high the Sun was in the sky. From this point on Mercury, for instance, with only

a portion of the Sun above the horizon, comparatively little heat reached the surface, and that little was spread over a lot of ground as the radiation struck almost horizontally.

The "weather" changed as one went deeper into the Sun-side and finally, when one reached that portion where the Sun was high in the sky, it was everything the sub-etherics said it was.

And besides, there were always the shadows. In the absence of air, light and heat traveled in a straight line. Neither could reach within the shadow except for small fractions which were reflected or radiated into it from neighboring sunlit portions. The shadows were therefore frosty cold and carbon black though the Sun was ever so hot and bright.

Lucky was growing more aware of these shadows. At first, after the upper line of Sun had appeared, the ground had been almost all shadow with only occasional patches of light. Now, as the Sun rose higher and higher, the light spread and coalesced until the shadows were distinct things hovering behind boulders and hills.

At one time Lucky deliberately plunged into the shadow of a rise of rock a hundred yards across, and it was as though for a long minute he were back on the dark-side. The heat of the Sun, which he had scarcely noticed while it beat upon him, became evident by its decrease in the shadow. All around the shadow the ground glistened brightly in sunlight, but within the shadow his suit-light was necessary to guide his steps.

He could not help noticing the difference in the surfaces that were in the shadow from those in the light. For on the Sun-side, at least, Mercury did have a kind of atmosphere. Not one in the Earthly sense, no nitrogen, oxygen, carbon dioxide, or water vapor, nothing like that. On the Sun-side, however, mercury would boil in places. Sulfur would be liquid and so would a number of volatile compounds. Traces of the vapor of such substances would cling to Mercury's superheated surface. These vapors froze out in the shadows.

This was brought forcibly to Lucky's mind when his insulated fingers brushed over the dark surface of one outcropping and came away smeared with a frozen hoar of mercury, glittering in his suit-light. It changed quickly into clinging liquid droplets as he emerged into the Sun and then, more slowly, evaporated away.

Slowly, the Sun seemed to be getting hotter. That did not worry Lucky. Even if it grew uncomfortably hot, he could always dodge into a shadow to cool off when necessary.

Short-wave radiation was perhaps a more important consideration. Lucky doubted even that was serious in this short-term exposure.

Workers on Mercury had a horror of radiation, because they were continually exposed to small amounts. Lucky recalled Mindes's emphasis on the fact that the saboteur he had seen had remained standing in the Sun. It was natural that Mindes should be disturbed at that. When exposure was chronic any lengthening of the time of exposure was foolish. In Lucky's own case, however, exposure would be short-term—he hoped.

He ran across patches of blackish ground that stood out somberly against Mercury's more general reddish gray. The reddish gray was familiar enough. It resembled the soil of Mars, a mixture of silicates with the addition of iron oxide, which gave it that ruddy tinge.

The black was more puzzling. Wherever it was, the ground was definitely hotter, since black absorbed more of the Sun's heat.

He bent as he ran and found the black areas crumbly rather than gritty. Some of it came up on the palm of his gauntlet. He looked at it. It might be graphite, it might be iron or copper sulfide. It might be any of a number of things, but he would have bet on its being some variety of impure iron sulfide.

He paused in the shadow of a rock, finally, and took stock. In an hour and a half, he estimated he had traveled some fifteen miles, judging from the fact that the Sun was just about entirely above the horizon now. (At the moment, he was more interested in sipping sparingly at the suit's supply of liquid nutrient mixture than in estimating distance, however.)

Somewhere to the left of him were cables of Mindes's Project Light. Somewhere to the right of him were others. Their exact location did not matter. They covered hundreds of square miles, and to wander aimlessly among them in search of a saboteur would have been foolish.

Mindes had tried it, hit or miss, and had failed. If the object or objects he had seen had indeed been the saboteur, there might have been a warning from inside the Dome. Mindes had made no secret of the fact that he was heading out to Sun-side.

Lucky had, however. There would be no warning, he hoped.

And he had a form of help Mindes had not had. He flipped his small ergometer out of the pouch he had placed it in. He held it before him in cupped palm, his suit-light playing full on it.

Once activated, its red signal-patch blazed with incredible fury when held out in the sunlight. Lucky smiled tightly and adjusted it. There was short-wave radiation from the Sun.

The flame died.

Patience, then, Lucky stepped out into the sunlight and scanned

the horizon in every direction. Where, if anywhere, was there a source of atomic power other than the Sun? He found an indication of the Dome, of course, but the light due to that region increased as he dipped the ergometer downward. The Dome's power plant was nearly a mile underground, and a twenty degree downward dip was required for maximum power where he stood.

He turned slowly, the ergometer held gingerly between the two forefingers of each hand in order that the opaque material of the suit should not block off the telltale radiation. Around a second time and a third.

It seemed to him that in one particular direction there had been the briefest of flashes—scarcely enough to see against the sunlight, really. Perhaps no more than the product of wishful thinking.

He tried again.

No mistake now!

Lucky sighted along the direction in which that glow had appeared and moved in that direction. He did not conceal from himself the fact that he might only be tracking down a patch of radioactive ore.

He caught his first glimpse of one of Mindes's cables nearly a mile farther on.

It was not a single cable at all, rather a web of cables, lying half buried in the ground. He followed it some hundreds of yards and came upon a square metal plate, about four feet on a side and polished to a high gloss. It reflected the stars as though it were a clear pool of water.

No doubt, thought Lucky, if he placed himself in the proper position he would find himself staring into the reflection of the Sun. He became aware that the plate was changing its angle of elevation, becoming less horizontal, more vertical. He looked away to see if it were shifting in such a way as to catch the Sun.

When he looked back he was amazed. The clear square was no longer clear. Instead, it was a dull black, so dull that not all the light of Mercury's Sun seemed to be able to brighten it.

Then, as he watched, that dullness trembled, broke, and fragmented.

It was bright again.

He watched it through three more cycles as the angle of elevation made it more and more vertical. First, incredible reflection; then, complete dullness. During the dullness, Lucky realized, light would be absorbed; during the glossiness, it would be reflected. The alter-



nation in phase might be perfectly regular, or there might be a deliberate, irregular pattern. He could not linger to find out and, if he did, it was doubtful whether his knowledge of hyperoptics would be enough to enable him to understand the purpose of it all.

Presumably hundreds or even thousands of such squares, all connected by a network of cables and all powered from an atomic micropile inside the Dome, were absorbing and reflecting light in a set way at different angles to the Sun. Presumably, this, in some way, could force light energy through hyperspace in a controlled manner.

And, presumably, torn cables and smashed plates prevented the overall pattern from being properly completed.

Lucky tried his ergometer again. It was much brighter now, and again he followed in the indicated direction.

Brighter, brighter! Whatever it was he was following, it was something that was changing its position. The source of gamma rays was not a fixed point on Mercury's surface.

And *that* meant it was not merely an outcropping of radioactive ore. It was something portable, and to Lucky that meant it was man or something belonging to man.

Lucky saw the figure first as a moving speck, black against the fire-lit ground. The sight came after a long spell in the open Sun, at a time when he had been about to find himself a shadow in which to let the slowly accumulating heat drain away.

Instead, he accelerated his pace now. He estimated the temperature outside his suit to be at not quite the boiling point of water. Inside, fortunately, it was considerably lower.

He thought grimly: If the Sun were overhead and not at the horizon, even these suits would be of no use.

The figure paid no attention to him. It continued on its own path, its gait showing it far from as expert in handling low gravity as was Lucky. Indeed its motion might almost be described as lumbering. Yet it managed to devour space. It covered the ground.

It wore no inso-suit. Even at long distance, the surface exposed to Lucky's gaze was obviously one of metal.

Lucky paused briefly in the shade of a rock but forced himself into the open again before there was time for much cooling.

The figure seemed unbothered by the heat. At least, in the time Lucky watched him he made no move to enter shadows, though he passed within a few feet of some.

Lucky nodded thoughtfully. It all fit well.

He sped on. The heat was beginning to feel like something he could touch and squeeze. But it would only be a few moments now.

He had abandoned his low-slung lope now. Every bit of his muscular power was being put into giant strides of up to fifteen feet each.

He shouted, "You! You there! Turn around!"

He said it peremptorily, with all the authority he could produce, hoping that the other could receive his radio signal and that he would not be reduced to sign language.

Slowly the figure turned, and Lucky's nostrils flared in a kind of cold satisfaction. So far, at least, it was as he thought, for the figure was no man—nothing human at all!

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## Saboteur!

The figure was tall, taller even than Lucky. It was nearly seven feet tall, in fact, and broad in proportion. All of the figure that met the eye was gleaming metal, brilliant where it caught the Sun's rays, black with shadow where it did not.

But underneath that metal was no flesh and blood, only more metal, gears, tubes, a micropile which powered the figure with nuclear energy and produced the gamma rays that Lucky had detected with his pocket ergometer.

The limbs of the creature were monstrous and its legs were straddled far apart as it stood there facing Lucky. What passed for its eyes were two photoelectric cells that gleamed a deep red. Its mouth was a slash across the metal on the lower part of its face.

It was a mechanical man, a robot, and it took Lucky no more than one glance to know that it was no robot of Earth's manufacture. Earth had invented the positronic robot, but it had never built any model like this.

The robot's mouth opened and closed in irregular movements as though it were speaking.

Lucky said, "I cannot hear sound in a vacuum, robot." He said it sternly, knowing that it was essential to establish himself as a man and therefore a master at once. "Switch to radio."

And now the robot's mouth remained motionless but a voice sounded in Lucky's receiver, harsh and uneven, with the words unnaturally spaced. It said, "What is your business, sir? Why are you here?"

"Do not question me," said Lucky. "Why are *you* here?"

A robot could only be truthful. It said, "I have been instructed to destroy certain objects at intervals."

"By whom?"

"I have been instructed not to answer that question."

"Are you of Sirian manufacture?"

"I was constructed on one of the planets of the Sirian Confederation."

Lucky frowned. The creature's voice was quite unpleasant. The few robots of Earth manufacture that Lucky had had occasion to see in experimental laboratories had been outfitted with voice boxes which, by direct sound or by radio, seemed as pleasant and natural as a well-cultivated human voice. Surely the Sirians would have improved on that.

Lucky's mind shifted to a more immediate problem. He said, "I must find a shadowed area. Come with me."

The robot said at once, "I will direct you to the nearest shade." It set off at a trot, its metal legs moving with a certain irregularity.

Lucky followed the creature. He needed no direction to reach the shade, but he lagged behind to watch the robot's gait.

What had seemed to Lucky, from a distance, to be a lumbering or a clumsy pace, turned out, at close hand, to be a pronounced limp. A limp and a harsh voice. Two imperfections in this robot whose outer appearance was that of a magnificent mechanical marvel.

It struck him forcibly that the robot might not be adjusted to the heat and radiation of Mercury. Exposure had damaged it, probably. Lucky was scientist enough to feel a twinge of regret at that. It was too beautiful to have to endure such damage.

He regarded the machine with admiration. Underneath that massive skull of chrome-steel was a delicate ovoid of sponge platinum-iridium about the size of a human brain. Within it, quadrillions of quadrillions of positrons came into being and vanished in millionths of a second. As they came into being and vanished they traced pre-calculated paths which duplicated, in a simplified way, the thinking cells of the human brain.

Engineers had calculated out those positronic paths to suit humanity, and into them they had designed the "Three Laws of Robotics."

The First Law was that a robot could not harm a human being or let one come to harm. Nothing came ahead of that. Nothing could substitute for it.

The Second Law was that a robot must obey orders except those that would break the First Law.

The Third Law allowed a robot to protect itself, provided the First and Second Laws weren't broken.

Lucky came out of his short reverie when the robot stumbled and almost fell. There was no unevenness in the ground that Lucky could see, no trifling ridge that might have caught his toe. If there had been, a line of black shadow would have revealed it.

The ground was table-smooth at that point. The robot's stride had simply broken for no reason and thrown it to one side. The robot recovered after threshing about wildly. Having done that, it resumed its stride toward the shade as though nothing had happened.

Lucky thought: It's definitely in poor working order.

They entered the shadow together, and Lucky turned on his suit-light.

He said, "You do wrong to destroy necessary equipment. You are doing harm to men."

There was no emotion in the robot's face; there could be none. Nor was there emotion in its voice. It said, "I am obeying orders."

"That is the Second Law," said Lucky severely. "Still, you may not obey orders that harm human beings. That would be to violate the First Law."

"I have not seen any men. I have harmed no one."

"You have harmed men you did not see. I tell you that."

"I have harmed no man," said the robot stubbornly, and Lucky frowned at the unthinking repetition. Despite its polished appearance, perhaps it was not a very advanced model.

The robot went on. "I have been instructed to avoid men. I have been warned when men were coming, but I was not warned about you."

Lucky stared out past the shadow at the glittering Mercurian landscape, ruddy and gray for the most part but blotched with a large area of the crumbly black material which seemed so common in this part of Mercury. He thought of Mindes spotting the robot twice (his story made sense now) and losing it when he tried to get closer. His own secret invasion of the Sun-side, combined with the use of an ergometer, had turned the trick, fortunately.

He said suddenly and forcefully, "*Who* warned you to avoid men?"

Lucky didn't really expect to catch the robot. A robot's mind is machinery, he thought. It cannot be tricked or fooled, any more than you can trick a suit-light into going on by jumping at the switch and pretending to close contact.

The robot said, "I have been instructed not to answer that ques-

tion." Then slowly, creakily, as though the words were coming out against its will, it said, "I do not wish you to ask such questions any longer. They are disturbing."

Lucky thought: To break the First Law would be more disturbing still.

Deliberately he stepped out of the shadow into the sunlight.

He said to the robot, who followed, "What is your serial number?"

"RL-726."

"Very well, RL-726, you understand I am a man?"

"Yes."

"I am not equipped to withstand the heat of Mercury's Sun."

"Nor am I," said the robot.

"I realize that," said Lucky, thinking of the robot's near-fall a few minutes earlier. "Nevertheless, a man is much less equipped for it than is a robot. Do you understand that?"

"Yes."

"Now, then, listen. I want you to stop your destructive activities, and I want you to tell me who ordered you to destroy equipment."

"I am instructed——"

"If you do not obey me," said Lucky loudly, "I will remain here in the Sun until I am killed and you will have broken the First Law, since you would have allowed me to be killed when you could have stopped it."

Lucky waited grimly. A robot's statement could not be accepted as evidence, of course, in any court, but it would assure him that he was on the right track if it were to say what he expected it to.

But the robot said nothing. It swayed. One eye blinked out suddenly (more imperfection!), then came to life. Its voice sounded in a wordless squawk, then it said in an almost drunken mumble, "I will carry you to safety."

"I would resist," said Lucky, "and you would have to harm me. If you answer my question, I will return to the shade of my own accord, and you will have saved my life without any damage to me at all."

Silence.

Lucky said, "Will you tell me who ordered you to destroy equipment?"

And suddenly the robot lunged forward, coming to within two feet of Lucky before stopping. "I told you not to ask that question."

Its hands moved forward as though to seize Lucky but did not complete the motion.

Lucky watched grimly and without concern. A robot could not harm a human being.

But then the robot lifted one of those mighty hands and put it to its head, for all the world as though it were a man with a headache.

*Headache!*

A sudden thought stabbed at Lucky. Great Galaxy! He'd been blind, stupidly, criminally blind!

It wasn't the robot's legs that were out of order, nor its voice, nor its eyes. How could the heat affect them? It was—it had to be—the positronic brain itself that was affected; the delicate positronic brain subjected to the direct heat and radiation of the Mercurian Sun for how long? Months?

That brain must be partially broken down already.

If the robot had been human, one would say he was in one of the stages of mental breakdown. One might say he was on the road to insanity.

A mad robot! Driven mad by heat and radiation!

How far would the Three Laws hold in a broken-down positronic brain?

And now Lucky Starr stood there, threatening a robot with his own death, while that same robot, nearly mad, advanced toward him, arms outstretched.

The very dilemma in which Lucky had placed the robot might be adding to that madness.

Cautiously, Lucky retreated. He said, "Do you feel well?"

The robot said nothing. Its steps quickened.

Lucky thought: If it's ready to break the First Law, it must be on the point of complete dissolution. A positronic brain would have to be in pieces to be capable of that.

Yet, on the other hand, the robot had endured for months. It might endure for months more.

He talked in a desperate attempt to delay matters and allow time for more thought.

He said, "Does your head ache?"

"Ache?" said the robot. "I do not understand the meaning of the word."

Lucky said, "I am growing warm. We had better retire to the shadow."

No more talk of heating himself to death. He retreated at a half-run now.

The robot's voice rumbled. "I have been told to prevent any interference with the orders given me."

Lucky reached for his blaster and he sighed. It would be unfortunate if he were forced to destroy the robot. It was a magnificent work of man, and the Council could investigate its workings with profit. And to destroy it without even having obtained the desired information was repugnant to him.

Lucky said, "Stop where you are."

The robot's arms moved jerkily as it lunged, and Lucky escaped by a hair as he floated away in a sidewise twist, taking the fullest advantage of Mercury's gravity.

If he could maneuver his way into the shadow; if the robot followed him there——

The coolness might calm those disordered positronic paths. It might become tamer, more reasonable, and Lucky might be spared the necessity of its destruction.

Lucky dodged again, and again the robot rushed past, its metal legs kicking up spurts of black grit that settled back to Mercury promptly and cleanly since there was no atmosphere to keep it in suspension. It was an eerie chase, the tread of man and robot hushed and silent in the vacuum.

Lucky's confidence grew somewhat. The robot's movements had grown jerkier. Its control of the gears and relays that manipulated its limbs was imperfect and growing more so.

Yet the robot was making an obvious attempt to head him off from the shadow. It was definitely and beyond any doubt trying to kill him.

And still Lucky could not bring himself to use the blaster.

He stopped short. The robot stopped too. They were face to face, five feet apart, standing on the black patch of iron sulfide. The blackness seemed to make the heat all the greater and Lucky felt a gathering faintness. The robot stood grimly between Lucky and the shade.

Lucky said, "Out of my way." Talking was difficult.

The robot said, "I have been told to prevent any interference with the orders given me. You have been interfering."

Lucky no longer had a choice. He had miscalculated. It had never occurred to him to doubt the validity of the Three Laws under all circumstances. The truth had come to him too late, and his miscalculation had brought him to this: the danger of his own life and the necessity of destroying a robot.

He raised his blaster sadly.

And almost at once he realized that he had made a second miscalculation. He had waited too long, and the accumulation of heat and weariness had made his body as imperfect a machine as was the



robot's. His arm lifted sluggishly, and the robot seemed to be twice life-sized to his own reeling mind and sight.

The robot was a blur of motion, and this time Lucky's tired body could not be driven into quick enough movement. The blaster was struck from Lucky's hand and went flying. Lucky's arm was clamped tight in the grip of one metal hand, and his waist was embraced by a metal arm.

Under the best of circumstances, Lucky could not have withstood the steel muscles of the mechanical man. No human being could have. Now he felt all capacity for resistance vanish. He felt only the heat.

The robot tightened its grip, bending Lucky backward as though he were a rag doll. Lucky thought dizzily of the structural weakness of the inso-suit. An ordinary space-suit might have protected him even against a robot's strength. An inso-suit could not. Any moment, a section of it might buckle and give.

Lucky's free arm flailed helplessly, his fingers dragging into the black grit below.

One thought flicked through his mind. Desperately he tried to drive his muscles into one last attempt to fend off what seemed inevitable death at the hands of a mad robot.

## Prelude to a Duel

Lucky's predicament was a duplicate in reverse of that which had faced Bigman some hours previously. Bigman had been threatened not by heat but by growing cold. He was held in the grip of the stony "ropes" as firmly as Lucky in the grip of the metal robot. In one respect, though, Bigman's position held hope. His numbing grasp held desperately on the blaster pinned in Urteil's hand.

And the blaster was coming loose. In fact, it came free so suddenly that Bigman's numbed fingers nearly dropped it.

"Sands of Mars!" he muttered, and held on.

If he had known where in the tentacles a vulnerable spot might be, if he could have blasted any part of those tentacles without killing either Urteil or himself, his problem would have been simple. As it was, there was only one gamble, not a good one either, open to him.

His thumb worked clumsily on the intensity control, pushing it down and down. He was getting drowsy, which was a bad sign. It had been minutes since he had heard any sign of life from Urteil.

He had intensity at minimum now. One more thing; he must reach the activator with his forefinger without dropping the blaster.

Space! He mustn't drop it.

The forefinger touched the proper spot and pushed against it.

The blaster grew warm. He could see that in the dull red glow of the grid across the muzzle. That was bad for the grid since a blaster was not designed to be used as a heat ray, but to deep Space with that.

With what strength was left him, Bigman tossed the blaster as far as he could.

It seemed to him then as though reality wavered for a moment, as though he were on the edge of unconsciousness.

Then he felt the first glow of warmth, a tiny leakage of heat entering his body from the laboring power-unit, and he shouted in weak joy. That heat was enough to show that power was no longer being drained directly into the voracious bodies of the heat-sucking tentacles.

He moved his arms. He lifted a leg. They were free. The tentacles were gone.

His suit-light had brightened, and he could see clearly the spot where the blaster had been thrown. The spot, but not the blaster. Where the blaster should be was a sluggishly moving mass of gray, intertwining tentacles.

With shaky motions, Bigman snatched at Urteil's own blaster, setting it to minimum and tossing it past the position of the first. That would hold the creature if the energy of the first gave out.

Bigman said urgently, "Hey, Urteil. Can you hear me?"

There was no answer.

With what strength he could muster he pulled the space-suited figure away with him. Urteil's suit-light glimmered, and his power-unit gauge showed itself as not quite empty. The temperature inside his suit should return to normal quickly.

Bigman called the Dome. There was no other decision possible now. In their weakened condition, with their power supply low, another encounter with Mercurian life would kill them. And he would manage to protect Lucky's position somehow.

It was remarkable how quickly men reached them.

With two cups of coffee and a hot meal inside him and the Dome's light and heat all about him, Bigman's resilient mind and body put the recent horror into proper perspective. It was already only an unpleasant memory.

Dr. Peverale hovered about him with an air partly like that of an anxious mother, partly like that of a nervous old man. His iron-gray hair was in disarray. "You're sure you're all right, Bigman. No ill effects?"

"I feel fine. Never better," insisted Bigman. "The question is, Doc, how's Urteil?"

"Apparently he'll be all right." The astronomer's voice grew cold. "Dr. Gardoma has examined him and reported favorably on his condition."

"Good," said Bigman almost gloatingly.

Dr. Peverale said with some surprise, "Are you concerned for him?"

"You bet, Doc. I've plans for him."

Dr. Hanley Cook entered now, almost trembling with excitement. "We've sent men into the mines to see if we can round up any of the creatures. They're taking heating pads with them. Like bait to a fish, you know." He turned to Bigman. "Lucky you got away."

Bigman's voice rose in pitch and he looked outraged, "It wasn't luck, it was brains. I figured they were after straight heat most of all. I figured it was their favorite kind of energy. So I gave it to them."

Dr. Peverale left after that, but Cook remained behind, talking of the creatures, walking back and forth, bubbling with speculation. "Imagine! The old stories about the freezing death in the mines were true. Really true! Think of it! Just rocky tentacles acting as heat sponges, absorbing energy wherever they can make contact. You're sure of the description, Bigman?"

"Of course I'm sure. When you catch one, see for yourself."

"What a discovery."

"How come they were never discovered before?" asked Bigman.

"According to you, they blend into their environment. Protective mimicry. Then, too, they attack only isolated men. Maybe," his words grew quicker, more animated, and his long fingers intertwined and twisted with one another, "there is some instinct there, some rudimentary intelligence that kept them hidden and out of sight. I'm sure of it. It's a kind of intelligence that kept them out of our way. They knew their only safety was in obscurity, so they attack only single, isolated men. Then for thirty years or more no men appeared in the mines. Their precious kernels of unusual heat were gone, and yet they never succumbed to the temptation to invade the Dome itself. But when men finally appeared once more in the mines, *that* temptation was too great and one of the creatures attacked, even though there were two men there and not one. For them, that was fatal. They have been discovered."

"Why don't they go to the Sun-side if they want energy and they're all that intelligent?" demanded Bigman.

"Maybe that's too hot," said Cook at once.

"They took the blaster. It was red hot."

"The Sun-side may be too full of hard radiation. They may not be adapted to that. Or maybe there is another breed of such creature on the Sun-side. How can we know? Maybe the dark-side ones live on radioactive ores and on the coronal glow."

Bigman shrugged. He found such speculation unprofitable.

And Cook's line of thought seemed to change too. He stared speculatively at Bigman, one finger rubbing his chin rhythmically. "So you saved Urteil's life."

"That's right."

"Well, maybe it's a good thing. If Urteil had died, they would have blamed you. Senator Swenson could have made it darned hot for you and for Starr *and* for the Council. No matter what explanation you gave, you would have been there when Urteil died, and that would have been enough for Swenson."

"Listen," said Bigman, moving about uneasily, "when do I get to see Urteil?"

"Whenever Dr. Gardoma says you may."

"Get him on the wire and tell him to say I can, then."

Cook's gaze remained fastened thoughtfully on the small Martian. "What's on your mind?"

And because Bigman had to make arrangements about the gravity, he explained some of his plan to Cook.

Dr. Gardoma opened the door and nodded to Bigman to enter. "You can have him, Bigman," he whispered. "I don't want him."

He stepped out, and Bigman and Urteil were alone with one another once again.

Jonathan Urteil was a little pallid where stubble didn't darken his face, but that was the only sign of his ordeal. He bared his lips to a savage grin. "I'm in one piece, if that's what you've come to see."

"That's what I've come to see. Also to ask you a question. Are you still full of that drivel about Lucky Starr setting up a fake Sirian base in the mines?"

"I intend to prove it."

"Look, you cobber, you know it's a lie, and you're going to fake proof if you can. *Fake* it! Now I'm not expecting you to get on your knees to thank me for saving your life——"

"Wait!" Slowly Urteil's face flushed. "All I remember is that that thing got me first by surprise. That was accident. After that, I don't know what happened. What *you* say means nothing to me."

Bigman shrieked with outrage. "You smudge of space dust, you yelled for help."

"Where's your witness? I don't remember a thing."

"How do you suppose you got out?"

"I'm not supposing anything. Maybe the thing crawled away on its own. Maybe there was no thing at all. Maybe a rockfall hit me and knocked me out. Now if you came here expecting me to cry on

your shoulders and promise to lay off your grafting friend, you're going to be disappointed. If you have nothing else to say, good-by."

Bigman said, "There's something you're forgetting. You tried to kill me."

"Where's your witness? Now if you don't get out, I'll pucker up and blow you out, midget."

Bigman remained heroically calm. "I'll make a deal with you, Urteil. You've made every threat you can think of because you're half an inch taller than I am and half a pound heavier, but you crawled the only time I made a pass at you."

"With a force-knife and myself unarmed. Don't forget that."

"I say you're yellow. Meet me rough and tumble, *now*. No weapons. Or are you too weak?"

"Too weak for you? Two years in the hospital and I wouldn't be too weak for you!"

"Then fight. Before witnesses! We can use the space in the power room. I've made arrangements with Hanley Cook."

"Cook must hate you. What about Peverale?"

"Nobody asked him. And Cook doesn't hate me."

"He seems anxious to get you killed. But I don't think I'll give him the satisfaction. Why should I fight a half-pint of skin and wind?"

"Yellow?"

"I said, why? You said you were making a deal."

"Right. You win, I don't say a word about what happened in the mines, what really happened. I win, you lay off the Council."

"Some deal. Why should I worry about anything you can say about me?"

"You're not afraid of losing, are you?"

"Space!" The exclamation was enough.

Bigman said, "Well, then?"

"You must think I'm a fool. If I fight with you before witnesses I'll be indicted for murder. If I lean a finger on you, you're squashed. Go find yourself another way to commit suicide."

"All right. How much do you outweigh me?"

"A hundred pounds," said Urteil contemptuously.

"A hundred pounds of fat," squeaked Bigman, his gnomish face screwed into a ferocious scowl. "Tell you what. Let's fight under Mercurian gravity. That makes your advantage forty pounds. And you keep your inertia advantage. Fair enough?"

Urteil said, "Space, I'd like to give you one smash, just to plaster your big mouth over your miserable little face."

"You've got your chance. Is it a deal?"

"By Earth, it's a deal. I'll try not to kill you, but that's as far as I'll go. You've asked for this, you've begged for it."

"Right. Now let's go. Let's go." And Bigman was so anxious that he hopped about as he talked, sparring a little with rapid birdlike motions of his fists. In fact, such was his eagerness for this duel that not once did he give a specific thought to Lucky nor suffer any presentiment of disaster. He had no way of telling that, some time before, Lucky had fought a more deadly duel than the one Bigman now proposed.

The power-level had its tremendous generators and heavy equipment, but it also had its broad level space suitable for gatherings of personnel. It was the oldest part of the Dome. In the first days, before even a single mine shaft had been blasted into Mercurian soil, the original construction engineers had slept on cots in that space between the generators. Even now it was still occasionally used for trifilm entertainment.

Now it served as a ring, and Cook, together with half a dozen or so technicians, remained dubiously on the side lines.

"Is this all?" demanded Bigman.

Cook said, "Mindes and his men are out Sun-side. There are ten men in the mines looking for your ropes, and the rest are mostly at their instruments." He looked apprehensively at Urteil and said, "Are you sure you know what you're doing, Bigman?"

Urteil was stripped to the waist. He had a thick growth of hair over his chest and shoulders, and he moved his muscles with an athletic joy.

Bigman looked in Urteil's direction indifferently. "All set with the gravity?"

"We'll have it off at the signal. I've rigged the controls so the rest of the Dome won't be affected. Has Urteil agreed?"

"Sure." Bigman smiled. "It's all right, pal."

"I hope so," said Cook fervently.

Urteil called out, "When do we get started?" Then looking about the small group of spectators, he asked, "Anyone care to bet on the monkey?"

One of the technicians looked at Bigman with an uneasy grin. Bigman, now also stripped to his waist, looked surprisingly wiry, but the difference in size gave the match a grotesque appearance.

"No bet here," said the technician.

"Are we ready?" called Cook.

"I am," said Urteil.

Cook licked his pale lips and flicked the master switch. There was a change in the pitch of the subdued droning of the generators.

Bigman swayed with the sudden loss of weight. So did all the rest. Urteil stumbled but recovered rapidly and advanced gingerly into the middle of the clear space. He did not bother to lift his arms but stood waiting in a posture of complete relaxation.

“Start something, bug,” he said.



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## Results of a Duel

For his part, Bigman advanced with gentle movements of his legs that translated themselves into slow and graceful steps, almost as though he were on springs.

In a way he was. Mercurian surface gravity was almost precisely equal to Martian surface gravity, and it was something he was at home with thoroughly. His cool, gray eyes, watching sharply, noticed every sway in Urteil's body, every knotting of a sudden muscle as he worked to keep erect.

Small misjudgments even in merely keeping one's balance were inevitable when working in a gravity to which one was unaccustomed.

Bigman moved in suddenly, springing from foot to foot and side to side in a broken motion that was at once amusingly dancelike and completely confusing.

"What is this?" growled Urteil in exasperation. "A Martian waltz?"

"Kind of," said Bigman. His arm lunged outward, and his bare knuckles slammed into Urteil's side with a resounding thwack, staggering the big fellow.

There was a gasp from the audience and one yell of "Hey, *boy!*"

Bigman stood there, arms akimbo, waiting for Urteil to recover his balance.

Urteil did so in a matter of five seconds, but now there was an angry red splotch on his side and a similar and angrier one on each cheekbone.

His own arm shot out powerfully, his right palm half open as

though a slap would be sufficient to fling this stinging insect out of his way forever.

But the blow continued, dragging Urteil about. Bigman had ducked, leaving a fraction of an inch to spare, with the sure judgment of a perfectly co-ordinated body. Urteil's efforts to stop his follow-through left him teetering wildly, back to Bigman.

Bigman placed his foot on the seat of Urteil's pants and shoved gently. The recoil sent him hopping easily backward on the other foot, but Urteil went slowly forward on his face in grotesque slow motion.

There was sudden laughter from the side lines.

One of the spectators called out, "Changed my mind, Urteil. I'm betting."

Urteil made no gesture of hearing this. He was facing Bigman again, and from the corner of his thick lips a viscid drop of saliva made its way down the corner of his chin.

"Up the gravity!" he roared hoarsely. "Get it to normal!"

"What's the matter, tubbo?" mocked Bigman. "Isn't forty pounds in your favor enough?"

"I'll kill you. I'll kill you," Urteil shouted.

"Go ahead!" Bigman spread his arms in mock invitation.

But Urteil was not entirely beyond reason. He circled Bigman, hopping a little in ungainly fashion. He said, "I'll get my gravity legs, bug, and once I grab you anywhere, that piece gets torn off you."

"Grab away."

But there was an uneasy silence among the men who watched now. Urteil was a stooping barrel, his arms sweeping out and wide, his legs spread. He was keeping his balance, catching the rhythm of the gravity.

Bigman was a slender stalk in comparison. He might be as graceful and self-assured as a dancer, yet he looked pitifully small.

Bigman seemed unworried. He hopped forward with a sudden stamp of his feet that sent him shooting high in the air, and when Urteil lunged at the rising figure, Bigman lifted his feet and went down behind his adversary before the other could turn around.

There was loud applause, and Bigman grinned.

He performed what was almost a pirouette as he ducked under one of the great arms that threatened him, reaching out and bringing the side of his hand sharply down against the biceps.

Urteil restrained a cry and whirled again.

Urteil maintained a dreadful calm to all these grandstanding prov-

ocations now. Bigman, on the other hand, tried in every way he could to taunt and sting Urteil into a wild motion that would send him shooting off balance.

Forward and away; quick, sharp blows, which for all their flicking qualities carried a sting.

But a new respect for Urteil was growing in the small Martian's mind. The clobber was taking it. He was maintaining his ground like a bear warding off the attack of a hunting dog. And Bigman was the hunting dog which could only hover at the outskirts, snap, snarl, and keep out of the reach of the bear's paws.

Urteil even looked like a bear with his large, hairy body, his small, bloodshot eyes, and his jowly, bristly face.

"Fight, clobber," jeered Bigman. "I'm the only one giving the customers a show."

Urteil shook his head slowly. "Come closer," he said.

"Sure," said Bigman lightly, dashing in. With flashing movements, he caught Urteil on the side of the jaw and was under his arm and away in almost the same movement.

Urteil's arm half moved, but it was too late and the motion wasn't completed. He swayed a little. "Try it again," he said.

Bigman tried it again, twisting and diving under his other arm this time and finishing with a little bow to accept the roars of approval.

"Try it again," said Urteil thickly.

"Sure," said Bigman. And he dashed.

This time Urteil was thoroughly prepared. He moved neither head nor arms, but his right foot shot forward.

Bigman doubled, or tried to, in mid-air and didn't quite make it. His ankle was caught and pinned brutally for a moment by Urteil's shoe. Bigman yelped at the pressure.

Urteil's rapid movement carried him forward, and Bigman, with a quick, desperate shove at the other's back, accelerated that movement.

This time Urteil, more accustomed to the gravity, was not thrown forward as far and recovered more quickly, while Bigman, with his ankle on fire, moved about with a frightening clumsiness.

With a wild shout Urteil charged and Bigman, pivoting on his good foot, was not fast enough. His right shoulder was caught in one hamlike fist. His right elbow was caught in the other. They went down together.

A groan went up almost in concert from the spectators and Cook,

watching ashen-faced, cried out, "Stop the fight" in a croaking voice that went completely unheeded.

Urteil got to his feet, his grip firm on Bigman, lifting the Martian as though he were a feather. Bigman, face twisted in pain, writhed to get a footing of his own.

Urteil muttered into the little fellow's ear. "You thought you were wise, tricking me into fighting under low gravity. Do you still think so?"

Bigman wasted no time in thought. He would have to get at least one foot on the floor. . . . Or on Urteil's kneecap, for his right foot rested momentarily on Urteil's knee and that would have to do.

Bigman pushed down hard and lunged his body backward.

Urteil swayed forward. That was not dangerous for Urteil in itself, but his balancing muscles overshot the mark in the low gravity, and in righting himself he swayed backward. And as he did so, Bigman, expecting that, shifted his weight and pushed hard forward.

Urteil went down so suddenly that the spectators could not see how it was accomplished. Bigman wrenched half free.

He was on his feet like a cat, with his right arm still pinned. Bigman brought his left arm down on Urteil's wrist and brought up his knee sharply against the other's elbow.

Urteil howled and his grip on Bigman loosened as he shifted position to keep his own arm from being broken.

Bigman took his chance with the quickness of a jet's ignition. He wrenched his pinned hand completely loose while maintaining his grip on Urteil's wrist. His freed hand came down upon Urteil's arm above the elbow. He had a two-handed grip now on Urteil's left arm.

Urteil was scrabbling to his feet, and as he did so, Bigman's body bowed and his back muscles went down hard with effort. He lifted along the line of Urteil's own motion of rising.

Bigman's muscles, combined with the action of Urteil's lift, carried that large body free of the ground in a slow motion, impressive display of what could be done in a low gravity field.

With his muscles near to cracking, Bigman whipped Urteil's torso still farther upward, then let go, watching it as it went flailing in a parabolic arc that seemed grotesquely slow by Earth standards.

They all watched and were all caught in the sudden change of gravity. Earth's full gravity snapped on with the force and speed of a blaster bolt, and Bigman went to his knees with a painful wrench on his twisted ankle. The spectators also went down in a chorus of confused cries of pain and astonishment.

Bigman caught only the merest glimpse of what happened to

Urteil. The change in gravity had caught him almost at the high point of the parabola, snapping him downward with sharp acceleration. His head struck a protecting stanchion of one of the generators a sharp, cracking blow.

Bigman, rising painfully to his feet, tried to shake sense into his addled brains. He staggered and was aware of Urteil sprawled limply, of Cook kneeling at Urteil's side.

"What happened?" cried Bigman. "What happened to the gravity?"

The others echoed the question. As nearly as Bigman could tell, Cook was the only one on his feet, the only one who seemed to be thinking.

Cook was saying, "Never mind the gravity. It's Urteil."

"Is he hurt?" cried someone.

"Not any more," said Cook, getting up from his kneeling position. "I'm pretty sure he's dead."

They made an uneasy circle about the body.

Bigman said, "Better get Dr. Gardoma." He scarcely heard himself say it. A great thought had come to him.

"There's going to be trouble," said Cook. "You killed him, Bigman."

"The change in gravity did that," said Bigman.

"That'll be hard to explain. You threw him."

Bigman said, "I'll face any trouble. Don't worry."

Cook licked his lips and looked away. "I'll call Gardoma."

Gardoma arrived five minutes later, and the shortness of his examination was proof enough that Cook had been correct.

The physician rose to his feet, wiping his hands on a pocket handkerchief. He said gravely, "Dead. Fractured skull. How did it happen?"

Several spoke at once, but Cook waved them down. He said, "A grudge fight between Bigman and Urteil——"

"Between Bigman and Urteil!" exploded Dr. Gardoma. "Who allowed that? Are you crazy, expecting Bigman to stand up——"

"Easy there," said Bigman. "I'm in one piece."

Cook said in angry self-defense, "That's right, Gardoma, it's Urteil that's dead. And it was Bigman who insisted on the fight. You admit that, don't you?"

"I admit it all right," said Bigman. "I also said it was to be under Mercurian gravity."

Dr. Gardoma's eyes opened wide. "Mercurian gravity? Here?"

He looked down at his feet as though wondering if his senses were playing him tricks and he were really lighter than he felt.

"It isn't Mercurian gravity any more," said Bigman, "because the pseudo-grav field snapped to full Earth gravity at a crucial time. Bam! Like that! That's what killed Urteil, not yours truly."

"What made the pseudo-grav snap to Earth levels?" asked Gardoma.

There was silence.

Cook said feebly, "It might have been a short——"

"Nuts," said Bigman, "the lever is pulled up. It didn't do that by itself."

There was a new silence and an uneasy one.

One of the technicians cleared his throat and said, "Maybe in the excitement of the fight someone was moving around and shoved it up with his shoulder without even realizing it."

The others agreed eagerly. One of them said, "Space! It just happened!"

Cook said, "I'll have to report the entire incident. Bigman——"

"Well," said the small Martian calmly, "am I under arrest for manslaughter?"

"N—no," said Cook uncertainly. "I won't arrest you, but I have to report, and you may be arrested in the end."

"Uh huh. Well, thanks for the warning." For the first time since returning from the mines, Bigman found himself thinking of Lucky. This, he thought, is a fine peck of trouble for Lucky to find waiting for him when he comes back.

And yet there was an odd stir of excitement in the little Martian, too, for he was sure he could get out of the trouble . . . and show Lucky a thing or two in the process.

A new voice broke in. "Bigman!"

Everyone looked up. It was Peverale, stepping down the ramp that led from the upper levels. "Great Space, Bigman, are you down there? And Cook?" Then almost pettishly, "What's going on?"

No one seemed to be able to say anything at all. The old astronomer's eyes fell on the prone body of Urteil, and he said with mild surprise, "Is he dead?"

To Bigman's astonishment, Peverale seemed to lose interest in that. He didn't even wait for his question to be answered before turning to Bigman once more.

He said, "Where's Lucky Starr?"

Bigman opened his mouth but nothing came out. Finally, he managed to say weakly, "Why do you ask?"

"Is he still in the mines?"

"Well——"

"Or is he on Sun-side?"

"Well——"

"Great Space, man, is he on Sun-side?"

Bigman said, "I want to know why you're asking."

"Mindes," said Peverale impatiently, "is out in his flitter, patrolling the area covered by his cables. He does that sometimes."

"So?"

"So he's either mad or he's correct in saying he's seen Lucky Starr out there."

"Where?" cried Bigman at once.

Dr. Peverale's mouth compressed in disapproval. "Then he *is* out there. That's plain enough. Well, your friend Lucky Starr was apparently in some trouble with a mechanical man, a robot——"

"A robot!"

"And according to Mindes, who has not landed but who is waiting for a party to be sent out, Lucky Starr is dead!"

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## Prelude to a Trial

During the moment in which Lucky lay bent in the inexorable grip of the robot, he expected momentary death, and when it did not come at once a weak hope flared up within him.

Could it be that the robot, having the impossibility of killing a human being ingrained in its tortured mind, found itself incapable of the actual act now that it was face to face with it?

And then he thought that couldn't be, for it seemed to him the pressure of the robot's grip was increasing in smooth stages.

He cried with what force he could muster, "Release me!" and brought up his one free hand from where it had dragged, trailing in the black grime. There was one last chance, one last, miserably weak chance.

He lifted his hand to the robot's head. He could not turn his head to see, crushed as that was against the robot's chest. His hand slipped along the smooth metal surface of the robot's skull two times, three times, four times. He took his hand away.

There was nothing more he could do.

Then—— Was it his imagination, or did the robot's grip seem to loosen? Was Mercury's big Sun on his side at last?

"Robot!" he cried.

The robot made a sound, but it was only like gears scraping rustily together.

Its grip *was* loosening. Now was the time to reinforce events by calling what might be left of the Laws of Robotics into play.

Lucky panted, "You may not hurt a human being."

The robot said, "I may not——" haltingly, and without warning fell to the ground.



Its grip was constant, as though rigid in death.

Lucky said, "Robot! Let go!"

Jerkily, the robot loosened his hold. Not entirely, but Lucky's legs came free and his head could move.

He said, "Who ordered you to destroy equipment?"

He no longer feared the robot's wild reaction to that question. He knew that he himself had brought that positronic mind to full disintegration. But in the last stages before final dissolution, perhaps some ragged remnant of the Second Law might hold. He repeated, "Who ordered you to destroy equipment?"

The robot made a blurred sound. "Er—Er——" Then, maddeningly, radio contact broke off, and the robot's mouth opened and closed twice as though, in the ultimate extremity, it were trying to talk by ordinary sound.

After that, nothing.

The robot was dead.

Lucky's own mind, now that the immediate emergency of near-death was over, was wavering and blurred. He lacked the strength to unwind the robot's limbs entirely from his body. His radio controls had been smashed in the robot's hug.

He knew that he must first regain his strength. To do that meant he must get out of the direct radiation of Mercury's big Sun and quickly. That meant reaching the shadow of the near-by ridge, the shadow he had failed to reach during the duel with the robot.

Painfully he doubled his feet beneath him. Painfully he inched his body toward the shadow of the ridge, dragging the robot's weight with him. Again. Again. The process seemed to last forever and the universe shimmered about him.

Again. Again.

There seemed to be no strength or feeling in his legs, and the robot seemed to weigh a thousand pounds.

Even with Mercury's low gravity, the task seemed beyond his weakening strength, and it was sheer will that drove him on.

His head entered the shadow first. Light blanked out. He waited, panting, and then, with an effort that seemed to crack his thigh muscles, he pushed himself along the ground once more and even once more.

He was in the shadow. One of the robot's legs was still in the sun, blazing reflections in all directions. Lucky looked over his shoulder and noted that dizzily. Then, almost gratefully, he let go of consciousness.

There were intervals later when sense perception crawled back.

Then, much later, he lay quietly, conscious of a soft bed under him, trying to bring those intervals back to mind. There were fragmentary pictures in his memory of people approaching, a vague impression of motion in a jet vehicle, of Bigman's voice, shrill and anxious. Then, a trifle more clearly, a physician's ministrations.

After that, a blank again, followed by a sharp memory of Dr. Peverale's courtly voice asking him gentle questions. Lucky remembered answering in connected fashion, so the worst of his ordeal must have been over by then. He opened his eyes.

Dr. Gardoma was looking at him somberly, a hypodermic still in his hand. "How do you feel?" he asked.

Lucky smiled. "How should I feel?"

"Dead, I should think, after what you've gone through. But you have a remarkable constitution, so you'll live."

Bigman, who had been hovering anxiously at the outskirts of Lucky's vision, entered it full now. "No thanks to Mindes for that. Why didn't that mud-brain go down and get Lucky out of there after he spotted the robot's leg? What was he waiting for? He was leaving Lucky to die?"

Dr. Gardoma put away his hypodermic and washed his hands. With his back to Bigman, he said, "Scott Mindes was convinced Lucky was dead. His only thought was to stay away so that no one could accuse him of being the murderer. He knew he had tried to kill Lucky once before and that others would remember that."

"How could he think that this time? The robot——"

"Mindes isn't himself under pressure these days. He called for help; that was the best he could do."

Lucky said, "Take it easy, Bigman. I was in no danger. I was sleeping it off in the shade, and I'm all right now. What about the robot, Gardoma? Was it salvaged?"

"We've got it in the Dome. The brain is gone, though, quite impossible to study."

"Too bad," said Lucky.

The physician raised his voice. "All right, Bigman, come on. Let him sleep."

"Hey——" began Bigman indignantly.

Lucky at once added, "That's all right, Gardoma. As a matter of fact, I want to speak to him privately."

Dr. Gardoma hesitated, then shrugged. "You need sleep, but I'll give you half an hour. Then he must go."

"He'll go."

As soon as they were alone, Bigman seized Lucky's shoulder and shook it violently. He said in a strangled kind of voice, "You stupid ape. If the heat hadn't got that robot in time—like in the sub-ethetics——"

Lucky smiled mirthlessly. "It wasn't coincidence, Bigman," he said. "If I had waited for a sub-etheric ending, I'd be dead. I had to gimmick the robot."

"How?"

"Its brain case was highly polished. It reflected a large part of the sun's radiation. That meant the temperature of the positronic brain was high enough to ruin its sanity but not high enough to stop it completely. Fortunately, a good part of Mercurian soil about here is made up of a loose black substance. I managed to smear some on its head."

"What did that do?"

"Black absorbs heat, Bigman. It doesn't reflect it. The temperature of the robot's brain went up quickly and it died almost at once. It was close, though. . . . Still, never mind that. What happened at this end while I was gone? Anything?"

"*Anything?* Wow! You listen!" And as Bigman talked, Lucky did listen, with an expression that grew continually graver as the story unfolded.

By the time it drew to a conclusion he was frowning angrily. "Why did you fight Urteil, anyway? That was foolish."

"Lucky," said Bigman in outrage, "it was *strategy!* You always say I just bull right ahead and can't be trusted to do the shrewd thing. This was *shrewd*. I knew I could lick him at low gravity——"

"It seems as though you almost didn't. Your ankle is taped."

"I slipped. Accident. Besides, I *did* win. A deal was involved. He could do a lot of damage to the Council with his lies, but if I won he'd get off our backs."

"Could you take his word for that?"

"Well——" began Bigman, troubled.

Lucky drove on. "You saved his life, you said. He must have known that, and yet that didn't persuade him to abandon his purpose. Did you think he was likely to do so as a result of a fist fight?"

"Well——" said Bigman, again.

"Especially if he lost and would therefore be raging at the humiliation of a public beating. . . . I tell you what, Bigman. You did it because you wanted to beat him and get revenge for making fun of you. Your talk about making a deal was just an excuse to give you an opportunity for the beating. Isn't that right?"

"Aw, Lucky! Sands of Mars——"

"Well, am I wrong?"

"I wanted to make the deal——"

"But mainly you wanted to fight, and now look at the mess."

Bigman's eyes dropped. "I'm sorry."

Lucky relented at once. "Oh, Great Galaxy, Bigman, I'm not angry at you. I'm angry at myself, really. I misjudged that robot and nearly got myself killed because I wasn't thinking. I could see it was out of order and never tied it up with the effect of heat on its positronic brain till it was nearly too late. . . . Well, the past has a lesson for the future, but otherwise, let's forget it. The question is what to do about the Urteil situation."

Bigman's spirits bounced back at once. "Anyway," he said, "the cobber is off our backs."

"He is," said Lucky, "but what about Senator Swenson?"

"Hmm."

"How do we explain things? The Council of Science is being investigated, and as a result of a fight instigated by someone close to the Council, someone who's almost a member, the investigator dies. That won't look good."

"It was an accident. The pseudo-grav field——"

"That won't help us. I'll have to talk to Peverale and——"

Bigman reddened and said hastily, "He's just an old guy. He's not paying any attention to this."

Lucky hitched himself to one elbow. "What do you mean, he's not paying any attention?"

"He isn't," said Bigman vehemently. "He came in with Urteil lying dead on the ground and thought nothing of it. He said, 'Is he dead?' and that's all."

"That's all?"

"That's all. Then he asked about where you were and said Min-des had called and said a robot had killed you."

Lucky's level glance held Bigman. "That's all?"

"That was all," said Bigman uneasily.

"What's happened since then? Come on, Bigman. You don't want me to talk to Peverale. Why not?"

Bigman looked away.

"Come on, Bigman."

"Well, I'm being tried or something."

"Tried!"

"Peverale says it's murder and it'll raise a smell back on Earth. He says we've got to fix responsibility."

"All right. When is the trial?"

"Aw, Lucky, I didn't want to tell you. Dr. Gardoma said you weren't to be excited."

"Don't act like a mother hen, Bigman. When is the trial?"

"Tomorrow at two P.M., System Standard Time. But there's nothing to worry about, Lucky."

Lucky said, "Call in Gardoma."

"Why?"

"Do as I say."

Bigman stepped to the door, and when he returned, Dr. Gardoma was with him.

Lucky said, "There's no reason I can't get out of bed by two P.M. tomorrow, is there?"

Dr. Gardoma hesitated. "I'd rather you took more time."

"I don't care what you'd rather. It won't kill me, will it?"

"It wouldn't kill you to get out of bed right now, Mr. Starr," said Dr. Gardoma, offended. "But it's not advisable."

"All right, then. Now you tell Dr. Peverale that I'll be at the trial of Bigman. You know about that, I suppose?"

"I do."

"Everyone does except myself. Is that it?"

"You were in no condition——"

"You tell Dr. Peverale I'll be at that trial and it isn't to start without me."

"I'll tell him," said Gardoma, "and you'd better go to sleep now. Come with me, Bigman."

Bigman squealed. "Just one second." He stepped rapidly to the side of Lucky's bed and said, "Look, Lucky, don't get upset. I've got the whole situation under control."

Lucky's eyebrows lifted.

Bigman, almost bursting with self-importance, said, "I wanted to surprise you, dam it. I can prove I had nothing to do with Urteil breaking his neck. I've solved the case." He pounded his chest. "I have. *Me!* Bigman! I know who's responsible for everything."

Lucky said, "Who?"

But Bigman cried instantly, "No! I'm not saying. I want to show you I have more on my mind than fist fights. I'll run the show this time and you watch me, that's all. You'll find out at the trial."

The little Martian wrinkled his face into a delighted grin, executed a small dance step, and followed Dr. Gardoma out of the room, wearing a look of gay triumph.

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## The Trial

Lucky strode into Dr. Peverale's office shortly before 2 P.M. the next day.

The others had already gathered. Dr. Peverale, sitting behind an old and crowded desk, nodded pleasantly at him, and Lucky responded with a grave, "Good afternoon, sir."

It was much like the evening of the banquet. Cook was there, of course, looking as always, nervous and, somehow, gaunt. He sat in a large armchair at Dr. Peverale's right, and Bigman's small body squirmed and was nearly lost in an equally large armchair at the left.

Mindes was there, his thin face twisted glumly and his intertwining fingers separating occasionally to drum on his pants leg. Dr. Gardoma sat next to him, stolid, his heavy eyelids lifting to glance disapprovingly at Lucky as he entered. The department heads among the astronomers were there.

In fact, the only man who had been present at the banquet but was absent now was Urteil.

Dr. Peverale began at once in his gentle way, "We can start now. And first, a few words for Mr. Starr. I understand that Bigman described this proceeding to you as a trial. Please be assured that it is nothing of the sort. If there is to be a trial, and I hope not, it will take place on Earth with qualified judges and legal counsel. What we are trying to do here is merely to assemble a report for transmission to the Council of Science."

Dr. Peverale arranged some of the helter-skelter of objects on his desk and said, "Let me explain why a full report is necessary. In the first place, as a result of Mr. Starr's daring penetration of the Sun-side, the saboteur who has been upsetting Dr. Mindes's project has

been stopped. It turned out to be a robot of Sirian manufacture, which is now no longer functional. Mr. Starr——”

“Yes?” said Lucky.

“The importance of the matter was such that I took the liberty of questioning you when you were first brought in and when your state was one of only half-consciousness.”

“I remember that,” said Lucky, “quite well.”

“Would you confirm some of the answers now, for the record?”

“I will.”

“In the first place, are there any other robots involved?”

“The robot did not say, but I do not believe there were others.”

“However, it did not say specifically that it was the only robot on Mercury?”

“It did not.”

“Then there might be many others.”

“I don’t think so.”

“That’s only your own opinion, though. The robot didn’t say there were no others.”

“It did not.”

“Very well, then. How many Sirians were involved?”

“The robot would not say. It had been instructed not to.”

“Did it locate the base of the Sirian invaders?”

“It said nothing concerning that. It made no mention of Sirians at all.”

“But the robot was of Sirian manufacture, wasn’t it?”

“It admitted that.”

“Ah.” Dr. Peverale smiled humorlessly. “Then it is obvious, I think, that there are Sirians on Mercury and that they are active against us. The Council of Science must be made aware of this. There must be an organized search of Mercury and, if the Sirians evade us and leave the planet, there must at least be an increased awareness of the Sirian danger.”

Cook interposed uneasily. “There is also the question of the native Mercurian life-forms, Dr. Peverale. The Council will have to be informed of that, too.” He turned to address the gathering at large. “One of the creatures was captured yesterday and——”

The old astronomer interrupted with some annoyance. “Yes, Dr. Cook, the Council shall assuredly be informed. Nevertheless, the Sirian question is what must be kept foremost. Other matters must be sacrificed to the immediate danger. For instance, I suggest that Dr. Mindes abandon his project until Mercury be made safe for Earthmen.”

"Hold on, now," cried Mindes quickly. "There's a lot of money and time and effort invested here——"

"I said, until Mercury was safe. I do not imply permanent abandonment of Project Light. And because it is necessary to put the Mercurian danger foremost, it is necessary to make sure that Urteil's protector, Senator Swenson, be prevented from setting up obstructions over side issues."

Lucky said, "You mean you want to present the senator with a scapegoat in the form of Bigman, neatly ticketed and bound hand and foot. Then while he's worrying and clawing at Bigman, the chase for Sirians can proceed on Mercury without interference."

The astronomer lifted his white eyebrows. "A scapegoat, Mr. Starr? We just want the facts."

"Well, go ahead, then," said Bigman, moving restlessly in his chair. "You'll get the facts."

"Good," said Dr. Peverale. "As the central figure, do you care to begin? Tell everything that occurred between you and Urteil in your own words. Tell it in your own words, but I would appreciate brevity. And remember, these proceedings are being recorded on sound microfilm."

Bigman said, "Do you want me to take my oath?"

Peverale shook his head. "This is not a formal trial."

"Suit yourself." And with surprising dispassion, Bigman told the story. Beginning with Urteil's slurs on his height and continuing through the encounter in the mines, he ended with the duel. He left out only Urteil's threats of action against Lucky Starr and the Council.

Dr. Gardoma followed, verifying what had occurred on the occasion of the first meeting between Urteil and Bigman and also describing, for the record, the scene at the banquet table. He went on to describe his treatment of Urteil after the return from the mines.

He said, "He recovered quickly from the hypothermia. I didn't ask him for details, and he didn't offer any. However, he asked after Bigman, and, from his expression when I said Bigman was entirely well, I should judge that his dislike for Bigman was as great as ever. He didn't act as though Bigman had saved his life. Just the same, I must say that from my observation of the man I should say Urteil was not subject to attacks of gratitude."

"That is only an opinion," interposed Dr. Peverale hastily, "and I recommend that we not confuse the record by such statements."

Dr. Cook came next. He concentrated on the duel. He said, "Bigman insisted on the fight. That's all there was to that. It seemed to



me that if I arranged one under low gravity as Bigman suggested, with witnesses, no harm would be done. We could intervene if things grew serious. I was afraid that, if I refused, a fight between them might result without witnesses and that there might be serious results. Of course, the results could scarcely be more serious than they have turned out to be, but I never anticipated that. I ought to have consulted you, Dr. Peverale, I admit that."

Dr. Peverale nodded. "You certainly ought to have. But the fact is now that Bigman insisted on the duel and insisted on low gravity, didn't he?"

"That's right."

"And he assured you that he would kill Urteil under those conditions."

"His exact words were that he would 'murder the cobber.' I think he was only speaking figuratively. I'm sure he didn't plan actual murder."

Dr. Peverale turned to Bigman. "Have you any comments in that connection?"

"Yes, I do. And since Dr. Cook is on the stand, I want to cross-examine."

Dr. Peverale looked surprised. "This isn't a trial."

"Listen," said Bigman heatedly. "Urteil's death was no accident. It was murder, and I want a chance to prove that."

The silence that fell at that statement lasted a moment and no more. It was succeeded by a confused babbling.

Bigman's voice rose to a piercing squeal. "I'm set to cross-examine Dr. Hanley Cook."

Lucky Starr said coldly, "I suggest you allow Bigman to go through with this, Dr. Peverale."

The old astronomer was the picture of confusion. "Really, I don't—— Bigman can't——" He stammered himself into silence.

Bigman said, "First, Dr. Cook, how did Urteil come to know the route Lucky and I were taking in the mines?"

Cook reddened. "I didn't know he knew the route."

"He didn't follow us directly. He took a parallel route as though he were intending to catch up and fall behind us well within the mines, after we had convinced ourselves that we were alone and unfollowed. To do that, he would have to be certain of the route we were planning to take. Now Lucky and I planned that route with you and with no one else. Lucky didn't tell Urteil and neither did I. Who did?"

Cook looked wildly about as though for help. "I don't know."

"Isn't it obvious you did?"

"No. Maybe he overheard."

"He couldn't overhear marks on a map, Dr. Cook. . . . Let's pass on, now. I fought Urteil, and if gravity had stayed at Mercurian normal, he would still be alive. But it didn't stay there. It was suddenly hopped up to Earth-levels at just the moment where it helped to kill him. Who did that?"

"I don't know."

"You were the first one at Urteil's side. What were you doing? Making sure he was dead?"

"I resent that. Dr. Peverale——" Cook turned a flaming face toward his chief.

Dr. Peverale said with agitation, "Are you accusing Dr. Cook of having murdered Urteil?"

Bigman said, "Look. The sudden change in gravity pulled me to the ground. When I got to my feet, everyone else was either getting to their feet, too, or was still on the ground. When 75 to 150 pounds fall on your back without warning, you don't get to your feet in a hurry. But Cook had. He was not only on his feet, he had gotten to Urteil's side and was bending over him."

"What does that prove?" demanded Cook.

"It proves you didn't go down when the gravity went up, or you couldn't have gotten there in time. And *why* didn't you go down when the gravity went up? Because you *expected* it to go up and were braced for it. And *why* did you expect it to go up? Because *you* tripped the lever."

Cook turned to Dr. Peverale. "This is persecution. It's madness."

But Dr. Peverale looked at his second in stricken horror.

Bigman said, "Let me reconstruct the business. Cook was working with Urteil. That's the only way Urteil could have learned our route in the mines. But he was working with Urteil out of fear. Maybe Urteil was blackmailing him. Anyway, the only way Cook could get out from under was to kill Urteil. When I said I could murder the cobbler if we fought under low gravity, I must have put an idea into his head, and when we had the fight he stood there waiting at the lever. That's all."

"Wait," cried Cook urgently, almost choked, "this is all—this is all——"

"You don't have to go by me," said Bigman. "If my theory is right, and I'm sure it is, then Urteil must have something in writing or on recording or on film that he can hold over Cook's head. Oth-

erwise, Cook wouldn't have felt trapped to the point of murder. So search Urteil's effects. You'll find something and that will be it."

"I agree with Bigman," said Lucky.

Dr. Peverale said in bewilderment, "I suppose it's the only way of settling the matter, though how——"

And the air seemed to go out of Dr. Hanley Cook, leaving him pale, shaken, and helpless. "Wait," he said weakly, "I'll explain."

And all faces turned toward him.

Hanley Cook's lean cheeks were bathed in perspiration. His hands as he raised them, almost in supplication, trembled badly. He said, "Urteil came to me shortly after he arrived on Mercury. He said he was investigating the Observatory. He said Senator Swenson had evidence of inefficiency and waste. He said it was obvious that Dr. Peverale ought to be retired; that he was an old man and incapable of bearing up under the responsibility. He said I might make a logical replacement."

Dr. Peverale, who listened to this with an air of stunned surprise, cried out. "*Cook!*"

"I agreed with him," said Cook sullenly. "You *are* too old. I'm running the place anyway while you occupy yourself with your Sirius mania." He turned again to Lucky. "Urteil said that if I helped him in his investigation he would see to it that I would be the next director. I believed him; everyone knows Senator Swenson is a powerful man.

"I gave him a great deal of information. Some of it was in writing and signed. He said he needed it for legal proceedings afterward.

"And then—and then he began holding that written information over my head. It turned out that he was a lot more interested in Project Light and the Council of Science. He wanted me to use my position to become a kind of personal spy for him. He made it quite plain that he would go to Dr. Peverale with evidence of what I had done if I refused. That would have meant the end of my career, of everything.

"I *had* to spy for him. I had to give information concerning the route Starr and Bigman were to take in the mines. I kept him up to date on everything Mindes did. Every time I surrendered a bit more to him I was more helplessly in his power. And after a while I knew that someday he would break me, no matter how much I helped him. He was that kind of man. I began to feel that the only way I could escape was to kill him. If only I knew how——"

"Then Bigman came to me with his plan to fight Urteil under low gravity. He was so confident that he could toss Urteil about. I

thought then I might—— The chances would be one in a hundred, maybe one in a thousand, but I thought, what was there to lose? So I stood at the pseudo-grav controls and waited my chance. It came and Urteil died. It worked perfectly. I thought it would go down as accident. Even if Bigman were in trouble, then the Council could get him out of it. No one would be hurt except Urteil, and he deserved it a hundred times over. Anyway, that's it."

In the awed silence that followed, Dr. Peverale said huskily, "Under the circumstances, Cook, you will of course consider yourself relieved of all duty and under ar——"

"Hey, hold it, *hold it*," cried Bigman. "The confession isn't complete yet. Look here, Cook, that was the second time you tried to kill Urteil, wasn't it?"

"The second time?" Cook's tragic eyes lifted.

"What about the gimmicked inso-suit? Urteil said for us to watch out for one, so he must have had experience with it. He made out Mindes was doing it, but that Urteil was a lying cobbler and nothing he says has to be believed. What I say is that you tried to kill Urteil that way, but he caught the suit and forced you to transfer it to our room when we came. Then he warned us about it just to get us thinking he was on our side and make trouble for Mindes. Isn't that so?"

"No," shouted Cook. "No! I had nothing to do with that inso-suit. Nothing."

"Come on," began Bigman. "We're not going to believe——"

But now Lucky Starr got to his feet. "It's all right, Bigman. Cook had nothing to do with the inso-suit. You can believe him. The man responsible for the slashed inso-suit is the man responsible for the robot."

Bigman stared at his tall friend incredulously. "You mean the Sirians, Lucky?"

"No Sirians," said Lucky. "There are no Sirians on Mercury. There never have been."

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## Results of the Trial

Dr. Peverale's deep voice was hoarse with dismay. "No Sirians? Do you know what you're saying, Starr?"

"Perfectly." Lucky Starr moved up to Dr. Peverale's desk, sat down on one corner of it, and faced the assemblage. "Dr. Peverale will bear me out on that, I'm sure, when I've explained the reasoning."

"I'll bear you out? No fear of that, I assure you," huffed the old astronomer, his face set in an attitude of bitter disapproval. "It is scarcely worth discussing. . . . By the way, we'll have to place Cook under arrest." He half rose.

Lucky urged him gently back into his seat. "It's all right, sir. Bigman will make sure that Cook will remain under control."

"I won't make any trouble," said the despairing Cook in a muffled tone. Bigman pulled his armchair close to Cook's nevertheless.

Lucky said, "Think back, Dr. Peverale, on the night of the banquet and of your own words concerning the Sirian robots. . . . By the way, Dr. Peverale, you've known for a long time there was a robot on the planet, haven't you?"

The astronomer said uneasily, "What do you mean?"

"Dr. Mindes came to you with stories of having sighted moving manlike figures in what seemed like metal space-suits who also seemed to endure solar radiation better than one would expect humans to."

"I certainly did," interposed Mindes, "and I should have known I was seeing a robot."

"You didn't have the experience with robots that Dr. Peverale did," said Lucky. He turned to the old astronomer again. "I'm sure

that you suspected the existence of Sirian-designed robots on the planet as soon as Mindes reported what he had seen. His description fit them perfectly.”

The astronomer nodded slowly.

“I, myself,” Lucky went on, “did not suspect robots when Mindes told me his story any more than he himself did. After the banquet, however, when, Dr. Peverale, you discussed Sirius and its robots, the thought occurred to me very forcefully that here was the explanation. You must have thought so too.”

Dr. Peverale nodded slowly again. He said, “I realized that we ourselves could do nothing against a Sirian incursion. That is why I discouraged Mindes.”

(Mindes turned pale at this point and muttered savagely to himself.)

Lucky said, “You never reported to the Council of Science?”

Dr. Peverale hesitated. “I was afraid they wouldn’t believe me and that I would only succeed in getting myself replaced. Frankly, I didn’t know what to do. It was obvious that I could make no use of Urteil. He was interested only in his own plans. When you came, Starr,” his voice grew deeper, more flowing, “I felt I might have an ally at last, and for the first time I felt able to talk about Sirius, its dangers, and its robots.”

“Yes,” said Lucky, “and do you remember how you described the Sirian affection for their robots? You used the word ‘love.’ You said the Sirians pampered their robots; they loved them; nothing was too good for them. You said they would regard a robot as worth a hundred Earthmen.”

“Of course,” said Dr. Peverale. “That’s true.”

“Then if they loved their robots so much, would they send one of them to Mercury, uninsulated, unadapted to Solar radiation? Would they condemn one of their robots to a slow, torturing death by the Sun?”

Dr. Peverale fell silent, his lower lip trembling.

Lucky said, “I, myself, could scarcely think of blasting the robot even though it endangered my life, and I am no Sirian. Could a Sirian have been so cruel to a robot, then?”

“The importance of the mission——” began Dr. Peverale.

“Granted,” said Lucky. “I don’t say a Sirian wouldn’t send a robot to Mercury for purposes of sabotage, but, Great Galaxy, they would have insulated its brain first. Even leaving their love for robots out of account, it’s only good sense. They could get more service out of it.”

There was a murmur of approval and agreement from the assemblage.

"But," stammered Dr. Peverale, "if not the Sirians then who——"

"Well," said Lucky, "let's see what leads we have. Number one. Twice Mindes spotted the robot, and twice it vanished when Mindes tried to draw close. The robot later informed me that it had been instructed to avoid people. Obviously, it had been warned that Mindes was out searching for the saboteur. Obviously, too, it must have been warned by someone inside the Dome. It wasn't warned against me, because I announced that I was going into the mines.

"Lead number two. As the robot lay dying, I asked once more who had given it its instructions. It could only say, 'Er—er——' Then its radio blanked out, but its mouth moved as though it were making two syllables."

Bigman shouted suddenly, his pale red hair standing on end with passion, "Urteil! The robot was trying to say Urteil! That filthy cober was the saboteur all the time. It fits in! It fits——"

"Maybe," said Lucky, "maybe! We'll see. It struck me as a possibility that the robot was trying to say, 'Earthman.' "

"And maybe," said Peverale dryly, "it was only a vague sound made by a dying robot and it meant nothing at all."

"Maybe," agreed Lucky. "But now we come to lead number three and it is instantly conclusive. That is this: The robot was of Sirian manufacture, and what human here at the Dome could possibly have had a chance to gain possession of a Sirian robot? Have any of us been on the Sirian planets?"

Dr. Peverale's eyes narrowed. "I have."

"Exactly," said Lucky Starr, "and no one else. That's your answer."

Mad confusion followed and Lucky called for silence. His voice was authoritative and his face stern. "As a Councilman of Science," he said, "I declare this observatory to be in my charge from this moment on. Dr. Peverale is replaced as director. I have been in communication with Council Headquarters on Earth, and a ship is on its way now. Appropriate action will be taken."

"I demand to be heard," cried Dr. Peverale.

"You will be," said Lucky, "but first listen to the case against you. You are the only man here who had the opportunity to steal a Sirian robot. Dr. Cook told us that you were awarded a robot for personal service during your stay on Sirius. Is that correct?"

"Yes, but——"

"You directed it into your own ship when you were through with

it. Somehow you managed to evade the Sirians. Probably they never dreamed anyone could commit so horrible a crime, to them, as robot-stealing. They took no precautions against it for that reason, perhaps.

"What's more, it makes sense to suppose the robot was trying to say, 'Earthman' when I asked it who had given it instructions. You were the one Earthman on Sirius. You would be spoken of as Earthman' when the robot was first placed in your service, probably. It would think of you as 'Earthman.'

"Finally, who would know better when anyone might be exploring the Sun-side? Who would better inform the robot by radio when it might be safe and when it ought to go into hiding?"

"I deny everything," said Dr. Peverale tightly.

"There's no point in denying it," said Lucky. "If you insist on your innocence, the Council will have to send to Sirius for information. The robot gave me its serial number as RL-726. If the Sirian authorities say that the robot assigned to you during your stay on Sirius was RL-726 and that it disappeared about the time you left Sirius, that will condemn you.

"Furthermore, your crime of robot-stealing was committed on Sirius, and because we have an extradition treaty with the Sirian planets we may be forced to release you into their custody. I would advise you, Dr. Peverale, to confess and let Earth's justice take its course, rather than to maintain innocence and risk what Sirius might do for your crime of having stolen one of their beloved robots and tortured it to death."

Dr. Peverale stared pitifully at the assemblage with unseeing eyes. Slowly, joint by joint, he collapsed and dropped to the floor.

Dr. Gardoma rushed to his side and felt for his heart. "He's alive," he said, "but I think he'd better be moved to bed."

Two hours later, with Dr. Gardoma and Lucky Starr at his bedside and with Council Headquarters in sub-etheric contact, Dr. Lance Peverale dictated his confession.

With Mercury falling rapidly behind and the sure knowledge that Council emissaries now had the situation in hand, relieving him of any feeling of responsibility, Lucky still felt tension. His expression was brooding and thoughtful.

Bigman, face puckered anxiously, said, "What's the matter, Lucky?"

"I'm sorry for old Peverale," said Lucky. "He meant well in his way. The Sirians *are* a danger, if not quite as immediate as he thought."



"The Council wouldn't have turned him over to Sirius, would it?"

"Probably not, but his fears of Sirius were sufficiently great to force his confession. It was a cruel trick, but necessary. However patriotic his motives, he had been forced into attempted murder. Cook, too, was goaded into his crime, yet it was none the less a crime, however little we think of Urteil."

Bigman said, "What did the old guy have against Project Light anyway, Lucky?"

"Peverale made that clear at the banquet," said Lucky grimly. "Everything was made clear that night. You remember, he complained that Earth was weakening itself by depending on imported food and resources. He said Project Light would make Earth dependent on space stations for the very manner in which it got its sunlight. He wanted Earth to be self-sufficient so that it could better resist the Sirian danger.

"In his slightly unbalanced mind, he must have thought he would help that self-sufficiency along by trying to sabotage Project Light. Perhaps he originally brought back the robot just as a dramatic demonstration of Sirian power. Finding Project Light in progress when he returned, he turned the robot into a saboteur instead.

"When Urteil arrived he must have been afraid at first that Urteil was going to investigate the Project Light affair and expose him. So he planted a slashed inso-suit in Urteil's room, but Urteil spotted it. Maybe Urteil really believed Mindes had been responsible."

Bigman said, "Sure, come to think of it. The first time we met the old guy he wouldn't even talk about Urteil, he was so mad about him."

"Exactly," said Lucky, "and there was no obvious reason why that should be, as in Mindes's case, for instance. I thought there might be some reason I knew nothing about."

"Is that what put you on to him first, Lucky?"

"No, it was something else. It was the slashed inso-suit in our own room. The man with the best opportunity to do that was obviously Peverale himself. He also would be in the best position to dispose of the suit after it had killed its man. He best knew our assigned room, and he could assign an inso-suit too. What bothered me, though, was the motive? Why should he want to kill me?"

"My name apparently meant nothing to him. He asked if I were a sub-temporal engineer like Mindes the first time we met. Now Mindes had recognized my name and tried to get me to help him. Dr. Gardoma had heard of me in connection with the poisonings on Mars.

Urteil knew all about me, of course. I wondered if Dr. Peverale might not have heard of me too.

"There was Ceres, for instance, where you and I stayed a while during the battle against the pirates. The largest observatory in the System is there. Might not Dr. Peverale have been there then? I asked him that, and he denied having met me there. He admitted that he visited Ceres, and Cook later told us the old man visited Ceres frequently. Peverale went on to explain, without any prompting from me, that he had been sick in bed during the pirate raid, and Cook later backed that statement. That was the giveaway. In his anxiety, Peverale had talked too much."

The little Martian stared. "I don't get that."

"It's simple. If Peverale had been on Ceres a number of times, how was it he felt it necessary to alibi that particular time when the pirates had attacked? Why that time and not another? Obviously, he knew on which occasion I had been on Ceres and was trying to alibi that one. Obviously, again, he knew who I was.

"If he knew me, why should he try to kill me, and Urteil too? Both of us suffered from slashed inso-suits, you know. We were both investigators. What was it Peverale feared?

"Then he began to talk about Sirians and robots at the banquet table, and things began to drop into place. Mindes's story suddenly made sense, and I knew at once that the only ones who could have brought a robot to Mercury were either Sirians or Dr. Peverale. To me it seemed that Peverale was the answer, that he was talking about Sirians now as a kind of insurance. If the robot were found and the sabotage stopped, it would serve as a smoke screen to hide his own part and, furthermore, it would make good anti-Sirian propaganda.

"I needed proof. Otherwise, Senator Swenson would shout *we* were setting up a smoke screen to cover the Council's own incompetence and extravagance. I needed good proof. With Urteil right on the ground, I dared not talk about the matter to anyone, Bigman, not even to you."

Bigman groaned in disgust. "When are you going to trust me, Lucky?"

"When I can count on you to avoid tricks like rough-and-tumbles with men twice your size," said Lucky with a smile that robbed the statement of some of its sting. "Anyway, I set out to capture the robot on the Sun-side and use him as evidence. That failed and I was forced to work a confession out of Peverale."

Lucky shook his head.

Bigman said, "What about Swenson now?"

"It's a draw, I think," said Lucky. "He can't do much with Urteil's death, since we can use Dr. Cook as a witness to show some of Urteil's dirty tactics. We can't do much against him, either, since the two top men at the Mercurian Observatory have had to be relieved of duty for felonies. It's a standoff."

"Sands of Mars!" moaned Bigman. "We'll have that cobber on our necks later on then."

But Lucky shook his head. "No, Senator Swenson is not a real cause for worry. He's ruthless and dangerous, but for that very reason he keeps the Council on its toes, keeps us from getting flabby.

"Besides," he added thoughtfully, "the Council of Science needs its critics, just as Congress and the government do. If ever the Council began to consider itself above criticism, then the time might come when it would establish a dictatorship over the Earth, and certainly I wouldn't want that to happen."

"Well, maybe," said Bigman, unsatisfied, "but I don't like that Swenson."

Lucky laughed and reached out to tousle the Martian's hair. "Nor I, but why worry about that now. Out there are the stars, and who knows where we'll be going next week, or why?"



# **LUCKY STARR AND THE MOONS OF JUPITER**

# DEDICATION

To Doubleday & Company

With whom in seven years of business

association I have yet to find one

cause for complaint

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# 1

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## Trouble on Jupiter Nine

Jupiter was almost a perfect circle of creamy light, half the apparent diameter of the moon as seen from Earth, but only one seventh as brightly lit because of its great distance from the sun. Even so, it was a beautiful and impressive sight.

Lucky Starr gazed at it thoughtfully. The lights in the control room were out and Jupiter was centered on the visiplat, its dim light making Lucky and his companion something more than mere shadows. Lucky said, "If Jupiter were hollow, Bigman, you could dump thirteen hundred planets the size of Earth into it and still not quite fill it up. It weighs more than all the other planets put together."

John Bigman Jones, who allowed no one to call him anything but Bigman, and who was five feet two inches tall if he stretched a little, disapproved of anything that was big, except Lucky. He said, "And what good is all of it? No one can land on it. No one can come near it."

"We'll never land on it, perhaps," said Lucky, "but we'll be coming close to it once the Agrav ships are developed."

"With the Sirians on the job," said Bigman, scowling in the gloom, "it's going to take *us* to make sure that happens."

"Well, Bigman, we'll see."

Bigman pounded his small right fist into the open palm of his other hand. "Sands of Mars, Lucky, how long do we have to wait here?"

They were in Lucky's ship, the *Shooting Starr*, which was in an orbit about Jupiter, having matched velocities with Jupiter Nine, the giant planet's outermost satellite of any size.

That satellite hung stationary a thousand miles away. Officially,

its name was Adrastea, but except for the largest and closest, Jupiter's satellites were more popularly known by numbers. Jupiter Nine was only eighty-nine miles in diameter, merely an asteroid, really, but it looked larger than distant Jupiter, fifteen million miles away. The satellite was a craggy rock, gray and forbidding in the sun's weak light, and scarcely worth interest. Both Lucky and Bigman had seen a hundred such sights in the asteroid belt.

In one way, however, it was different. Under its skin a thousand men and billions of dollars labored to produce ships that would be immune to the effects of gravity.

Nevertheless, Lucky preferred watching Jupiter. Even at its present distance from the ship (actually three fifths of the distance of Venus from Earth at their closest approach), Jupiter showed a disc large enough to reveal its colored zones to the naked eye. They showed in faint pink and greenish-blue, as though a child had dipped his fingers in a watery paint and trailed them across Jupiter's image.

Lucky almost forgot the deadliness of Jupiter in its beauty. Bigman had to repeat his question in a louder voice.

"Hey, Lucky, how long do we have to wait here?"

"You know the answer to that, Bigman. Until Commander Donahue comes to pick us up."

"I know that part. What I want to know is why we have to wait for him."

"Because he's asked us to."

"Oh, he has. Who does the cobbler think he is?"

"The head of the Agrav project," Lucky said patiently.

"You don't have to do what he says, you know, even if he is."

Bigman had a sharp and deep realization of Lucky's powers. As full member of the Council of Science, that selfless and brilliant organization that fought the enemies of Earth within and without the solar system, Lucky Starr could write his own ticket even against the most high-ranking.

But Lucky was not quite ready to do that. Jupiter was a known danger, a planet of poison and unbearable gravity; but the situation on Jupiter Nine was more dangerous still because the exact points of danger were unknown—and until Lucky could know a bit more, he was picking his way forward carefully.

"Be patient, Bigman," he said.

Bigman grumbled and flipped the lights on. "We're not staring at Jupiter all day, are we?"

He walked over to the small Venusian creature bobbing up and down in its enclosed water-filled cage in the corner of the pilot room.

He peered fondly down at it, his wide mouth grinning with pleasure. The V-frog always had that effect on Bigman, or indeed, on anyone.

The V-frog was a native of the Venusian oceans, a tiny thing that seemed, at times, all eyes and feet. Its body was green and frog-like and but six inches long. Its two big eyes protruded like gleaming blackberries, and its sharp, strongly curved beak opened and closed at irregular intervals. At the moment its six legs were retracted, so that the V-frog hugged the bottom of its cage, but when Bigman tapped the top cover, they unfolded like a carpenter's rule and became stilts.

It was an ugly little thing but Bigman loved it when he was near it. He couldn't help it. Anyone else would feel the same. The V-frog saw to that.

Carefully Bigman checked the carbon-dioxide cylinder that kept the V-frog's water well saturated and healthful and made sure that the water temperature in the cage was at ninety-five. (The warm oceans of Venus were bathed by and saturated with an atmosphere of nitrogen and carbon dioxide. Free oxygen, nonexistent on Venus except in the man-made domed cities at the bottom of its ocean shallows, would have been most uncomfortable for the V-frog.)

Bigman said, "Do you think the weed supply is enough?" and as though the V-frog heard the remark, its beak snipped a green tendril off the native Venusian weed that spread through the cage, and chewed slowly.

Lucky said, "It will hold till we land on Jupiter Nine," and then both men looked up sharply as the receiving signal sounded its unmistakable rasp.

A stern, aging face was centered on the visiplat after Lucky's fingers had quickly made the necessary adjustments.

"Donahue at this end," said a voice briskly.

"Yes, Commander," said Lucky. "We've been waiting for you."

"Clear locks for tube attachment, then."

On the commander's face, written in an expression as clear as though it consisted of letters the size of Class I meteors, was worry—trouble and worry.

Lucky had grown accustomed to just that expression on men's faces in these past weeks. On Chief Councilman Hector Conway's for instance. To the chief councilman, Lucky was almost a son and the older man felt no need to assume any pretense of confidence.

Conway's rosy face, usually amiable and self-assured under its crown of pure white hair, was set in a troubled frown. "I've been waiting for a chance to talk to you for months."

"Trouble?" Lucky asked quietly. He had just returned from Mercury less than a month earlier, and the intervening time had been spent in his New York apartment. "I didn't get any calls from you."

"You earned your vacation," Conway said gruffly. "I wish I could afford to let it continue longer."

"Just what is it, Uncle Hector?"

The chief councilman's old eyes stared firmly into those of the tall, lithe youngster before him and seemed to find comfort in those calm, brown ones. "Sirius!" he said.

Lucky felt a stir of excitement within him. Was it the great enemy at last?

It had been centuries since the pioneering expeditions from Earth had colonized the planets of the nearer stars. New societies had grown up on those worlds outside the solar system. Independent societies that scarcely remembered their Earthly origin.

The Sirian planets formed the oldest and strongest of those societies. The society had grown up on new worlds where an advanced science was brought to bear on untapped resources. It was no secret that the Sirians, strong in the belief that they represented the best of mankind, looked forward to the time when they might rule all men everywhere; and that they considered Earth, the old mother world, their greatest enemy.

In the past they had done what they could to support the enemies of Earth at home but never yet had they felt quite strong enough to risk open war.

But now?

"What's this about Sirius?" asked Lucky.

Conway leaned back. His fingers drummed lightly on the table. He said, "Sirius grows stronger each year. We know that. But their worlds are underpopulated; they have only a few millions. We still have more human beings in our solar system than exist in all the galaxy besides. We have more ships and more scientists; we still have the edge. But, by Space, we won't keep that edge if things keep on as they've been going."

"In what way?"

"The Sirians are finding out things. The Council has definite evidence that Sirius is completely up-to-date on our Agrav research."

"What!" Lucky was startled. There were few things more top-secret than the Agrav project. One of the reasons actual construction had been confined to one of the outer satellites of Jupiter had been for the sake of better security. "Great Galaxy, how has that happened?"

Conway smiled bitterly. "That is indeed the question. How has that happened? All sorts of material are leaking out to them, and we don't know how. The Agrav data is most critical. We've tried to stop it. There isn't a man on the project that hasn't been thoroughly checked for loyalty. There isn't a precaution we haven't taken. Yet material still leaks. We've planted false data and that's gone out. We know it has from our own Intelligence information. We've planted data in such ways that it *couldn't* go out, and yet it has."

"How do you mean *couldn't* go out?"

"We scattered it so that no one man—in fact, no half dozen men—could possibly be aware of it all. Yet it went. It would mean that a number of men would have to be co-operating in espionage and that's just unbelievable."

"Or that some one man has access everywhere," said Lucky.

"Which is just as impossible. It must be something new, Lucky. Do you see the implication? If Sirius has learned a new way of picking our brains, we're no longer safe. We could never organize a defense against them. We could never make plans against them."

"Hold it, Uncle Hector. Great Galaxy, give yourself a minute. What do you mean when you say they're picking our brains?" Lucky fixed his glance keenly on the older man.

The chief councilman flushed. "Space, Lucky, I'm getting desperate. I can't see how else this can be done. The Sirians must have developed some form of mind reading, of telepathy."

"Why be embarrassed at suggesting that? I suppose it's possible. We know of one practical means of telepathy at least. The Venusian V-frogs."

"All right," said Conway. "I've thought of that, too, but they don't have Venusian V-frogs. I know what's been going on in V-frog research. It takes thousands of them working in combination to make telepathy possible. To keep thousands of them anywhere but on Venus would be awfully difficult, and easily detectable, too. And without V-frogs, there is no way of managing telepathy."

"No way we've worked out," Lucky said softly, "so far. It is possible that the Sirians are ahead of us in telepathy research."

"Without V-frogs?"

"Even without V-frogs."

"I don't believe it," Conway cried violently. "I can't believe that the Sirians can have solved any problem that has left the Council of Science so completely helpless."

Lucky almost smiled at the older man's pride in the organization, but had to admit that there was something more than merely pride

there. The Council of Science represented the greatest collection of intellect the galaxy had ever seen, and for a century not one sizable piece of scientific advance anywhere in the Galaxy had come anywhere but from the Council.

Nevertheless Lucky couldn't resist a small dig. He said, "They're ahead of us in robotics."

"Not really," snapped Conway. "Only in its applications. Earthmen invented the positronic brain that made the modern mechanical man possible. Don't forget that. Earth can take the credit for all the basic developments. It's just that Sirius builds more robots and," he hesitated, "has perfected some of the engineering details."

"So I found out on Mercury," Lucky said grimly.

"Yes, I know, Lucky. That was dreadfully close."

"But it's over. Let's consider what's facing us now. The situation is this: Sirius is conducting successful espionage and we can't stop them."

"Yes."

"And the Agrav project is most seriously affected."

"Yes."

"And I suppose, Uncle Hector, that what you want me to do is to go out to Jupiter Nine and see if I can learn something about this."

Conway nodded gloomily. "It's what I'm asking you to do. It's unfair to you. I've gotten into the habit of thinking of you as my ace, my trump card, a man I can give any problem and be sure it will be solved. Yet what can you do here? There's nothing the Council hasn't tried and we've located no spy and no method of espionage. What more can we expect of you?"

"Not of myself alone. I'll have help."

"Bigman?" The older man couldn't help smiling.

"Not Bigman alone. Let me ask you a question. To your knowledge, has any information concerning our V-frog research on Venus leaked out to the Sirians?"

"No," said Conway. "None has, to my knowledge."

"Then I'll ask to have a V-frog assigned to me."

"A V-frog! One V-frog?"

"That's right."

"But what good will that do you? The mental field of a single V-frog is terribly weak. You won't be able to read minds."

"True, but I might be able to catch whiffs of strong emotion."

Conway said thoughtfully, "You might do that. But what good would that do?"

"I'm not sure yet. Still, it will be an advantage previous inves-

tigators haven't had. An unexpected emotional surge on the part of someone there might help me, might give me grounds for suspicion, might point the direction for further investigation. Then, too—"

"Yes?"

"If someone possesses telepathic power, developed either naturally or by use of artificial aids, I might detect something much stronger than just a whiff of emotion. I might detect an actual thought, some distinct thought, before the individual learns enough from my mind to shield his thoughts. You see what I mean?"

"He could detect your emotions, too."

"Theoretically, yes, but I would be listening for emotion, so to speak. He would not."

Conway's eyes brightened. "It's a feeble hope, but, by Space, it's a hope! I'll get you your V-frog . . . But one thing, David," and it was only at moments of deep concern that he used Lucky's real name, the one by which the young councilman had been known all through childhood—"I want you to appreciate the importance of this. If we don't find out what the Sirians are doing, it means they are really ahead of us at last. And *that* means war can't be delayed much longer. War or peace hangs on this."

"I know," said Lucky softly.

## 2

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### The Commander Is Angry

And so it came about that Lucky Starr, Earthman, and his small friend, Bigman Jones, born and bred on Mars, traveled beyond the asteroid belt and into the outer reaches of the solar system. And it was for this reason also that a native of Venus, not a man at all, but a small mind-reading and mind-influencing animal, accompanied them.

They hovered, now, a thousand miles above Jupiter Nine and waited as a flexible conveyer tube was made fast between the *Shooting Starr* and the commander's ship. The tube linked air lock to air lock and formed a passageway which men could use in going from one ship to the other without having to put on a space suit. The air of both ships mingled, and a man used to space, taking advantage of the absence of gravity, could shoot along the tube after a single initial push and guide himself along those places where the tube curved with the gentle adjusting force of a well-placed elbow.

The commander's hands were the first part of him visible at the lock opening. They gripped the lip of the opening and pushed in such a way that the commander himself leapfrogged out and came down in the *Shooting Starr's* localized artificial gravity field (or pseudo-grav field, as it was usually termed) with scarcely a stagger. It was neatly done, and Bigman, who had high standards indeed for all forms of spacemen's techniques, nodded in approval.

"Good day, Councilman Starr," said Donahue gruffly. It was always a matter of difficulty whether to say "good morning," "good afternoon," or "good evening" in space, where, strictly speaking,



there was neither morning, afternoon, nor evening. "Good day" was the neutral term usually adopted by spacemen.

"Good day, Commander," said Lucky. "Are there any difficulties concerning our landing on Jupiter Nine that account for this delay?"

"Difficulties? Well, that's as you look at it." He looked about and sat down on one of the small pilot's stools. "I've been in touch with Council headquarters but they say I must treat with you directly, so I'm here."

Commander Donahue was a wiry man, with an air of tension about him. His face was deeply lined, his hair grayish but showing signs of having once been brown. His hands had prominent blue veins along their backs, and he spoke in an explosive fashion, rapping out his phrases in a quick succession of words.

"Treat with me about what, sir?" asked Lucky.

"Just this, Councilman. I want you to return to Earth."

"Why, sir?"

The commander did not look directly at Lucky as he spoke. "We have a morale problem. Our men have been investigated and investigated *and* investigated. They've all come through clear each time, and each time a new investigation is started. They don't like it and neither would you. They don't like being under continual suspicion. And I'm completely on their side. Our Agrav ship is almost ready and this is not the time for my men to be disturbed. They talk of going on strike."

Lucky said calmly, "Your men may have been cleared but there is still leakage of information."

Donahue shrugged. "Then it must come from elsewhere. It must . . ." He broke off and a sudden incongruous note of friendliness entered his voice. "What's that?"

Bigman followed his eyes and said at once, "That's our V-frog, Commander, I'm Bigman."

The commander did not acknowledge the introduction. He approached the V-frog instead, staring into the enclosed water-filled cage. "That's a Venus creature, isn't it?"

"That's right," said Bigman.

"I've heard of them. Never saw one, though. Cute little jigger, isn't it?"

Lucky felt a grim amusement. He did not find it strange that in the midst of a most serious discussion the commander should veer off into an absorbed admiration for a small water creature from Venus. The V-frog itself made that inevitable.

The small creature was looking back at Donahue now out of its

black eyes, swaying on its extensible legs and clicking its parrot beak gently. In all the known universe its means of survival was unique. It had no defensive weapons, no armor of any sort. It had no claws or teeth or horns. Its beak might bite, but even that bite could do no harm to any creature larger than itself.

Yet it multiplied freely along the weed-covered surface of the Venusian ocean, and none of the fierce predators of the ocean's deeps disturbed it, simply because the V-frog could control emotion. They instinctively caused all other forms of life to like them, to feel friendly toward them, to have no wish whatever to hurt them. So they survived. They did more than that. They flourished.

Now this particular V-frog was filling Donahue, quite obviously, with a feeling of friendliness, so that the army man pointed a finger at it through the glass of its cage and laughed to see it cock its head and sink down along its collapsing legs, as Donahue moved his finger downward.

"You don't suppose we could get a few of these for Jupiter Nine, do you, Starr?" he asked. "We're great ones for pets here. An animal here and there makes for a breath of home."

"It's not very practical," said Lucky. "V-frogs are difficult to keep. They have to be maintained in a carbon-dioxide-saturated system, you know. Oxygen is mildly poisonous to them. That makes things complicated."

"You mean they can't be kept in an open fish-bowl?"

"They can be at times. They're kept so on Venus, where carbon dioxide is dirt cheap and where they can always be turned loose in the ocean if they seem to be unhappy. On a ship, though, or on an airless world, you don't want to bleed carbon dioxide continuously into the air, so a closed system is best."

"Oh." The commander looked a bit wistful.

"To return to our original subject of discussion," said Lucky briskly, "I must refuse your suggestion that I leave. I have an assignment and I must carry it through."

It seemed to take a few seconds for the commander to emerge from the spell cast by the V-frog. His face darkened. "I'm sure you don't understand the entire situation." He turned suddenly, looking down at Bigman. "Consider your associate, for instance."

The small Martian, with a stiffening of spine, began to redden. "I'm Bigman," he said. "I told you that before."

"Not very big a man, nevertheless," said the commander.

And though Lucky placed a soothing hand on the little fellow's shoulder at once, it didn't help. Bigman cried, "Bigness isn't on the

outside, mister. My name is Bigman, and I'm a big man against you or anyone you want to name regardless of what the yardstick says. And if you don't believe it . . ." He was shrugging his left shoulder vigorously. "Let go of me, Lucky, will you? This clobber here . . ."

"Will you wait just one minute, Bigman?" Lucky urged. "Let's find out what the commander is trying to say."

Donahue had looked startled at Bigman's sudden verbal assault. He said, "I'm sure I meant no harm in my remark. If I've hurt your feelings, I'm sorry."

"My feelings hurt?" said Bigman, his voice squeaking. "Me? Listen, one thing about me, I never lose my temper and as long as you apologize, we'll forget about it." He hitched at his belt and brought the palms of his hands down with a smart slap against the knee-high orange and vermilion boots that were the heritage of his Martian farmboy past and without which he would never be seen in public (unless he substituted others with an equally garish color scheme).

"I want to be very plain with you, Councilman," said Donahue, turning to Lucky once more. "I have almost a thousand men here at Jupiter Nine, and they're tough, all of them. They have to be. They're far from home. They do a hard job. They run great risks. They have their own outlook on life now and it's a rough one. For instance, they haze newcomers and not with a light hand, either. Sometimes newcomers can't stand it and go home. Sometimes they're hurt. If they come through, everything's fine."

Lucky said, "Is this officially permitted?"

"No. But it is permitted unofficially. The men have to be kept happy somehow, and we can't afford to alienate them by interfering with their horseplay. Good men are hard to replace out here. Not many people are willing to come to the moons of Jupiter, you know. Then, too, the initiation is helpful in weeding out the misfits. Those that don't pass would probably fail in other respects eventually. That is why I made mention of your friend."

The commander raised his hands hurriedly. "Now make no mistake. I agree that he is big on the inside and capable and anything else you want. But will he be a match for what lies ahead? Will you, Councilman?"

"You mean the hazing?"

"It will be rough, Councilman," said Donahue. "The men know you are coming. News gets around somehow."

"Yes, I know," murmured Lucky.

The commander scowled. "In any case, they know you are to investigate them and they will feel no kindness toward you. They are

in an ugly mood and they will hurt you, Councilman Starr. I am asking you not to land on Jupiter Nine for the project's sake, for my men's sake, and for your own. There you have it as plainly as I can put it."

Bigman stared at the change that came over Lucky. His usual look of calm good nature was gone. His dark brown eyes turned hard, and the straight lines of his lean and handsome face were set in something that Bigman rarely saw there: bitter anger. Every muscle of Lucky's tall body seemed tense.

Lucky said ringingly, "Commander Donahue, I am a member of the Council of Science. I am responsible only to the head of the Council and to the President of the Solar Federation of Worlds. I outrank you and you will be bound by my decisions and orders.

"I consider the warning you have just given me to be evidence of your own incompetence. Don't say anything, please; hear me out. You are obviously not in control of your men and not fit to command men. Now hear this: I will land on Jupiter Nine and I will conduct my investigations. I will handle your men if you cannot."

He paused while the other gasped and vainly attempted to find his voice. He rapped out, "Do you understand, Commander?"

Commander Donahue, his face congested almost beyond recognition, managed to grind out, "I will take this up with the Council of Science. No arrogant young whipsnap can talk like that to me, councilman or no councilman. I will match my record as a leader of men against that of anyone in the service. Furthermore, my warning to you will be on record also and if you are hurt on Jupiter Nine, I will run the risk of court-martial gladly. I will do nothing for you. In fact, I hope—I hope they teach you manners, you . . ."

He was past speech once more. He turned on his heel, toward the open lock, connected still with the space tube to his own ship. He clambered in, missing a hand hold in his anger and stumbling badly.

Bigman watched with awe as the commander's heels disappeared down the tube. The other's anger had been so intense a thing that the little Martian had seemed to feel it in his own mind as though waves of heat were rolling in upon him.

Bigman said, "Wow, that cobber was really *going!* You had him rocking."

Lucky nodded. "He was angry. No doubt about it."

Bigman said, "Listen, maybe *he's* the spy. He'd know the most. He'd have the best chance."

"He'd also be the most thoroughly investigated, so your theory is doubtful. But at least he's helped us out in a little experiment, so when I see him next I will have to apologize."

"Apologize?" Bigman was horrified. It was his firm view that apologies were strictly something that other people had to do. "Why?"

"Come, Bigman, do you suppose I really meant those things I said?"

"You weren't angry?"

"Not really."

"It was an act?"

"You could call it that. I wanted to make him angry, really angry, and I succeeded. I could tell that firsthand."

"Firsthand?"

"Couldn't you? Couldn't you feel the anger just pouring out of him all over you?"

"Sands of Mars! The V-frog!"

"Of course. It received the commander's anger and rebroadcast it on to us. I had to know if one V-frog could do it. We tested it back on Earth, but until I tried it under actual field conditions, I wasn't sure. Now I am."

"It broadcast fine."

"I know. So at least it proves we have a weapon, one weapon, after all."

# 3

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## The Agrav Corridor

“Good deal,” said Bigman fiercely. “Then we’re on our way.”

“Hold it,” said Lucky at once. “Hold everything, my friend. This is a non-specific weapon. We’ll sense strong emotion but we may never sense one that will give us the key to the mystery. It’s like having eyes. We may see, but we may not see the right thing, not ever.”

“*You will,*” said Bigman confidently.

Dropping down toward Jupiter Nine reminded Bigman very strongly of similar maneuvers in the asteroid belt. As Lucky had explained on the voyage outward, most astronomers considered Jupiter Nine to have been a true asteroid to begin with; a rather large one that had been captured by Jupiter’s tremendous gravity field many millions of years previously.

In fact, Jupiter had captured so many asteroids that here, fifteen million miles from the giant planet, there was a kind of miniature asteroid belt belonging to Jupiter alone. The four largest of these asteroid satellites, each from forty to a hundred miles in diameter, were Jupiter Twelve, Eleven, Eight, and Nine. In addition there were at least a hundred additional satellites of more than a mile in diameter, unnumbered and unregarded. Their orbits had been plotted only in the last ten years when Jupiter Nine was first put to use as an anti-gravity research center, and the necessity of traveling to and from it had made the population of surrounding space important.

The approaching satellite swallowed the sky and became a rough world of peaks and rocky channels, unsoftened by any touch of air in the billions of years of its history. Bigman, still thoughtful, said,

"Lucky, why in Space do they call this Jupiter Nine, anyway? It isn't the ninth one out from Jupiter according to the Atlas. Jupiter Twelve is a lot closer."

Lucky smiled. "The trouble with you, Bigman, is that you're spoiled. Just because you were born on Mars, you think mankind has been cutting through space ever since creation. Look boy, it's only a matter of a thousand years since mankind invented the first spaceship."

"I know that," said Bigman indignantly. "I'm not ignorant. I've had schooling. Don't go shoving your big brain all over the place."

Lucky's smile expanded, and he rapped Bigman's skull with two knuckles. "Anybody home?"

Bigman's fist whipped toward Lucky's abdomen, but Lucky caught it in midair and held the little fellow motionless.

"It's as simple as this, Bigman. Before space travel was invented, men were restricted to Earth and all they knew about Jupiter was what they could see in a telescope. The satellites are numbered in the order they were discovered, see?"

"Oh," said Bigman, and yanked free. "Poor ancestors!" He laughed, as he always did, at the thought of human beings cooped up on one world, peering out longingly, even as he struggled to free himself from Lucky's grip.

Lucky went on. "The four big satellites of Jupiter are numbered One, Two, Three, and Four, of course, but the numbers are hardly ever used. The names Io, Europa, Ganymede, and Callisto are familiar names. The nearest satellite of all, a small one, is Jupiter Five, while the farther ones have numbers up to Twelve. The ones past Twelve weren't discovered till after space travel was invented and men had reached Mars and the asteroid belt . . . Watch out now. We've got to adjust for landing."

It was amazing, thought Lucky, how you could consider tiny a world eighty-nine miles in diameter as long as you were nowhere near it. Of course, such a world is tiny compared to Jupiter or even to Earth. Place it gently on Earth and its diameter is small enough to allow it to fit within the state of Connecticut without lapping over; and its surface area is less than that of Pennsylvania.

And yet, just the same, when you came to enter the small world, when you found your ship enclosed in a large lock and moved by gigantic grapples (working against a gravitational force of almost zero but against full inertia) into a large cavern capable of holding a

hundred ships the size of the *Shooting Starr*, it no longer seemed so small.

And then when you came across a map of Jupiter Nine on the wall of an office and studied the network of underground caverns and corridors within which a complicated program was being carried out, it began to seem actually large. Both horizontal and vertical projections of the work volume of Jupiter Nine were shown on the map, and though only a small portion of the satellite was being used, Lucky could see that some of the corridors penetrated as much as two miles beneath the surface and that others spread out just under the surface for nearly a hundred miles.

"A tremendous job," he said softly to the lieutenant at his side.

Lieutenant Augustus Nevsky nodded briefly. His uniform was spotless and gleaming. He had a stiff little blond mustache, and his wide-set blue eyes had a habit of staring straight ahead as though he were at perpetual attention.

He said with pride, "We're still growing."

He had introduced himself a quarter of an hour earlier, as Lucky and Bigman had stepped from the ship, as the personal guide assigned them by Commander Donahue.

Lucky said with some amusement, "Guide? Or guardian, Lieutenant? You are armed."

Any trace of feeling was carefully washed out of the other's face. "My arms are regulation for officers on duty, Councilman. You will find you will need a guide here."

But he seemed to relax, and there was ordinary human feeling about him as he listened to the visitors' awed praise of the project. He said, "Of course the absence of any significant gravitational field makes certain engineering tricks feasible that wouldn't work on Earth. Underground corridors require practically no support."

Lucky nodded, then said, "I understand that the first Agrav ship is about ready for take-off."

The lieutenant said nothing for a moment. His face blanked free, again, of emotion or feeling. Then he said stiffly, "I will show you your quarters first. It can be most easily reached by Agrav, if I can persuade you to use an Agrav cor—"

"Hey, Lucky," called Bigman in sudden excitement. "Look at this."

Lucky turned. It was only a half-grown cat, gray as smoke, with the look of solemn sadness that cats usually have, and a back that arched readily against Bigman's curved fingers. She was purring.



Lucky said, "The commander said they went for pets here. Is this one yours, Lieutenant?"

The officer flushed. "We all have shares in it. There are a few other cats around, too. They come on the supply ships sometimes. We've got some canaries, a parakeet, white mice, goldfish. Things like that. Nothing like your whatever-it-is, though." And his eyes, as they looked quickly at the V-frog's bowl tucked under Lucky's arm, contained a spark of envy.

But Bigman was concentrating on the cat. There was no native animal life on Mars and the furry pets of Earth always had the charm of novelty to him.

"He likes me, Lucky."

"It's a she," said the lieutenant, but Bigman paid no attention. The cat, tail hoisted into a stiff vertical with only the tip drooping, walked past him, doubling sharply so as to present first one side, then the other, to Bigman's gentle stroking.

And then the purring stopped, and through Bigman's mind stabbed one pure touch of fevered and hungry desire.

It startled him for a moment, and then he noticed that the cat had stopped purring and was squatting slightly in the tense hunting posture dictated by its millions-of-years-old instincts.

Her green slitted eyes stared directly at the V-frog.

But the emotion, so feline in its touch, was gone almost as soon as it had come. The cat padded softly over to the glass container Lucky was holding and stared in curiously, purring with contentment.

The cat, too, liked the V-frog. It had to.

Lucky said, "You were saying, Lieutenant, we would have to reach our quarters by Agrav. Were you going to explain what that means?"

The lieutenant, who had also been staring fondly at the V-frog, paused to gather his wits before answering. "Yes. It's simple enough. We have artificial gravity fields here on Jupiter Nine as on any asteroid or on any space ship for that matter. They are arranged at each of the main corridors, end to end, so that you can fall the length of them in either direction. It's like dropping straight down a hole on Earth."

Lucky nodded. "How fast do you drop?"

"Well, that's the point. Ordinarily, gravity pulls constantly and you fall faster and faster . . ."

"Which is why I ask my question," interposed Lucky dryly.

"But not under Agrav controls. Agrav is really A-grav: no gravity, you see. Agrav can be used to absorb gravitational energy or

store it or transfer it. The point is you only fall so fast, you see, and no faster. With a gravitational field in the other direction, too, you can even slow down. An Agrav corridor with two pseudo-grav fields is very simple and it has been used as a steppingstone to an Agrav ship which works in a single gravitational field. Now Engineers' Quarters, which is where your rooms will be, is only a little over a mile from here and the most direct route is by Corridor A-2. Ready?"

"We will be once you explain how we're to work Agrav."

"That's hardly a problem." Lieutenant Nevsky presented each with a light harness, adjusting them over the shoulders and at the waist, talking rapidly about the controls.

And then he said, "If you'll follow me, gentlemen, the corridor is just a few yards in this direction."

Bigman hesitated at the opening of the corridor. He was not afraid of space in itself, or of drops in themselves. But all his life he had been used to bridging gaps under Martian gravity or less. This time the pseudo-grav field was at full Earth-normal, and under its influence the corridor was a brilliantly lighted hole, plummeting, apparently, straight downward, even though in actuality (Bigman's mind told him) it paralleled the satellite's surface closely.

The lieutenant said, "Now this is the lane for travel in the direction of Engineers' Quarters. If we were to approach from the other side, 'down' would appear to be in the other direction. Or we could make 'up' and 'down' change places by appropriate adjustments of our Agrav controls."

He looked at the expression on Bigman's face and said, "You'll get the idea as you go along. It becomes second nature after a while."

He stepped into the corridor and didn't drop an inch. It was as though he were standing on an invisible platform.

He said earnestly, "Have you set the dial at zero?"

Bigman did so, and instantly all sensation of gravity vanished. He stepped into the corridor.

Now the lieutenant's hand on the central knob of his own controls turned it sharply, and he sank, gathering speed. Lucky followed him, and Bigman, who would sooner have fallen the length of the corridor under double gravity and been smashed to pulp than fail to do anything Lucky did, took a deep breath and let himself fall.

"Turn back to zero," called the lieutenant, "and you'll be moving at constant velocity. Get the feel of it."

Periodically they approached and passed through luminous green letters that glowed KEEP TO THIS SIDE. Once there was the flash of

a man passing (falling, really) in the other direction. He was moving much more rapidly than they were.

"Are there ever any collisions, Lieutenant?" asked Lucky.

"Not really," said the lieutenant. "The experienced dropper watches for people who might be overtaking him or whom he might be overtaking, and it's easy enough to slow down or speed up. Of course the boys will bump on purpose sometimes. It's a kind of rowdy fun that ends with a broken collarbone sometimes." He looked quickly at Lucky. "Our boys play rough."

Lucky said, "I understand. The commander warned me."

Bigman, who had been staring downward through the well-lit tunnel into which he was sinking, cried in sudden exhilaration, "Hey, Lucky, this is fun when you get used to it," and turned his controls into the positive region.

He sank faster, his head moving down to a level with Lucky's feet, then farther down at an increasing rate.

Lieutenant Nevsky cried out in instant alarm, "Stop that, you fool. Turn back into the negatives!"

Lucky called out an imperious, "Bigman, slow down!"

They caught up to him, the lieutenant angrily exclaiming. "Don't ever do that! There are all sort of barriers and partitions along these corridors, and if you don't know your way, you'll be slamming into one just when you think you're safe."

"Here, Bigman," said Lucky. "Hold the V-frog. That will give you some responsibility and make you behave, perhaps."

"Aw, Lucky," said Bigman, abashed. "I was just kicking my heels a bit. Sands of Mars, Lucky . . ."

"All right," said Lucky. "No harm done," and Bigman brightened at once.

Bigman looked down again. Falling at a constant rate was not quite the same as free fall in space. In space, nothing seemed to move. A space ship might be traveling at a velocity of hundreds of thousands of miles an hour and there would still be the sensation of motionlessness all about. The distant stars never moved.

Here, though, the sense of motion was all about. The lights and openings and various attachments that lined the corridor walls flashed past.

In space, one expected that there would be no "up" and "down," but here there was none either and it seemed wrong. As long as he looked "down" past his feet, it seemed "down" and that was all right. When he looked "up," however, there would be a quick sensation that "up" was really "down," that he was standing head downward

falling "up." He looked toward his feet again quickly to get rid of the sensation.

The lieutenant said, "Don't bend too far forward, Bigman. The Agrav works to keep you lined up in the direction of fall, but if you bend over too much, you'll start tumbling."

Bigman straightened.

The lieutenant said, "There's nothing fatal about tumbling. Anyone who's used to Agrav can straighten himself out again. Beginners would find it troublesome, however. We'll decelerate now. Move the dial into the negatives and keep it there. About minus five."

He was slowing as he spoke, moving above them. His feet dangled at Bigman's eye level.

Bigman moved the dial, trying desperately to line himself up with the lieutenant. And as he slowed, "up" and "down" became definite, and in the wrong way. He *was* standing on his head.

He said, "Hey, the blood's rushing to my head."

The lieutenant said sharply, "There are footholds along the sides of the corridor. Hook one with the toe of your foot as you reach it and let go quickly."

He did so as he said this. His head swung outward, and head and feet reversed position. He continued swinging and stopping himself with a quick hand tap against the wall.

Lucky followed suit, and Bigman, flailing widely with his short legs, managed to catch one of the footholds at last. He whirled sharply and caught the wall with his elbow just a trifle too hard for comfort but managed to line up properly.

At least he was head-up again. He wasn't falling any more, but rising, as though he had been shot out of a cannon and rising against gravity more and more slowly; but at least he was head-up.

When they were moving at a slow crawl, Bigman, looking uneasily toward his feet, thought: We're going to be falling again. And suddenly the corridor looked like an endlessly deep well and his stomach tightened.

But the lieutenant said, "Adjust to zero," and at once they stopped slowing down. They just moved upward, as though in a smooth, slow elevator, until they reached a cross-level at which the lieutenant, seizing a foothold with one toe, brought himself to a feathery stop.

"Engineers' Quarters, gentlemen," he said.

"And," added Lucky Starr gently, "a reception committee."

For men were waiting for them in the corridor now, fifty of them at least.

Lucky said, "You said they liked to play rough, Lieutenant, and maybe they want to play now."

He stepped firmly out into the corridor. Bigman, nostrils flaring with excitement and grateful to be on the firm pseudo-grav of a solid floor, clutched the V-frog's cage tightly and was at Lucky's heels, facing the waiting men of Jupiter Nine.

# 4

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## Initiation!

Lieutenant Nevsky tried to make his voice crackle with authority as he placed his hand on the butt of his blaster. "What are you men doing here?"

There was a small murmur from the men, but by and large they remained quiet. Eyes turned to the one of them who stood in front, as though they were waiting for him to speak.

The leader of the men was smiling, and his face was crinkled into an expression of apparent good will. His straight hair, parted in the middle, had a light-orange tint to it. His cheekbones were broad and he chewed gum. His clothing was of synthetic fiber, as was true of that of the others, but unlike the others, his shirt and trousers were ornamented with brass buttons that were large and bulky. Four on his shirt front, one each on the two shirt pockets, and four down the side of each pants leg: fourteen altogether. They seemed to serve no purpose; to be only for show.

"All right, Summers," said the lieutenant, turning to this man, "what are the men doing here?"

Summers spoke now in a soft, wheedling voice. "Well, now, Lieutenant, we thought it would be nice to meet the new man. He'll be seeing a lot of us. He'll be asking questions. Why shouldn't we meet him now?"

He looked at Lucky Starr as he spoke, and for a moment there was a touch of ice in that glance that swallowed up all the show of softness.

The lieutenant said, "You men should be at work."

"Have a heart, Lieutenant," said Summers, chewing even more

slowly and leisurely. "We've *been* working. Now we want to say hello."

The lieutenant was obviously uncertain as to his next move. He looked doubtfully at Lucky.

Lucky said, "Which rooms are to be ours, Lieutenant?"

"Rooms 2A and 2B, sir. To find them—"

"I'll find them. I'm sure one of these men will direct me. And now, Lieutenant Nevsky, that you've directed us to our quarters, I think your assignment is completed. I'll be seeing you again."

"I can't leave!" said Lieutenant Nevsky in a low, appalled whisper.

"I think you can."

"Sure you can, Lieutenant," said Summers, grinning more broadly than ever. "A simple hello won't hurt the boy." There was a snicker of laughter from the men behind him. "And besides, you've been asked to leave."

Bigman approached Lucky and muttered in an urgent whisper. "Lucky, let me give the V-frog to the lieutenant. I can't fight and hold it, too."

"You just hold it," said Lucky. "I want it exactly here. . . . Good day, Lieutenant. Dismissed!"

The lieutenant hesitated, and Lucky said in a tone that, for all its softness, bit like steel. "That's an order, Lieutenant."

Lieutenant Nevsky's face assumed a soldierly rigidity. He said sharply, "Yes, sir."

Then, surprisingly, he hesitated one further moment and glanced down at the V-frog in the crook of Bigman's arm, as it chewed idly at a fern frond. "Take care of that little thing." He turned and was in the Agrav corridor in two steps, disappearing almost at once in a rush of speed.

Lucky turned to face the men again. He was under no illusions. They were grim-faced and they meant business, but unless he could face them down and prove that he meant business as well, his mission would come to nothing against the rock of their hostility. He would have to win them over somehow.

Summers' smile had become the least bit wolfish. He said, "Well, now, friend, the uniform-boy is gone. We can talk. I'm Red Summers. What's your name?"

Lucky smiled in return. "My name is David Starr. My friend's name is Bigman."

"Seems to me I heard you called Lucky when all that whispering was going on a while back."

"I'm called Lucky by my friends."

"Isn't that nice. Do you want to stay lucky?"

"Do you know a good way?"

"Matter of fact, Lucky Starr, I do." Suddenly his face contorted itself into a bitter scowl. "Get off Jupiter Nine."

There was a hoarse roar of approval from the others, and a few voices took up the cry of "Get off! Get off!"

They crowded closer, but Lucky stood his ground. "I have important reasons to stay on Jupiter Nine."

"In that case, I'm afraid you aren't lucky," said Summers. "You're a greenhorn and you look soft, and soft greenhorns get hurt on Jupiter Nine. We worry about you."

"I think I won't get hurt."

"That's what you think, eh?" said Summers. "Armand, come here."

From the ranks behind him, a huge man stepped forward, round-faced, beefy of build, with large shoulders and a barrel chest. He topped Lucky's six feet one by half a head and looked down at the young councilman with a smile that showed yellowed, wide-spaced teeth.

The men were beginning to take seats on the floor. They shouted to one another with lighthearted cheer, as though they were about to watch a ball game.

One called out, "Hey, Armand, watch out you don't step on the kid!"

Bigman started, and glared furiously in the direction of the voice but could not identify the speaker.

Summers said, "You could still leave, Starr."

Lucky said, "I have no intention of doing so, particularly at a moment when you seem to be planning some sort of entertainment."

"Not for you," said Summers. "Now listen, Starr, we're ready for you. We've been ready since we got word that you were coming. We've had enough of you little tin horns from Earth and we aren't taking any more. I've got men stationed on various levels. We'll know if the commander tries to interfere, and if he does, then by Jupiter, we're ready to go on strike. Am I right, men?"

"*Right!*" came back the multiple roar.

"And the commander knows it," said Summers, "and I don't think he'll interfere. So this gives us our chance to give you our



initiation and after that I'll ask you again if you want to leave. If you're conscious, that is."

"You're going to a lot of trouble for nothing," said Lucky. "What harm am I doing you?"

"You won't be doing us any," said Summers. "I guarantee that."

Bigman said, in his tense, high-pitched voice, "Look, you cobber, you're talking to a councilman. Have you stopped to figure what happens if you fool with the Council of Science?"

Summers looked at him suddenly, put his fists on his hips, and bent his head back to laugh. "Hey, men, it talks. I was wondering what it was. It looks as though Lucky Snoop has brought along his baby brother for protection."

Bigman went dead-white, but under the cover of the laughter Lucky stooped and spoke through stiff lips. "Your job is to hang on to the V-frog, Bigman. I'll take care of Summers. And, Great Galaxy, Bigman, stop broadcasting anger! I can't get a thing on the V-frog except that."

Bigman swallowed hard twice, three times.

Summers said softly, "Now, Councilman Snoop, can you maneuver under Agrav?"

"I just have, Mr. Summers."

"Well, we'll just have to test you and make sure. We can't have anyone around who hasn't learned all the Agrav ropes. It's too dangerous. Right, men?"

"Right!" they roared again.

"Armand here," said Summers, and his hand rested on one of Armand's huge shoulders, "is our best teacher. You'll know all about Agrav maneuvering when you're through with him. Or you will know if you stay out of his way. I suggest you get out into the Agrav corridor now. Armand will join you."

Lucky said, "If I choose not to go?"

"Then we'll throw you into the corridor anyway and Armand goes after you."

Lucky nodded. "You seem determined. Are there any rules to this lesson I'm going to get?"

There was wild laughter, but Summers held up his arms. "Just keep out of Armand's way, Councilman. That's the only rule you'll have to remember. We'll be at the lip of the corridor watching. If you try to crawl out of Agrav before you've completed your lesson, we'll throw you back in, and there are men stationed at other levels, watching, and they're ready to do the same."

Bigman cried, "Sands of Mars, your man outweighs Lucky by fifty pounds and he's an expert with Agrav!"

Summers turned on him in mock surprise. "No! I never thought of that. What a shame!" There was laughter from the men. "On your way, Starr. Get into the corridor, Armand. Drag him in if you have to."

"He won't have to," said Lucky. He turned and moved into the open space of the wide Agrav corridor. As his feet drifted out into empty air, his fingers caught gently at the wall, twisting him in a slow, turning motion that he stopped with another touch against the wall. He stood there in midair, facing the men.

There was some murmuring at Lucky's maneuver, and Armand nodded, speaking for the first time in a rolling appreciative bass. "Hey, mister, that's not bad."

Summers, lips suddenly set and with a frown newly creasing his forehead, struck Armand a sharp blow on the back. "Don't talk, you idiot! Get in after him and give it to him."

Armand moved forward slowly. He said, "Hey, Red, let's not make too much of this."

Summers' face contorted in fury. "Get in there! And you do what I said. I told you what he is. If we don't get rid of him, they'll be sending more." His words were a harsh whisper that didn't carry.

Armand stepped into the corridor and stood face to face with Lucky.

Lucky Starr waited in what was almost absence of mind. He was concentrating on the faint whiffs of emotion brought him by the V-frog. Some he could recognize without difficulty, both as to their nature and their owner. Red Summers was easiest to detect: fear and niggling hate mixed with an undertone of anxious triumph. Armand loosed a small leak of tension. Occasionally there were sharp pin-points of excitement from one or another, and sometimes Lucky could identify the owner because it coincided with a happy shout or a threatening one. All of it had to be sorted out from the steady trickle of Bigman's anger, of course.

But now he was staring into Armand's small eyes and he was aware that the other was bobbing up and down, a few inches either way. Armand's hand fingered his chest control.

Lucky was instantly alert. The other was alternating the gravitational direction, moving the controls this way and that. Was he expecting to confuse Lucky?

Lucky was sharply aware that for all his experience with space

he was inexperienced in the type of weightlessness brought about by Agrav, for this was a weightlessness that wasn't absolute, as in space, but one that could be changed at will.

And suddenly Armand dropped as though he had stepped through a trap door—except that he dropped upward!

As Armand's large legs moved up past Lucky's head, they parted and came together as if to catch Lucky's head in a vise.

Automatically Lucky's head snapped back, but as it did so, his legs moved forward, his body swinging about its center of gravity, and for a moment, he was off balance and flailing helplessly. A roar of laughter arose from the watching men.

Lucky knew what was wrong. He should have dodged by gravity. If Armand moved up, Lucky should have adjusted controls to move up with him or to race down past him. And now it would take the pull of gravity to straighten him out. At gravity zero, he would tumble indefinitely.

But before his fingers could touch his controls, Armand was past the top of his rise and was gathering speed downward. As he dropped past Lucky once more, his elbow caught Lucky a sharp jab in the hip. He dropped farther and his thick fingers clutched at Lucky's ankles, carrying him down, down. Armand pulled strongly downward and reached up to seize Lucky's shoulders. His harsh breath stirred Lucky's hair. He said, "You need a lot of training, mister."

Lucky brought up his own arms head-high and broke the other's hold sharply.

Lucky dialed gravity up and helped his upward movement by bringing his foot sharply down on the other's shoulder, accelerating his own pace and slowing the other's. To his own senses it now seemed that he was falling head downward and there was a tenseness about that sensation that seemed to be slowing his reactions. Or was it his Agrav controls which were somewhat sluggish? He tested them and lacked the experience to be certain, yet felt that they were.

Armand was on him now, bellowing, thrusting against him, attempting to use his own greater mass of body to maneuver Lucky hard against the wall.

Lucky wriggled his hand toward the controls in order to reverse the direction of gravity. He readied his knees for an upward thrust to coincide and lurch Armand out of position.

But it was Armand's field that shifted first, and it was Lucky who was lurched out of position.

Armand's feet shot backward now, striking the wall of the corridor as it was flashing by and angling the pair, by recoil, against the

opposite wall. Lucky struck bruisingly and skidded along it some feet before his ankle caught one of the metal railings and his body swung away and into the open corridor.

Armand whispered hotly in Lucky's ear, "Had enough, mister? Just tell Red you'll leave. I don't want to hurt you bad."

Lucky shook his head. Strange, he thought, that Armand's gravitational field had beaten his own to the shift. He had felt Armand's hand move to the controls and he was certain his own controls had moved first.

Twisting suddenly, Lucky placed his elbow sharply in the pit of Armand's stomach. Armand grunted, and in that split second Lucky got his legs between himself and the other's and straightened them. The two men flew apart and Lucky was free.

He shot away an instant before Armand returned, and then for the next few minutes Lucky concentrated only on staying away. He was learning the use of the controls and they *were* sluggish. It was only by skillful use of the footholds along the walls and lightning-like head-to-foot reversals that he managed to avoid Armand.

And then while he was drifting feather-fashion, allowing Armand to shoot past him, he turned his Agrav controls and found no response at all. There was no change in the gravitational field direction; no sudden sensation of accelerating one way or the other.

Instead, Armand was on him again, grunting, and Lucky found himself crashing with stunning force against the corridor wall.

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## Needle-Guns and Neighbors

Bigman felt fully confident of Lucky's ability to handle any overgrown mass of beef, and though he felt a sharp anger at the unsympathetic crowd, he felt no fear.

Summers had approached the lip of the corridor and so had another, a gangling, dark-complexioned fellow who barked out events as they occurred in a raucous voice, as though it were a flight-polo game on the subetherics.

There were cheers when Armand first slammed Lucky against the corridor wall. Bigman discounted those with contempt. Of course that shouting fool would try to make it look good for his own side. Wait till Lucky got the feel of the Agrav technique; he would cut that Armand guy into ribbons. Bigman was sure of it.

But then when the dark fellow yelled, "Armand has him now in a head lock. He's maneuvering for a second fall; feet against the wall; retract and extend and *there's the crash, a beauty!*" Bigman felt the beginnings of uneasiness.

He edged close to the corridor himself. No one paid any attention to him. It was one advantage of his small size. People who didn't know him tended to discount him as a possible danger, to ignore him.

Bigman looked down and saw Lucky pushing away from the wall, Armand drifting nearby, waiting.

"Lucky!" he yelled shrilly. "Stay away!"

His cry was lost in the hubbub, but the dark man's voice as it was lowered in a conversational aside to Red Summers was not. Bigman caught it.

The dark man said, "Give the snoop some power, Red. There won't be any excitement."

And Summers growled in response, "I don't want excitement. I want Armand to finish the job."

Bigman didn't get the significance of the short exchange for a moment, but only for a moment. And then his eyes darted sharply in the direction of Red Summers, whose hands, held closely against his chest, were manipulating some small object Bigman could not identify.

"Sands of Mars!" Bigman cried breathlessly. He sprang back. "You! Summers! You foul-fighting clobber!"

This was another one of those times when Bigman was glad he carried a needle-gun even in the face of Lucky's disapproval. Lucky considered it an unreliable weapon, as it was too hard to focus accurately, but Bigman would sooner doubt the fact that he was as tall as any six-footer as doubt his own skill.

When Summers didn't turn at Bigman's shout, Bigman clenched his fist about the weapon (of which only half-inch of snout, narrowing to a needlepoint, showed between the second and third fingers of his right hand) and squeezed just tightly enough to activate it.

Simultaneously there was a flash of light six inches in front of Summers' nose, and a slight pop. It was not very impressive. Only air molecules were being ionized. Summers jumped, however, and panic, transmitted by the V-frog, rose sharply.

"Everybody," called Bigman. "Freeze! *Freeze!* You split-head, underlipped miseries." Another needle-gun discharge popped the air, this time over Summers' head where all could see it plainly.

Few people might have handled needle-guns, which were expensive and hard to get licenses for, but everybody knew what a needle-gun discharge looked like, if only from subetheric programs, and everyone knew the damage it could do.

It was as though fifty men had stopped breathing.

Bigman was bathed in the cold drizzle of human fear from fifty frightened men. He backed against the wall.

He said, "Now listen, all of you. How many of you know that this clobber Summers is gimmicking my friend's Agrav controls? This fight is fixed!"

Summers said desperately, through clenched teeth, "You're wrong. You're wrong."

"Am I? You're a brave man, Summers, when you've got fifty against two. Let's see you stay brave against a needle-gun. They're hard to aim, of course, and I might miss."

He clenched his fist again, and this time the pop of the discharge was sharply ear-splitting and the flash dazzled all the spectators but

Bigman, who, of them all, was the only one who knew exactly when to close his eyes for a moment.

Summers emitted a strangled yell. He was untouched except that the top button on his shirt was gone.

Bigman said, "Nice aiming if I do say so myself, but I suppose having a run of luck is too much to ask. I'd advise you not to move, Summers. Pretend you're stone, you clobber, because if you do move, I'll miss and feeling a chunk of your skin go will hurt you worse than just losing a button."

Summers closed his eyes. His forehead was glistening with perspiration. Bigman calculated the distance and clenched twice.

Pow! Smack! Two more buttons gone.

"Sands of Mars, my lucky day! Isn't it nice that you've arranged to have no one come around to interfere? Well, one more—for the road."

And this time Summers yelled in agony. There was a rent in the shirt and reddened skin showed.

"Aw," said Bigman, "not on the nose. Now I'm rattled and I'll probably miss the next by two inches . . . Unless you're ready to say something, Summers."

"All right," yelled the other. "I've fixed it."

Bigman said mildly, "Your man was heavier. Your man had experience and still you couldn't leave it a fair fight. You don't take *any* chances, do you? Drop what you're holding . . . Don't the rest of you move, though. From here on in, it's a fair fight in the corridor. No one's moving until someone climbs out of the corridor."

He paused and glared as his fist with the needle-gun moved slowly from side to side. "*But* if it's your ball of gristle that comes back, I'll just be a bit disappointed. And when I'm disappointed, there's no telling what I'll do. I just might be disappointed and mad enough to fire this needle-gun into the crowd, and there isn't a thing in the world any of you can do to stop me from clenching my fist ten times. So if there are ten of you bored with living, just hope that your boy beats Lucky Starr."

Bigman waited there desperately, his right hand holding the needle-gun, his left arm crooked over the V-frog in its container. He longed to order Summers to bring the two men back, to end the fight, but he dared not risk Lucky's anger. He knew Lucky well enough to know that the fight couldn't be allowed to end by default on Lucky's side.

A figure whizzed past the line of sight, then another. There was

a crash as of a body hitting a wall, then a second and a third. Then silence.

A figure drifted back, with a second gripped firmly by one ankle.

The person in control came lightly out into the corridor; the person being held followed and dropped like a sack of sand.

Bigman let out a shout. The man standing was Lucky. His cheek was bruised and he limped, but it was Armand who was unconscious.

They brought Armand back to consciousness with some difficulty. He had a lump on his skull resembling a small grapefruit, and one eye was swollen closed. Though his lower lip was bleeding, he managed a painful smile and said, "By Jupiter, this kid's a wildcat."

He got to his feet and threw his arms about Lucky in a bear hug. "It was like tangling with ten men after he got his bearings. He's all right."

Surprisingly, the men were cheering wildly. The V-frog transmitted relief first, swallowed up at once by excitement.

Armand's smile widened, and he dabbed at the blood with the back of his hand. "This councilman is all right. Anyone who still doesn't like him has to fight me, too. Where's Red?"

But Red Summers was gone. So was the instrument he had dropped at Bigman's order.

Armand said, "Listen, Mr. Starr, I've got to tell you. This wasn't my idea, but Red said we had to get rid of you or you'd make trouble for all of us."

Lucky raised his hand. "That's a mistake. Listen, all of you. There'll be no trouble for any loyal Earthman. I guarantee it. This fight is off the record. It was a bit of excitement, but we can forget it. Next time we meet, we all meet fresh. Nothing's happened. Right?"

They cheered madly and there were shouts of "He's all right" and "Up the Council!"

Lucky was turning to go when Armand said, "Hey, wait." He drew in a vast breath and pointed a thick finger. "What's this?" He was pointing to the V-frog.

"A Venusian animal," said Lucky. "A pet of ours."

"It's cute." The giant simpered down at it. The others crowded close to stare at it and make appreciative comments, to seize Lucky's hand and assure him that they had been on his side all along.

Bigman, outraged at the shoving, finally yelled, "Let's get to quarters, Lucky, or I swear I'll kill a few of these guys."



There was an instant silence and men squeezed back to make a path for Lucky and Bigman.

Lucky winced as Bigman applied cold water to the bruised cheek in the privacy of their quarters.

He said, "Some of the men were saying something about needle-guns in that final crush, but in the confusion I didn't get the story straight. Suppose you tell me, Bigman."

Reluctantly Bigman explained the circumstances.

Lucky said thoughtfully, "I realized that my controls were off, but I assumed mechanical failure, particularly since they came back after my second fall. I didn't know you and Red Summers were fighting it out over me."

Bigman grinned. "Space, Lucky, you didn't think I'd let that character pull a trick like that?"

"There might have been some way other than needle-guns."

"Nothing else would have frozen them so," said Bigman, agrieved. "Did you want me to shake my finger at them and say, 'Naughty, naughty'? Besides, I *had* to scare the green bejeebies out of them."

"Why?" Lucky said sharply.

"Sands of Mars, Lucky, you spotted the other guy two falls when the fighting was fixed, and I didn't know if you had enough left to make out. I was going to make Summers call the fight off."

"That would have been bad, Bigman. We would have gained nothing. There would have been men convinced the cry of 'foul' was an unsportsmanlike fake."

"I knew you'd figure that, but I was nervous."

"No need to be. After my controls started responding properly, things went fairly well. Armand was certain he had me, and when he found there was still fight in me, the fight seemed to go out of him. That happens sometimes with people who have never had to lose. When they don't win at once, it confuses them, and they don't win at all."

"Yes, Lucky," said Bigman, grinning.

Lucky was silent for a minute or two, then he said, "I don't like that 'Yes, Lucky.' What did you do?"

"Well—" Bigman applied the final touch of flesh tint to hide the bruise and stepped back to consider his handiwork critically—"I couldn't help but hope that you'd win, now could I?"

"No, I suppose not."

"And I told everyone in that place that if Armand won, I would shoot as many of them as I could."

"You weren't serious."

"Maybe I was. Anyway, they thought I was; they were sure I was after they saw me needle four buttons off that cobbler's shirt. So there were fifty guys there, even including Summers, who were sweating themselves blind hoping you would win and Armand lose."

Lucky said, "So that's it."

"Well, I couldn't help it if the V-frog was there and transmitted all those thoughts to you too, could I?"

"So all the fight went out of Armand because his mind was blanketed with wishes he would lose." Lucky looked chagrined.

"Remember, Lucky. Two foul falls. It wasn't a fair fight."

"Yes, I know. Well, maybe I needed the help at that."

The door signal flashed at that moment, and Lucky raised his eyebrows. "Who's this, I wonder?" He pressed the button that retracted the door into its slot.

A chunky man, with thinning hair and china-blue eyes that stared at them unblinkingly, stood in the doorway. In one hand he held an oddly shaped piece of gleaming metal, which his limber fingers turned end for end. Occasionally the piece ducked between fingers, traveling from thumb to pinkie and back as though it had a life of its own. Bigman found himself watching it, fascinated.

The man said, "My name is Harry Norrich. I'm your next-door neighbor."

"Good day," said Lucky.

"You're Lucky Starr and Bigman Jones, aren't you? Would you care to come to my place a few minutes? Visit a bit, have a drink?"

"That's kind of you," said Lucky. "We'll be glad to join you."

Norrich turned somewhat stiffly and led the way down the corridor to the next door. One hand touched the corridor wall occasionally. Lucky and Bigman followed, the latter holding the V-frog.

"Won't you come in, gentlemen?" He stood aside to let them enter. "Please sit down. I've heard a great deal about you already."

"Like what?" asked Bigman.

"Like Lucky's fight with Big Armand and Bigman's marksmanship with a needle-gun. It's all over the place. I doubt there's anyone on Jupiter Nine who won't hear of it by morning. It's one of the reasons I asked you in. I wanted to talk to you about it."

He poured a reddish liquor carefully into two small glasses and offered them. For a moment Lucky put his hand some three inches to one side of the glass, waited without result, then reached over and took it from Norrich's hand. Lucky put the drink to one side.

"What's that on your worktable?" asked Bigman.

Norrich's room, in addition to the usual furnishings, had something that looked like a worktable running the length of one wall with a bench before it. On the worktable was a series of metal gimmicks spread out loosely, and in the center was an odd structure, six inches high and very uneven in outline.

"This thing?" Norrich's hand slid delicately along the surface of the table and came to rest on the structure. "It's a threedee."

"A what?"

"A three-dimensional jigsaw. The Japanese had them for thousands of years, but they've never caught on elsewhere. They're puzzles, made up of a number of pieces that fit together to form some sort of structure. This one, for instance, will be the model of an Agrav generator when it's finished. I designed and made this puzzle myself."

He lifted the piece of metal he was holding and placed it carefully in a little slot in the structure. The piece slid in smoothly and held in place.

"Now you take another piece." His left hand moved gently over the structure, while his right felt among the loose pieces, came up with one, and moved it into place.

Bigman, fascinated, moved forward, then jumped back at a sudden animal howl from beneath the table.

A dog came squirming out from beneath the table and put its forefeet on the bench. It was a large German shepherd dog and it stood now looking mildly at Bigman.

Bigman said nervously, "Here, now, I stepped on it by accident."

"It's only Mutt," said Norrich. "He won't hurt anyone without better cause than being stepped on. He's my dog. He's my eyes."

"Your eyes?"

Lucky said softly, "Mr. Norrich is blind, Bigman."

# 6

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## Death Enters the Game

Bigman shrank back. "I'm sorry."

"No need to be sorry," Norrich said cheerfully. "I'm used to it and I can get along. I'm holding a master technician's rank and I'm in charge of constructing experimental jigs. I don't need anyone to help me, either, any more than I need help in my threedees."

"I imagine the threedees offer good exercise," said Lucky.

Bigman said, "You mean you can put those things together without even being able to see them? Sands of Mars!"

"It's not as hard as you might think. I've been practicing for years and I make them myself so I know the tricks of them. Here, Bigman, here's a simple one. It's just an egg shape. Can you take it apart?"

Bigman received the light-alloy ovoid and turned it in his hands, looking over the pieces that fit together smoothly and neatly.

"In fact," Norrich went on, "the only thing I really need Mutt for is to take me along the corridors." He leaned down to scratch the dog behind one ear, and the dog permitted it, opening his mouth wide in a sleepy yawn, showing large white fangs and a length of pink lolling tongue. Lucky could feel the warm thickness of Norrich's affection for the dog pour out via the V-frog.

"I can't use the Agrav corridors," Norrich said, "since I'd have no way of telling when to decelerate, so I have to walk through ordinary corridors and Mutt guides me. It makes for the long way around, but it's good exercise, and with all the walking Mutt and I know Jupiter Nine better than anybody, don't we, Mutt? . . . Have you got it yet, Bigman?"

"No," said Bigman. "It's all one piece."

"Not really. Here, give it to me."

Bigman handed it over, and Norrich's skillful fingers flew over the surface. "See this little square bit here? You push it and it goes in a bit. Grab the part that comes out the other end, give it half a turn clockwise, and it pulls out altogether. See? Now the rest comes apart easily. This, then this, then this, and so on. Line up the pieces in order as they come out; there are only eight of them; then put them back in reverse order. Put the key piece in last, and it will lock everything into place."

Bigman stared dubiously at the individual pieces and bent close over them.

Lucky said, "I believe you wanted to discuss the reception committee I met up with when I arrived, Mr. Norrich. You said you wanted to talk about my fight with Armand."

"Yes, Councilman, yes. I wanted you to understand. I've been here on Jupiter Nine since Agrav project started and I know the men. Some leave when their hitch is up, some stay on, greenhorns join up; but they're all the same in one way. They're very insecure."

"Why?"

"For several reasons. In the first place, there is danger involved in the project. We've had dozens of accidents and lost hundreds of men. I lost my eyes five years ago and I was fortunate in a way. I might have died. Secondly, the men are isolated from friends and family while they're here. Really isolated."

Lucky said, "I imagine there are some people who enjoy the isolation."

He smiled grimly as he said that. It was no secret that men who in one way or another had gotten entangled with the law sometimes managed to find work on some of the pioneer worlds. People were always needed to work under domes in artificial atmospheres with pseudo-grav fields, and those who volunteered were usually not asked too many questions. Nor was there anything very wrong with that. Such volunteers aided Earth and its people under difficult conditions, and that, in a way, was a payment for misdeeds.

Norrich nodded at Lucky's words. "I see you're not naïve about it and I'm glad. Leaving the officers and the professional engineers to one side, I imagine a good half of the men here have criminal records on Earth, and most of the rest might have such records if the police knew everything. I doubt that one in five gives his real name. Anyway, you see where tension comes in when investigator after investigator arrives. You're all looking for Sirian spies; we know that; but each man thinks that maybe his own particular trouble will come

out and he'll be dragged back to jail on Earth. They all want to go back to Earth, but they want to go back anonymously, not at the other end of a set of wrist locks. That's why Red Summers could rouse them so."

"And is Summers something special that he takes the lead? A particularly bad record on Earth?"

Bigman looked up briefly from his threedee to say bitterly, "Murder, maybe?"

"No," said Norrich with instant energy. "You've got to understand about Summers. He's had an unfortunate life: broken home, no real parents. He got into the wrong crowds. He's been in prison, yes, for being involved in some minor rackets. If he'd stayed on Earth, his life would have been one long waste. But he's come to Jupiter Nine. He's made a new life here. He came out as a common laborer and he educated himself. He's learned low-grav construction engineering, force-field mechanics, and Agrav techniques. He's been promoted to a responsible position and has done wonderful work. He's respectable, admired, well liked. He's found out what it is to have honor and position and he dreads nothing more than the thought of going back to Earth and his old life."

"Sure, he hates it so much," said Bigman, "that he tried to kill Lucky by gimmicking the fight."

"Yes," said Norrich, frowning, "I heard he was using a sub-phase oscillator to kill the councilman's control response. That was stupid of him, but he was in panic. Look, fundamentally the man is good-hearted. When my old Mutt died—"

"Your old Mutt?" asked Lucky.

"I had a Seeing Eye dog before this one which I also called Mutt. It died in a force-field short circuit that killed two men besides. He shouldn't have been there, but sometimes a dog will wander off on his own adventures. This one does, too, when I'm not using him, but he always comes back." He leaned down to slap his dog's flank lightly, and Mutt closed one eye and thumped his tail against the floor.

"Anyway, after old Mutt died, it looked for a while as though I mightn't get another and I would have to be sent home. I'm no use here without one. Seeing Eye dogs are in short supply; there are waiting lists. The administration here at Jupiter Nine didn't want to pull any strings because they weren't anxious to publicize the fact that they were employing a blind man as construction engineer. The economy bloc in Congress is always waiting for something like that to make bad publicity out of. So it was Summers who came through.

He used some contacts he had on Earth and got me Mutt here. It wasn't exactly legal, it was even what you might call the black market, but Summers risked his position here to do a friend a favor and I owe him a great deal. I'm hoping you'll remember Summers can do and has done things like that and that you'll go easy on him for his actions earlier today."

Lucky said, "I'm not taking any action against him. I had no intention of doing so even before our conversation. Still, I'm sure that Summers' real name and record are known to the Council and I'll be checking on the facts."

Norrich flushed, "By all means, do so. You'll find he's not so bad."

"I hope so. But tell me something. Through all that has just taken place, there was no attempt on the part of the project administration to interfere. Do you find this strange?"

Norrich laughed shortly. "Not at all. I don't think Commander Donahue would have cared much if you'd been killed, except for the trouble it would have taken to hush it up. He's got bigger troubles on his mind than you or your investigation."

"Bigger troubles?"

"Sure. The head of this project is changed every year; army policy of rotation. Donahue is the sixth boss we've had and far and away the best. I've got to say that. He's cut through red tape and he hasn't tried to make an army camp out of the project. He's given the men leeway and let them raise a bit of Cain now and then so he's gotten results. Now the first Agrav ship will be ready to take off any time. Some say it's a matter of days."

"That soon?"

"Could be. But the point is that Commander Donahue is due to be relieved in less than a month. A delay now could mean that the launching of the Agrav ship won't take place until Donahue's successor comes in. Donahue's successor would get to ride in it, have the fame, go down in the history books, and Donahue would miss out."

"No wonder he didn't want you on Jupiter Nine," Bigman said hotly. "No wonder he didn't want you, Lucky."

Lucky shrugged. "Don't waste temper, Bigman."

But Bigman said, "The dirty clobber! Sirius can gobble up Earth for all he cares as long as he can get to ride his miserable ship." He lifted a clenched fist, and there was a muted growl from Mutt.

Norrich said sharply, "What are you doing, Bigman?"

"What?" Bigman was genuinely astonished. "I'm not doing a thing."

"Are you making a threatening gesture?"

Bigman lowered his arm quickly. "Not really."

"You've got to be careful around Mutt. He's been trained to take care of me. . . . Look, I'll show you. Just step toward me and make believe you're going to throw a punch at me."

Lucky said, "That's not necessary. We understand—"

"Please," said Norrich. "There's no danger. I'll stop Mutt in time. As a matter of fact, it's good practice for him. Everyone on the project is so careful of me that I swear I don't know if he remembers his training. Go ahead, Bigman."

Bigman stepped forward and raised his arm halfheartedly. At once Mutt's ears flattened, his eyes slitted, his fangs stood sharply revealed, his leg muscles tensed for a spring, and a harsh growl issued from the recesses of his throat.

Bigman drew back hastily, and Norrich said, "Down, Mutt!" The dog subsided. Lucky could sense, clearly, the gathering and relaxation of tension in Bigman's mind and the fond triumph in Norrich's.

Norrich said, "How are you doing with the threedee egg, Bigman?"

The little Martian, in exasperation, said, "I've given up. I've got two pieces put together and that's all I can do."

Norrich laughed. "Just a matter of practice, that's all. Look."

He took the two pieces out of Bigman's hand and said, "No wonder. You've got these together wrong." He flipped one piece end for end, brought the two together again, added another piece and another until he held seven pieces in the shape of a loose ovoid with a hole through it. He picked up the eighth and key piece, slipped it in, gave it a half turn counterclockwise, pushed it the rest of the way, and said, "Finished."

He tossed the completed egg into the air and caught it, while Bigman watched in chagrin.

Lucky got to his feet. "Well, Mr. Norrich, we'll be seeing you again. I'll remember your remarks about Summers and the rest. Thank you for the drink." It still rested untouched on the desk.

"Nice to have met you," said Norrich, rising and shaking hands.

It was some time before Lucky could fall asleep. He lay in the darkness of his room hundreds of feet below the surface of Jupiter Nine, listening to Bigman's soft snoring in the adjoining room, and thought of the events of the day. Over and over them he went.



He was bothered! Something had happened that shouldn't have; or something had not happened that should have.

But he was weary and everything was a bit unreal and twisted in the half-world of half-sleep. Something hovered at the edge of awareness. He clutched at it, but it slipped away.

And when morning came there was nothing left of it.

Bigman called out to Lucky from his own room as Lucky was drying himself under the soft jets of warm air after his shower.

The little Martian yelled, "Hey, Lucky, I've recharged the V-frog's carbon-dioxide supply and dumped in more weed. You'll be taking it down to our meeting with that blasted commander, won't you?"

"We certainly will, Bigman."

"It's all set then. How about letting me tell the commander what I think of him?"

"Now, Bigman."

"Nuts! It's me for the shower now."

Like all men of the solar system brought up on planets other than Earth, Bigman reveled in water when he could get at it, and a shower for him was a leisurely, loving experience. Lucky braced himself for a session of the tenor caterwauling that Bigman called singing.

The intercom sounded after Bigman was well launched into some dubious fragment of melody that sounded piercingly off-key and just as Lucky completed dressing.

Lucky stepped to it and activated reception. "Starr speaking."

"Starr!" Commander Donahue's lined face showed in the visipanel. His lips were narrow and compressed and his whole expression was one of antagonism as he gazed at Lucky. "I have heard some story of a fight between yourself and one of our workers."

"Yes?"

"I see you have not been hurt."

Lucky smiled. "All's well."

"You'll remember I warned you."

"I am making no complaints."

"Since you aren't, and in the interest of the project, I would like to ask if you plan making any report concerning it."

"Unless it turns out to have some direct bearing on the problem which concerns me here, the incident will never be mentioned by me."

"Good!" Donahue looked suddenly relieved. "I wonder if I could extend that attitude to our meeting this morning. Our meeting might be taped for confidential records and I would prefer—"

"There will be no need to discuss the matter, Commander."

"Very good!" The commander relaxed into what was almost cordiality. "I'll be seeing you in an hour then."

Lucky was dimly aware that Bigman's shower had stopped and that his singing had subsided to a humming. Now the humming stopped, too, and there was a moment of silence.

Lucky said into the transmitter, "Yes, Commander, good—" when Bigman exploded into a wild, near-incoherent shout.

*"Lucky!"*

Lucky was on his feet with smooth speed and at the door connecting the two rooms in two strides.

But Bigman was in the doorway before him, eyes big with horror. "Lucky! The V-frog! It's dead! It's been killed!"

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## A Robot Enters the Game

The V-frog's plastic cage was shattered and shriveled, and the floor was wet with its watery contents. The V-frog, half covered with the fronds it fed upon, was quite, quite dead.

Now that it was dead and unable to control emotion, Lucky could look at it without the enforced fondness that he, as well as all others that came within its radius of influence, had felt. He felt anger, however—mostly at himself for having allowed himself to be overreached.

Bigman, fresh from his shower, with only his shorts on, clenched and unclenched his fists. "It's my fault, Lucky. It's all my fault. I was yelling so loud in the shower I never heard anyone come in."

The phrase "come in" was not quite appropriate. The killer had not simply come in; he had burnt his way in. The lock controls were fused and melted away with what had obviously been an energy projector of fairly large caliber.

Lucky stepped back to the interphone. "Commander Donahue?"  
"Yes, what happened? Is anything wrong?"

"I'll see you in an hour." He broke connections and returned to the grieving Bigman. He said somberly, "It's my fault, Bigman. Uncle Hector said the Sirians had not yet discovered the facts concerning the emotional powers of the V-frog, and I accepted that too thoroughly. If I had been a little less optimistic about Sirian ignorance, neither one of us would ever have left that little creature out of our sight for a second."

Lieutenant Nevsky called for them, standing at attention as Lucky and Bigman left their quarters.

He said in a low voice, "I am glad, sir, that you were unharmed in yesterday's encounter. I would not have left you, sir, had you not strictly ordered me to."

"Forget it, Lieutenant," Lucky said absently. His mind kept returning to that moment just before sleep the preceding night when, for a brief instant, a thought had hovered at the outskirts of consciousness, then vanished. But it would not come now, and finally Lucky's mind sped to other matters.

They had entered the Agrav corridor now, and this time it seemed crowded with men, streaming accurately and unconcernedly in both directions. There was a "beginning of the work day" atmosphere all about. Though men worked underground here and there was no day or night, yet the old twenty-four-hour schedule held. Mankind brought the familiar rotation of the Earth to all the worlds on which he lived. And though men might work in shifts the clock round, the largest number always worked on the "day shift" from nine to five, Solar Standard Time.

It was nearly nine now, and there was a bustle through the Agrav corridors as men traveled to the work posts. There was a feel of "morning" almost as strong as though there were a sun low in the eastern sky and dew on the grass.

Two men were sitting at the table when Lucky and Bigman entered the conference room. One was Commander Donahue, whose face bore the appearance of a carefully controlled tension. The commander rose and coldly introduced the other: James Panner, the chief engineer and civilian head of the project. Panner was a stocky man with a swarthy face, dark deep-set eyes, and a bull neck. He wore a dark shirt open at the collar and without insignia of any sort.

Lieutenant Nevsky saluted and retired. Commander Donahue watched the door close and said, "Since that leaves the four of us, let's get to business."

"The four of us and a cat," said Lucky, stroking a small creature that hitched its forepaws on the table and stared at him solemnly. "This isn't the same cat I saw yesterday, is it?"

The commander frowned. "Perhaps. Perhaps not. We have a number of cats on the satellite. However, I presume we're not here to discuss pets."

Lucky said, "On the contrary, Commander, I think it will do as a topic of conversation to begin with and I chose it deliberately. Do you remember my own pet, sir?"

"Your little Venusian creature?" said the commander with sudden warmth. "I remember it. It was—" He stopped in confusion as though wondering, in the V-frog's absence, what the reason for his enthusiasm concerning it might be.

"The little Venusian creature," said Lucky, "had peculiar abilities. It could detect emotion. It could transmit emotion. It could even impose emotion."

The commander's eyes opened wide, but Panner said in a husky voice, "I once heard a rumor to that effect, Councilman. I laughed."

"You needn't have. It is true. In fact, Commander Donahue, my purpose in asking for this interview was to make arrangements to have every man on the project interviewed by me in the presence of the V-frog. I wanted an emotional analysis."

The commander still seemed half stunned. "What would that prove?"

"Perhaps nothing. Still, I meant to try it."

Panner intervened. "*Meant* to try it? You use the past tense, Councilman Starr."

Lucky stared solemnly at the two project officials. "My V-frog is dead."

Bigman said furiously, "Killed this morning."

The commander said, "Who killed it?"

"We don't know, Commander."

The commander sat back in his chair. "Then your little investigation is over, I suppose, till the animal can be replaced."

Lucky said, "There will be no waiting. The mere fact of the V-frog's death has told me a great deal, and the matter becomes much more serious."

"What do you mean?"

All stared. Even Bigman looked up at Lucky in profound surprise.

Lucky said, "I told you that the V-frog has the capacity to impose emotion. You yourself, Commander Donahue, experienced that. Do you recall your feelings when you saw the V-frog on my ship yesterday? You were under considerable strain, yet when you saw the V-frog— Do you remember your feelings, sir?"

"I was rather taken with the creature," the commander faltered.

"Can you think why, as you look back at the moment now?"

"No, come to think of it. Ugly creature."

"Yet you liked it. You couldn't help yourself. Could you have harmed it?"

"I suppose not."

"I'm certain you couldn't. No one with emotions could have. Yet someone did. Someone killed it."

Panner said, "Do you intend to explain the paradox?"

"Easily explained. No one *with emotions*. A robot, however, does *not* have emotions. Suppose that somewhere on Jupiter Nine there is a robot, a mechanical man, in the perfect form of a human being?"

"You mean a humanoid?" exploded Commander Donahue. "Impossible. Such things exist only in fairy tales."

Lucky said, "I think, Commander, you are not aware of how skillful the Sirians are in the manufacture of robots. I think they might be able to use some man on Jupiter Nine, some thoroughly loyal man, as model; build a robot in his shape and substitute it for him. Such a humanoid robot could have special senses that would enable it to be the perfect spy. It might, for instance, be able to see in the dark or sense things through thicknesses of matter. It would certainly be able to transmit information through the subether by some built-in device."

The commander shook his head. "Ridiculous. A man could easily have killed the V-frog. A desperate man frightened to an extreme might have overcome this—this mental influence the animal exerted. Have you thought of that?"

"Yes, I have," said Lucky. "But why should a man be so desperate, why so wild to kill a harmless V-frog? The most obvious reason is that the V-frog represented a desperate danger, that it was not harmless at all. The only danger a V-frog might have to the killer would involve the animal's capacity to detect and transmit the killer's emotions. Suppose those emotions would be an immediate giveaway to the fact that the killer was a spy?"

"How could it be?" Panner asked.

Lucky turned to look at him. "What if our killer had no emotions at all? Wouldn't a man without emotions be revealed at once as a robot? . . . Or take it another way altogether. Why kill only the V-frog? Having gotten into our rooms, having risked so much, having found one of us in the shower and one at the intercom and both unsuspecting and unready, why did not the killer kill *us* instead of the V-frog? For that matter, why not kill us *and* the V-frog?"

"No time, probably," said the commander.

"There's another and more plausible reason," said Lucky. "Do

you know the Three Laws of Robotics, the rules of behavior that all robots are built to follow?"

"I know them generally," the commander said. "I can't quote them."

"I can," said Lucky, "and with your permission I will, so that I may make a point. The First Law is this: A robot may not injure a human being or, through inaction, allow a human being to come to harm. The Second Law is: A robot must obey the orders given it by human beings except where such orders would conflict with the First Law. The Third Law is: A robot must protect its own existence as long as such protection does not conflict with the First or Second Law."

Panner nodded. "All right, Councilman, what does that prove?"

"A robot can be ordered to kill the V-frog, which is an animal. It will risk its existence, since self-preservation is only Third Law, to obey orders, which is Second Law. But it cannot be ordered to kill Bigman or myself, since we are humans, and First Law takes precedence over all. A human spy would have killed us and the V-frog; a robot spy would have killed only the V-frog. It all points to the same thing, Commander."

The commander considered that for long minutes, sitting motionless, the lines on his tired face grooving deeper. Then he said, "What do you propose to do? X-ray every man on the project?"

"No," said Lucky at once. "It's not that simple. Successful espionage is going on elsewhere than here. If there is a humanoid robot here, there are probably others elsewhere. It would be well to catch as many of the humanoids as possible; all of them if we can. If we act too eagerly and openly to catch the one under our hands, the others may be snatched away for use at another time."

"Then what *do* you propose doing?"

"To work slowly. Once you suspect a robot, there are ways of making it give itself away without its being aware of it. And I don't start completely from scratch. For instance, Commander, I know you are not a robot, since I detected emotion in you yesterday. In fact, I deliberately induced anger in you to test my V-frog, and for that I ask your pardon."

Donahue's face had gone mauve. "I, a robot?"

"As I said, I used you only to test my V-frog."

Panner said dryly, "You have no reason to feel sure about me, Councilman. I never faced your V-frog."

"That is right," said Lucky. "You are not cleared yet. Remove your shirt."

"What!" cried Panner indignantly. "Why?"

Lucky said mildly, "You have just been cleared. A robot would have had to obey that order."

The commander's fist banged down on his desk. "*Stop it!* This ends right here. I will not have you testing or annoying my men in any way. I have a job to do on this satellite, Councilman Starr; I have an Agrav ship to get into space, and I'm getting it into space. My men have been investigated and they're clear. Your story about a robot is flimsy, and I'm not going along with it.

"I told you yesterday, Starr, that I didn't want you on this Satellite disturbing my men and wrecking their morale. You saw fit yesterday to address me in insulting fashion. You say now it was just to test your animal, which makes it no less insulting. For that reason, I feel no need to co-operate with you and I am not doing so. Let me tell you exactly what I have done.

"I've cut off all communication with Earth. I've put Jupiter Nine under emergency orders. I have the powers of a military dictator now. Do you understand?"

Lucky's eyes narrowed a trifle. "As councilman of the Council of Science, I outrank you."

"How do you intend to enforce your rank? My men will obey me and they have their orders. You will be restrained forcibly if you try in any way, by word or deed, to interfere with my orders."

"And what are your orders?"

"Tomorrow," said Commander Donahue, "at 6 P.M., Solar Standard Time, the first functioning Agrav ship in existence will make its first flight from Jupiter Nine to Jupiter One, the satellite Io. After we're back—*after* we're back, Councilman Starr, and not one hour sooner—you may conduct your investigation. And if you then want to get in touch with Earth and arrange court-martial proceedings, I will be ready for you."

Commander Donahue stared firmly at Lucky Starr.

Lucky said to Panner. "Is the ship ready?"

Panner said, "I think so."

Donahue said scornfully. "We leave tomorrow. Well, Councilman Starr, do you go along with me or will I have to have you arrested?"

The silence that followed was a tense one. Bigman virtually held his breath. The commander's hands were clenching and unclenching, and his nose was white and pinched. Panner slowly fumbled a stick



of gum out of his shirt pocket, stripped it of its plastofoil coating with one hand, and crumpled it into his mouth.

And then Lucky clasped his hands loosely, sat back in his chair, and said, "I'll be glad to co-operate with you, Commander."

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## Blindness

Bigman was at once outraged. "Lucky! Are you going to let him stop the investigation just like that?"

Lucky said, "Not exactly, Bigman. We'll be on board the Agrav ship and we'll continue it there."

"No sir," the commander said flatly, "You will not be on board. Don't think that for an instant."

Lucky said, "Who will be on board, Commander? Yourself, I presume?"

"Myself. Also Panner, as chief engineer. Two of my officers, five other engineers, and five ordinary crewmen. All these were chosen some time ago. Myself and Panner, as responsible heads of the project; the five engineers to handle the ship itself; the remainder in return for their services to the project."

Lucky said thoughtfully, "What type of service?"

Panner interrupted to say, "The best example of what the commander is talking about is Harry Norrich, who—"

Bigman stiffened in surprise. "You mean the blind fellow?"

Panner said, "You know him then?"

"We met him last evening," said Lucky.

"Well," said Panner, "Norrich was here at the very beginning of the project. He lost his sight when he threw himself between two contacts to keep a force field from buckling. He was in the hospital five months and his eyes were the one part of him that couldn't be restored. By his act of bravery, he kept the satellite from having a chunk the size of a mountain blown out of it. He saved the lives of two hundred people *and* he saved the project, since a major accident at the beginning might have made it impossible to get further appro-

priations out of Congress. That sort of thing is what earns one the honor of a place on the maiden voyage of the Agrav ship."

"It's a shame he won't be able to see Jupiter up close," said Bigman. Then, his eyes narrowing, "How'll he get around on board ship?"

Panner said, "We'll be taking Mutt, I'm sure. He's a well-behaved dog."

"That's all I want to know then," said Bigman heatedly. "If you cobbers can take a dog, you can take Lucky and me."

Commander Donahue was looking at his wristwatch impatiently. Now he put the palms of his hands flat on the table and made as though to rise. "We have finished our business then, gentlemen."

"Not quite," Lucky said. "There's one little point to be cleared up. Bigman puts it crudely, but he's quite right. He and I will be on the Agrav ship when it leaves."

"No," said Commander Donahue. "Impossible."

"Is the added mass of two individuals too great for the ship to handle?"

Panner laughed. "We could move a mountain."

"Do you lack room then?"

The commander stared at Lucky in hard displeasure. "I will not give any reason. You are not being taken only because it is my decision that you not be taken. Is that clear?"

There was a glint of satisfaction in his eyes, and Lucky did not find it hard to guess that he was squaring accounts for the tongue-lashing Lucky had given him aboard the *Lucky Starr*.

Lucky said quietly, "You had better take us, Commander."

Donahue smiled sardonically. "Why? Am I to be relieved of duty at the orders of the Council of Science? You won't be able to communicate with Earth till I return, and after that they can relieve me of duty if they wish."

"I don't think you've thought it through, Commander," said Lucky. "They might relieve you of duty retroactive to this moment. In fact, I assure you they will do so. As far as the government records are concerned, then, it will appear that Agrav ship made its first flight not under your command but under the command, officially, of your successor, whoever he might be. The records of the trip might even be adjusted to show, officially, that you were not on board."

Commander Donahue went white. He rose and for a moment seemed on the point of throwing himself bodily at Lucky.

Lucky said, "Your decision, Commander?"

Donahue's voice was most unnatural when it finally came. "You may come."

Lucky spent the remainder of the day in the record rooms, studying the files on various men employed on the project, while Bigman, under Panner's guidance, was taken from laboratory to laboratory and through tremendous testing rooms.

It was only after the evening meal when they returned to quarters that they had a chance to be alone together. Lucky's silence then was not extraordinary, since the young councilman was never talkative at the best of times, but there was a small crease between his eyes that Bigman recognized as a sure sign of concern.

Bigman said, "We aren't making any progress, are we, Lucky?"

Lucky shook his head, "Nothing startling, I'll admit."

He had brought a book-film with him from the project's library, and Bigman caught a flash of its title: *Advanced Robotics*. Methodically Lucky threaded the beginnings of the film through the viewer.

Bigman stirred restlessly. "Are you going to be all tied up with that film, Lucky?"

"I'm afraid so, Bigman."

"Do you mind then if I visit Norrich next door for company?"

"Go ahead." Lucky had the viewer over his eyes and he was leaning back, his arms crossed loosely across his chest.

Bigman closed the door and remained standing just outside for a moment, a little nervous. He should discuss this with Lucky first, he knew he should, and yet the temptation . . .

He told himself: I'm not going to do anything. I'll just check something. If I'm wrong, I'm wrong and why bother Lucky? But if it checks out, then I'll *really* have something to tell him.

The door opened at once when he rang, and there was Norrich, blind eyes fixed in the direction of the doorway, seated before a desk on which a checkerboard design carried odd figures.

He said, "Yes?"

"This is Bigman," said the little Martian.

"Bigman! Come in. Sit down. Is Councilman Starr with you?"

The door closed again, and Bigman looked about in the brightly lit room. His mouth tightened. "He's busy. But as for me, I'm filled up on Agrav today. Dr. Panner took me all over, only I don't understand a thing of it hardly."

Norrich smiled. "You're not exactly in a minority, but if you ignore the mathematics, some of it isn't too hard to understand."

"No? Mind explaining it then?" Bigman sat down in a large chair

and bent to look under Norrich's workbench. Mutt lay there with his head between his forepaws and one eye brightly fixed on Bigman.

(Keep him talking, thought Bigman. Keep him talking till I find a hole, or make one.)

"Look here," Norrich said. He held up one of the round counters he had been holding. "Gravity is a form of energy. An object such as this piece I'm holding which is under the influence of a gravitational field but is not allowed to move is said to have potential energy. If I were to release the piece, that potential energy would be converted to motion—or kinetic energy, as it is called. Since it continues under the influence of the gravitational field as it falls, it falls faster and faster and faster." He dropped the counter at this point, and it fell.

"Until, splash," said Bigman. The counter hit the floor and rolled. Norrich bent as though to retrieve it and then said, "Would you get it for me, Bigman? I'm not sure where it rolled."

Bigman suppressed his disappointment. He picked it up and returned it.

Norrich said, "Now until recently that was the only thing that could be done with potential energy: it could be converted into kinetic energy. Of course the kinetic energy could be used further. For instance, the falling water of Niagara Falls could be used to form electricity, but that's a different thing. In space, gravity results in motion and that ends it.

"Consider the Jovian system of moons. We're at Jupiter Nine, way out. Fifteen million miles out. With respect to Jupiter, we've got a tremendous quantity of potential energy. If we try to travel to Jupiter One, the satellite Io, which is only 285,000 miles from Jupiter, we are, in a way, falling all those millions of miles. We pick up tremendous speeds which we must continually counteract by pushing in the opposite direction with a hyperatomic motor. It takes enormous energy. Then, if we miss our mark by a bit, we're in constant danger of continuing to fall, in which case there's only one place to go, and that's Jupiter—and Jupiter is instant death. *Then*, even if we land safely on Io, there's the problem of getting back to Jupiter Nine, which means lifting ourselves all those millions of miles against Jupiter's gravity. The amount of energy required to maneuver among Jupiter's moons is just prohibitive."

"And Agrav?" asked Bigman.

"Ah! Now that's a different thing. Once you use an Agrav converter, potential energy can be converted into forms of energy *other* than kinetic energy. In the Agrav corridor, for instance, the

force of gravity in one direction is used to charge the gravitational field in the other direction as you fall. People falling in one direction provide the energy for people falling in the other. By bleeding off the energy that way, you yourself, while falling, need never speed up. You can fall at any velocity less than the natural falling velocity. You see?"

Bigman wasn't quite sure he did but he said, "Go on."

"In space it's different. There's no second gravitational field to shift the energy to. Instead, it is converted to hyperatomic field energy and stored so. By doing this, a space ship can drop from Jupiter Nine to Io at any speed less than the natural falling speed without having to use any energy to decelerate. Virtually no energy is expended except in the final adjustment to Io's orbital speed. And safety is complete, since the ship is always under perfect control. Jupiter's gravity could be completely blanketed, if necessary.

"Going back to Jupiter Nine still requires energy. There is no getting around that. But now you can use the energy you had previously stored in the hyperatomic field condenser to get you back. The energy of Jupiter's own gravitational field is used to kick you back."

Bigman said, "It sounds good." He squirmed in his seat. He wasn't getting anywhere. Suddenly he said, "What's that you're fooling with on your desk?"

"Chess," said Norrich. "Do you play?"

"A little," Bigman confessed. "Lucky taught me, but it's no fun playing with him. He always wins." Then he asked, offhand, "How can *you* play chess?"

"You mean because I'm blind?"

"Uh—"

"It's all right. I'm not sensitive about being blind. . . . It's easy enough to explain. This board is magnetized and the pieces are made of a light magnetic alloy so that they stick where they're put and don't go tumbling if I move my arm about carelessly. Here, try it, Bigman."

Bigman reached for one of the pieces. It came up as though stuck in syrup for a quarter of an inch or so, then was free.

"And you see," said Norrich, "they're not ordinary chess pieces."

"More like checkers," grunted Bigman.

"Again so I don't knock them over. They're not completely flat, though. They've got raised designs which I can identify easily enough by touch and which resemble the ordinary pieces closely enough so

that other people can learn them in a moment and play with me. See for yourself."

Bigman had no trouble. The circle of raised points was obviously the queen, while the little cross in the center of another piece signified the king. The pieces with grooves slanting across were the bishops, the raised circle of squares the rooks, and pointed horse's ears the knights, and the simple round knobs the pawns.

Bigman felt stymied. He said, "What are you doing now? Playing a game by yourself?"

"No, solving a problem. The pieces are arranged just so, you see, and there's one way and only one in which white can win the game in exactly three moves and I'm trying to find that way."

Bigman said suddenly, "How can you tell white from black?"

Norrich laughed. "If you'll look closely, you'll see the white pieces are grooved along the rims and the black pieces aren't."

"Oh. Then you have to remember where all the pieces are, don't you?"

"That's not hard," Norrich said. "It sounds as though you would need a photographic memory, but actually all I have to do is pass my hand over the board and check the pieces any time. You'll notice the squares are marked off by little grooves, too."

Bigman found himself breathing hard. He had forgotten about the squares on the checkerboard, and they *were* grooved off. He felt as though he were playing a kind of chess game of his own, one in which he was being badly beaten.

"Mind if I watch?" he said sharply. "Maybe I can figure out the right moves."

"By all means," said Norrich. "I wish you could. I've been at this for half an hour and I'm getting frustrated."

There was silence for a minute or more, and then Bigman rose, his body tense and catlike in its effort to make no noise. He drew a small flashlight from one pocket and stepped toward the wall in little motions. Norrich never moved from his bowed position over the chessboard. Bigman threw a quick glance toward Mut, but the dog made no move, either.

Bigman reached the wall and, hardly breathing, put one hand lightly and noiselessly over the light patch. At once, the light in the room went out and a profound darkness rested everywhere.

Bigman remembered the direction in which Norrich's chair was. He raised the flashlight.

He heard a muted thump and then Norrich's voice calling out in

surprise and a little displeasure, "Why did you put out the light, Bigman?"

"That does it," yelled Bigman in triumph. He let the flashlight's beam shine full on Norrich's broad face. "You're not blind at all, you spy."



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## The Agrav Ship

Norrich cried out, "I don't know what you're doing, but Space, man, don't do anything sudden or Mutt will jump you!"

"You know exactly what I'm doing," said Bigman, "because you can see well enough I'm drawing my needle-gun, and I think you've heard I'm a dead shot. If your dog moves in my direction, it's the end for him."

"Don't hurt Mutt. Please!"

Bigman was taken aback by the sudden anguish in the other's voice. He said, "Just keep him quiet then and come with me and no one will be hurt. We'll go see Lucky. And if we pass anyone in the corridor, don't you say anything but 'Good day.' I'll be right beside you, you know."

Norrich said, "I can't go without Mutt."

"Sure you can," said Bigman. "It's only five steps down the corridor. Even if you were really blind, you could manage that—a fellow who can do threedees and all."

Lucky lifted the viewer from his head at the sound of the door opening and said, "Good day, Norrich. Where's Mutt?"

Bigman spoke before the other had a chance to answer. "Mutt's in Norrich's room, and Norrich doesn't need him. Sands of Mars. Lucky, Norrich isn't any blinder than we are!"

"What?"

Norrich began, "Your friend is quite mistaken, Mr. Starr. I want to say—"

Bigman snapped. "Quiet, you! I'll talk, and then when you're invited, you can make some remarks."

Lucky folded his arms. "If you don't mind, Mr. Norrich, I'd like to hear what Bigman has on his mind. And meanwhile, Bigman, suppose you put away the needle-gun."

Bigman did so with a grimace. He said, "Look, Lucky, I suspected this clobber from the beginning. Those threedee puzzles of his set me to thinking. He was just a little too good. I got to wondering right away that he might be the spy."

"That's the second time you've called me a spy," Norrich cried. "I won't stand for that."

"Look, Lucky," said Bigman, ignoring Norrich's outcry, "it would be a clever move to have a spy a supposed blind man. He could see an awful lot no one would think he was seeing. People wouldn't cover up. They wouldn't hide things. He could be staring right at some vital document and they'd think, 'It's only poor Norrich. He can't see.' More likely they wouldn't give it a thought at all. Sands of Mars, it would be a perfect setup!"

Norrich was looking more astonished with every moment. "But *I am* blind. If it's the threedee puzzles or the chess, I've explained—"

"Oh, sure, you've explained," Bigman said scornfully. "You've been practicing explanations for years. How come you sit in the privacy of your room with the lights on, though? When I walked in, Lucky, about half an hour ago, the light was on. He hadn't just put it on for me. The switch was too far away from where he was sitting. Why?"

"Why not?" said Norrich. "It makes no difference to me whether it's on or not, so it might as well be on as long as I'm awake for the convenience of those who come visiting, like you."

"All right," said Bigman. "That shows how he can think up an explanation for everything—how he can play chess, how he can identify the pieces, everything. Once he almost forgot himself. He dropped one of his chess pieces and bent to pick it up when he remembered just in time and asked me to do it for him."

"Usually," said Norrich, "I can tell where something drops by the sound. This piece rolled."

"Go on, explain," said Bigman. "It won't help you because there's one thing you *can't* explain. Lucky, I was going to test him. I was going to put out the light, then flash my pocketlight in his eyes at full intensity. If he weren't blind, he'd be bound to jump or blink his eyes anyway. I was sure I'd get him. But I didn't even have to go that far. As soon as I put out the light, the poor clobber forgets himself and says, 'Why did you put out the light?' . . . How did he know I put out the light, Lucky? *How did he know?*"

"But—" Norrich began.

Bigman drove on. "He can feel chess pieces and threedee puzzles and all that but he can't feel light going out. He had to *see* that."

Lucky said, "I think it's time to let Mr. Norrich say something."

Norrich said, "Thank you. I may be blind, Councilman, but my dog is not. When I put out the light at night, it makes no difference to me, as I said before, but to Mutt it signals bedtime and he goes to his own corner. Now I heard Bigman tiptoe to the wall in the direction of the light switch. He was trying to move without sound, but a man who has been blind for five years can hear the lightest tiptoe. A moment after he stopped walking I heard Mutt jump into his corner. It didn't take much brain power to figure out what had happened. Bigman was standing at the light switch and Mutt was turning in for the night. Obviously he had put out the light."

The engineer turned his slightless face in the direction first of Bigman, then of Lucky, as though straining his ears for an answer.

Lucky said, "Yes, I see. It seems we owe you an apology."

Bigman's gnomelike face screwed up unhappily. "But Lucky—"

Lucky shook his head. "Let go, Bigman! Never hang on to a theory after it's been exploded. I hope you understand, Mr. Norrich, that Bigman was only doing what he felt to be his duty."

"I wish he had asked a few questions before acting," said Norrich, coldly, "Now may I go? Do you mind?"

"You may go. As an official request, however, please make no mention of what has occurred to anyone. That's quite important."

Norrich said, "It comes under the heading of false arrest, I imagine, but we'll let it go. I won't mention this." He walked to the door, reached the signal patch with a minimum of fumbling, and walked out.

Bigman turned almost at once to Lucky. "It was a trick. You shouldn't have let him go."

Lucky rested his chin on the palm of his right hand, and his calm, brown eyes were thoughtful. "No, Bigman, he isn't the man we're after."

"But he's *got* to be, Lucky. Even if he's blind, *really* blind, it's an argument against him. Sure, Lucky," Bigman grew excited again, his small hands clumping into fists, "he could get close to the V-frog without seeing it. He could kill it."

Lucky shook his head, "No, Bigman. The V-frog's mental influence doesn't depend on its being seen. It's direct mental contact. That's the one fact we can't get around." He said slowly, "It had to be a robot who did that. It had to be, and Norrich is no robot."

“Well, how do you know he—?” But Bigman stopped.

“I see you’ve answered your own question. We sensed his emotion during our first meeting, when the V-frog was still with us. He has emotions, so he’s not the robot and he’s not the man we’re looking for.”

But even as he said so, there was a look of deep trouble on his face and he tossed the book-film on advanced robotics to one side as though despairing of help from it.

The first Agrav ship ever to be built was named *Jovian Moon* and it was not like any ship Lucky had ever seen. It was large enough to be a luxury liner of space, but the crew and passenger quarters were abnormally crowded forward, since nine tenths of the ship’s volume consisted of the Agrav converter and the hyperatomic force-field condensers. From the midsection, curved vanes, ridged into a vague resemblance to bat’s wings, extended on either side. Five to one side, five to the other, ten in all.

Lucky had been told that these vanes, in cutting the lines of force of the gravitational field, converted the gravity into hyperatomic energy. It was as prosaic as that, and yet they gave the ship an almost sinister appearance.

The ship rested now in a gigantic pit dug into Jupiter Nine. The lid, of reinforced concrete, had been retracted, and the whole area was under normal Jupiter Nine gravity and exposed to the normal airlessness of Jupiter Nine’s surface.

Nevertheless the entire personnel of the project, nearly a thousand men, were gathered in this natural amphitheater. Lucky had never seen so many men in space suits at one time. There was a certain natural excitement because of the occasion; a certain almost hysterical restlessness that manifested itself in horseplay made possible by the low gravity.

Lucky thought grimly: And one of those men in space suits is no man at all.

But which one? And how could he tell?

Commander Donahue made his short speech of dedication to a group of men grown silent, impressed despite themselves; while Lucky, looking up at Jupiter, glanced at a small object near it that was not a star but a tiny sliver of light, curved like the paring of a small fingernail, almost too small for the curve to be seen. If there had been any air in the way, instead of Jupiter Nine’s airless vacuum, that small curve would have been blurred into a formless spot of light.

Lucky knew the tiny crescent to be Ganymede, Jupiter Three, Jupiter's largest satellite and worthy moon of the giant planet. It was nearly three times the size of Earth's moon; it was larger than the planet Mercury. It was almost as large as Mars. With the Agrav fleet completed, Ganymede would quickly become a major world of the solar system.

Commander Donahue christened the ship at last in a voice husky with emotion, and then the assembled audience, in groups of five and six, entered the air-filled interior of the satellite through the various locks.

Only those who were to be aboard the *Jovian Moon* remained. One by one they climbed the ramp to the entrance lock, Commander Donahue first.

Lucky and Bigman were last to board. Commander Donahue turned away from the air lock as they entered, stiffly unfriendly.

Bigman leaned toward Lucky, to say tightly, "Did you notice, Lucky, that Red Summers is on board?"

"I know."

"He's the cobbler who tried to kill you."

"I know, Bigman."

The ship was lifting now in what was at first a majestic creep. The surface gravity of Jupiter Nine was only one eightieth of Earth, and though the weight of the ship was still in the hundreds of tons, that was not the cause of the initial slowness. Even were gravity absent altogether, the ship would still retain its full content of matter and all the inertia that went with it. It would still be just as hard to put all that matter into motion, or, if it came to that, to stop it or change its direction of travel, once it had begun moving.

But first slowly, then more and more rapidly, the pit was left behind. Jupiter Nine shrank beneath them and became visible in the visiplates as a rugged gray rock. The constellations powdered the black sky and Jupiter was a bright marble.

James Panner approached them and placed an arm on the shoulder of each man. "Would you two gentlemen care to join me in my cabin for a meal? There'll be nothing to watch here in the viewing room for a while." His wide mouth pulled back in a grin that swelled the cords of his thick neck and made it seem no neck at all but a mere continuation of head.

"Thank you," Lucky said. "It's kind of you to invite us."

"Well," said Panner, "the commander isn't going to and the men

are a little leery of you, too. I don't want you to get too lonely. It will be a long trip."

"Aren't you leery of me, Dr. Panner?" Lucky asked dryly.

"Of course not. You tested me, remember, and I passed."

Panner's cabin was a small one in which the three barely fitted. It was obvious that the quarters in this, the first Agrav ship, were as cramped as engineering ingenuity could make them. Panner broke out three cans of ship-ration, the concentrated food that was universally eaten on space ships. It was almost home to Lucky and Bigman; the smell of heating rations, the feeling of crowding walls, outside of which was the infinite emptiness of space, and, sounding through those walls, the steady vibrating hum of hyperatomic motors converting field energies into a directional thrust or, at the very least, powering the energy-consuming innards of the ship.

If ever the ancient belief of the "music of the spheres" could be said to have come literally true, it was in that hum of hyperatomics that was the very essential of space flight.

Panner said, "We're past Jupiter Nine's escape velocity now, which means we can coast without danger of falling back to its surface."

Lucky said, "That means we're in free fall down to Jupiter."

"With fifteen million miles to fall, yes. Once we've piled up enough velocity to make it worthwhile, we'll shift to Agrav."

He took a watch out of his pocket as he spoke. It was a large disc of gleaming, featureless metal. He pressed a small catch, and luminous figures appeared upon its face. A glowing line of white encircled it, turning red in a sweeping arc until the redness closed in upon itself and the arc turned white again.

Lucky said, "Are we scheduled to enter Agrav so soon?"

"Not very long," said Panner. He placed the watch on the table, and they ate silently.

Panner lifted the watch again. "A little under a minute. It should be completely automatic." Although the chief engineer spoke calmly enough, the hand that held the watch trembled very slightly.

Panner said, "Now," and there was silence. Complete silence.

The hum of the hyperatomics had stopped. The very power to keep the ship's lights on and its pseudo-gray field in operation were now coming from Jupiter's gravitational field.

Panner said, "On the nose! Perfect!" He put away his watch, and though the smile on his broad, homely face was a restrained one, it

virtually shouted relief. "We're actually on an Agrav ship now in full Agrav operation."

Lucky was smiling, too. "Congratulations. I'm pleased to be on board."

"I imagine you are. You worked hard enough for it. Poor Don-ahue."

Lucky said gravely, "I'm sorry I had to push the commander so hard, but I had no choice. One way or another, I had to be on board."

Panner's eyes narrowed at the sudden gravity in Lucky's voice. "Had to be?"

"Had to be! It seems almost certain to me that on board this ship at the present moment is the spy we're looking for."

# 10

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## In the Vitals of the Ship

Panner stared blankly. Then, "Why?"

"The Sirians would certainly want to know how the ship actually worked. If their method of spying is foolproof, as it has been till now, why not continue it on board the ship?"

"What you're saying, then, is that one of the fourteen men on board the *Jovian Moon* is a robot?"

"That is exactly what I mean."

"But the men aboard ship have been chosen long since."

"The Sirians would know the reasons for choosing and the method of choice just as they know everything else about the project and they would maneuver their humanoid robot so as to have him chosen."

"That's giving them a lot of credit," muttered Panner.

"I admit it," said Lucky. "There is an alternative."

"Which is?"

"That the humanoid robot is aboard as a stowaway."

"Very unlikely," said Panner.

"But quite possible. It might easily have boarded the ship in the confusion before the commander made his christening speech. I tried to watch the ship then, but it was impossible. Furthermore, nine tenths of the ship seems to be made up of engine compartment, so there must be plenty of room to hide."

Panner thought about it. "Not as much room as you might think."

"Still we must search the ship. Will you do that, Dr. Panner?"

"I?"

"Certainly. As chief engineer, you would know the contents of the engine compartment better than anyone else. We'll go with you."



"Wait. It's a fool's errand."

"If there is no stowaway, Dr. Panner, we have still gained something. We'll know we can restrict our consideration to the men legally aboard ship."

"Just three of us?"

Lucky said quietly, "Whom can we trust to help us, when anyone we might ask might be the robot we're looking for? Let us not discuss this any further, Dr. Panner. Are you willing to help us search the ship? I am asking your help in my capacity as a member of the Council of Science."

Reluctantly Panner got to his feet. "I suppose I must then."

They clambered down the hand holds of the narrow shaft leading to the first engine level. The light was subdued and, naturally, indirect, so that the huge structures on either side cast no shadow.

There was no sound, no slightest hum to indicate activity or to show that vast forces were being trapped and dealt with. Bigman, looking about, was appalled to find that nothing seemed familiar; that of the ordinary workings of a space ship, such as that of their own *Shooting Starr*, nothing seemed left.

"Everything's closed in," he said.

Panner nodded and said in a low voice, "Everything is as automatic as possible. The need for human intervention has been cut to the minimum."

"What about repairs?"

"There shouldn't have to be any," the engineer said grimly. "We have alternate circuits and duplicated equipment at every step, all allowing for automatic cut-in after self-check."

Panner moved ahead, guiding them through the narrow openings but moving always slowly as though at any moment he expected someone, or some thing, to hurl itself murderously upon them.

Level by level, methodically moving out from the central shaft along the side channels, Panner probed each bit of room with the sureness of the expert.

Eventually they came to a halt at the very bottom, hard against the large tail jets through which the glowing hyperatomic forces (when the ship was in ordinary flight) pressed backward to push the ship forward.

From within the ship the test jets showed as four smooth pipes, each twice as thick as a man, burrowing into the ship and ending in the tremendous featureless structures that housed the hyperatomic motors.

Bigman said, "Hey, the jets! Inside!"

"No," said Panner.

"Why not? A robot could hide there fine. It's open space, but what's that to a robot?"

"Hyperatomic thrusts," said Lucky, "would be plenty to it and there've been a number of those till an hour ago. No, the jets are out."

"Well, then," said Panner, "there's no one anywhere in the engine compartments. No thing, either."

"You're sure?"

"Yes. There isn't a place we haven't looked, and the route I followed made it impossible for anything to get around and behind us."

Their voices made small echoes in the lengths of shafts behind them.

Bigman said, "Sands of Mars, that leaves us with the fourteen regulars."

Lucky said thoughtfully, "Less than that. Three of the men aboard ship showed emotion: Commander Donahue, Harry Norrich, Red Summers. That leaves eleven."

Panner said, "Don't forget me. I disobeyed an order. That leaves ten."

"That raises an interesting point," said Lucky. "Do you know anything about robotics?"

"I?" said Panner. "Never dealt with a robot in my life."

"Exactly," said Lucky. "Earthmen invented the positronic robot and developed most of the refinements, yet, except for a few specialists, the Earth technician knows nothing about robotics, simply because we don't use robots to any extent. It isn't taught in the schools and it doesn't come up in practice. I myself know the Three Laws and not too much more. Commander Donahue couldn't even quote the Three Laws. The Sirians, on the other hand, with a robot-saturated economy, must be past masters at all the subtleties of robotics."

"Now I spent a good deal of time yesterday and today with a book-film on advanced robotics that I found in the project library. It was the only book on the subject, by the way."

"So?" said Panner.

"It became obvious to me that the Three Laws aren't as simple as one might think. . . . Let us move on, by the way. We can give the engine levels a double check on the way back." He was moving

across this lowest level as he spoke, looking with keen interest at his surroundings.

Lucky continued, "For instance, I might think it would only be necessary to give each man on the ship a ridiculous order and note whether it be obeyed. As a matter of fact, I did think so. But that isn't necessarily true. It is theoretically possible to adjust the positronic brain of a robot to obey only those orders that belong naturally to the line of its duties. Orders that are contrary to those duties or irrelevant to them may still be obeyed provided that they are preceded by certain words which act as a code or by the person who gives the orders identifying himself in a certain way. In this manner a robot can be handled in all ways by its proper overseers and yet be insensitive to strangers."

Panner, who had placed his hands on the holds that would guide the men up to the next higher level, released them. He turned to face Lucky.

He said, "You mean when you told me to take off my shirt and I didn't obey, that meant nothing?"

"I say it could have meant nothing, Dr. Panner, since taking off your shirt at that moment was no part of your regular duties, and my order might not have been stated in the proper form."

"Then you're accusing me of being a robot?"

"No. It isn't likely that you are. The Sirians, in choosing some member of the project to replace by a robot, would scarcely choose the chief engineer. For the robot to do that job properly, it would have to know so much about Agrav that the Sirians couldn't supply the knowledge. Or, if they could, they would have no need to spy."

"Thanks," said Panner, sourly, turning toward the hand holds again, but now Bigman's voice rang out.

"Hold it, Panner!" The small Martian had his ready needle-gun in his fist. He said, "Wait a minute, Lucky, how do we know he knows anything about Agrav? We're just assuming that. He never showed us any knowledge. When the *Jovian Moon* shifted to Agrav, where was he? Sitting on his squatter in his quarters with us, that's where he was."

Lucky said, "I thought of that, too, Bigman, and that's one reason I brought Panner down here. He's obviously acquainted with the engines. I've watched him inspect everything and he couldn't have done it with such assurance if he weren't an expert on the workings."

"Does that suit you, Martian?" Panner demanded with suppressed anger.

Bigman put his needle-gun away, and without a further word Panner scrambled up the ladder.

They stopped off at the next level, working through it a second time.

Panner said, "All right, that leaves ten men: two army officers, four engineers, four workmen. What do you propose to do? X-ray each of them separately? Something like that?"

Lucky shook his head. "That's too risky. Apparently the Sirians have been known to use a cute little trick to protect themselves. They've been known to use robots to carry messages or to perform tasks which the individual giving the orders wanted to be kept secret. Now obviously a robot can't keep a secret if a human being asks him, in the proper fashion, to reveal it. What the Sirians do, then, is to install an explosive device in the robot which is triggered by any attempt to force the robot to give away the secret."

"You mean if you put an X-ray on the robot, it will explode?"

"There's a very good chance that it would. Its greatest secret is its identity, and it may be triggered for every attempt to discover that identity that the Sirians could think of." Lucky added regretfully, "They hadn't counted on a V-frog; there was no trigger against that. They had to order the robot to kill the V-frog directly. Or that might have been preferable anyway, since it managed to keep the robot alive undetected."

"Wouldn't the robot be harming humans nearby if it exploded? Wouldn't it be breaking First Law?" asked Panner with a trace of sarcasm.

"It wouldn't. It would have no control over the explosion. The triggering would be the result of the sound of a certain question or the sight of a certain action, not the result of anything the robot itself would do."

They crawled up to still another level.

"Then what do you expect to do, Councilman?" demanded Panner.

"I don't know," Lucky said frankly. "The robot must be made to give itself away somehow. The Three Laws, however modified and fancified, *must* apply. It's only a question of being sufficiently acquainted with robotics to know how to take advantage of those Laws. If I knew how to force the robot into some action that would show it to be non-human without activating any explosive device with which it might be equipped; if I could manipulate the Three Laws so as to force one to conflict with another sufficiently strongly to paralyze the creature completely; if I—"

Panner broke in impatiently, "Well, if you expect help from me, Councilman, it's no use. I've told you already I know nothing of robotics." He whirled suddenly. "What's that?"

Bigman looked about, too. "I didn't hear anything."

Wordlessly Panner squeezed past them, dwarfed by the bending metal tube on either side.

He had gone almost as far as he could, the other two following, when he muttered, "Someone might have squeezed in among the rectifiers. Let me pass again."

Lucky stared, frowning, into what was almost a forest of twisting cables that enclosed them in a complete dead end.

Lucky said, "It seems clear to me."

"We can test it for sure," Panner said tightly. He had opened a panel in the wall nearby and now he reached in cautiously, looking over his shoulder.

"Don't move," he said.

Bigman said testily, "Nothing's happened. There's nothing there."

Panner relaxed. "I know it. I asked you not to move because I didn't want to slice an arm off when I established the force field."

"What force field?"

"I've shorted a force field right across the corridor. You can't move out of there any more than you could if you were encased in solid steel three feet thick."

Bigman yelled, "Sands of Mars, Lucky, he *is* the robot!" His hand lunged.

Panner cried at once, "Don't try the needle-gun. Kill me and how do you ever get out?" He stared at them, dark eyes sparking, his broad shoulders hunched. "Remember, energy can get through a force field but matter can't, not even air molecules. You're airtight in there. Kill me and you'll suffocate long before anyone happens to come across you down here."

"I said he was the robot," said Bigman in raging despair.

Panner laughed shortly, "You're wrong. I'm not a robot. But if there *is* one, I know who it is."

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## Down the Line of Moons

“Who?” Bigman demanded at once.

But it was Lucky who answered. “Obviously he thinks it’s one of us.”

“Thanks!” said Panner. “How would *you* explain it? You mentioned stowaways; you talked about people forcing their way on board the *Jovian Moon*. Talk about nerve! Aren’t there two people who did force their way on board? Didn’t I witness the process? *You two!*”

“True enough,” said Lucky.

“And you brought me down here so you could investigate every inch of the ship’s workings. You tried to keep me busy with stories about robots hoping I wouldn’t notice that you two were going over the whole ship with a microscope.”

Bigman said, “We have a right to do it. This is Lucky Starr!”

“He *says* he’s Lucky Starr. If he’s a member of the Council of Science, he can prove it and he knows how. If I had any brains, I’d have demanded identification before taking you down.”

“It’s not too late now,” Lucky said calmly. “Can you see clearly from that distance?” He held up one arm, palm forward, and peeled the sleeve back.

“I’m not coming any closer,” Panner said angrily.

Lucky said nothing to that. He let his wrist tell the story. The skin along the inner surface of his wrist seemed merely exposed skin, but years before it had been treated hormonally in a most complicated fashion. Responding to nothing more than a disciplined effort of Lucky’s will, an oval spot on the wrist darkened and slowly turned

black. Within it, little yellow specks formed in the familiar patterns of the Big Dipper and of Orion.

Panner gasped as though the breath had been forcibly knocked out of his lungs. Few human beings had the occasion to see this sign of the Council, but all above the age of childhood knew it for what it was—the final and unforgeable identification insigne of the councilman of science.

Panner was left with no choice. Silently, reluctantly, he released the force field and stepped back.

Bigman came out, raging, "I ought to bend in your skull, you lopsided—"

Lucky pulled him back. "Forget it, Bigman. The man had as much right to suspect us as we had to suspect him. Settle down."

Panner shrugged. "It seemed logical."

"I admit it did. I think we can trust each other now."

"You, maybe," the chief engineer said pointedly. "You're identified. What about this little loudmouth with you? Who identifies him?"

Bigman squawked incoherently and Lucky stepped in between the two. "I identify him and take full responsibility for him. . . . Now I propose that we get back to passenger quarters before a search is organized for us. Everything that went on down here is, of course, strictly confidential."

Then, as though nothing had happened, they resumed the climb upward.

The room assigned to them contained a two-decker bed and a washstand out of which a small trickle of water could be urged. Nothing more. Even the cramped and Spartan quarters on board the *Shooting Starr* were luxury to this.

Bigman sat cross-legged on the upper bed, while Lucky sponged his neck and shoulders. They talked in whispers, conscious of the listening ears that might be present on the other side of the walls.

Bigman said, "Look, Lucky, suppose I go up to each person on board ship; I mean, each of the ten we don't know about? Suppose I deliberately pick a fight with each one, call them a few names, things like that? Wouldn't it turn out that the guy who doesn't take a punch at me is the robot?"

"Not at all. He might not want to break shipboard discipline, or he might know what a handy fellow you are with a needle-gun, or he might not want to get into a wrangle with the Council of Science, or he might just not like to hit a man smaller than himself."

"Aw, come on, Lucky." Bigman was silent for a minute, then he said cautiously, "I've been thinking: how can you be *sure* the robot is aboard ship? I keep thinking maybe it stayed back on Jupiter Nine. It's possible."

"I know it's possible and yet I'm sure the robot is here on board ship. That's just it. I'm sure and I don't know why I'm sure," said Lucky, his eyes dark with thought. He leaned against the bed and tapped his teeth with the knuckle of one finger. "That first day we landed on Jupiter Nine, something happened."

"What?"

"If I only knew! I had it; I knew what it was, or thought I did, just before I went to sleep that night, and it vanished. I haven't been able to get it back. If I were on Earth, I'd submit to a psycho-probe. Great Galaxy, I swear I would!"

"I've tried every trick I could. Thinking hard, getting my mind off it altogether. When we were with Panner down in the engine levels, I tried talking my fool head off. I thought if I would just keep discussing every aspect of the matter, the thought was bound to pop into my head. It didn't.

"But it's there just the same. It's because of the thought that I must feel so sure the robot is one of the men aboard ship. I've made the subconscious deduction. If I could only put my finger on it, I'd have the whole answer. If I could only put my finger on it."

He sounded almost despairing.

Bigman had never seen Lucky with quite that look of frustrated loss in his face. He said, worried, "Hey, we'd better get some sleep."

"Yes, we'd better."

Minutes later, in the darkness, Bigman whispered, "Hey, Lucky, what makes you so sure I'm not the robot myself?"

Lucky whispered back, "Because the Sirians couldn't bear to build a robot with such an ugly face," and lifted his elbow to ward off a flying pillow.

The days passed. Halfway to Jupiter, they passed the inner and more sparsely populated belt of small moons, of which only Six, Seven, and Ten were numbered. Jupiter Seven was visible as a bright star, but the others were far enough away to melt into the background of the constellations.

Jupiter itself had grown to the size of the moon as seen from Earth. And because the ship was approaching the planet with the sun squarely to its rear, Jupiter remained in the "full" phase. Its entire



visible surface was ablaze with sunlight. There was no shadow of night advancing across it.

Yet though the size of the moon, it was not so bright as the moon by any means. Its cloud-decked surface reflected eight times as much of the light that reached it, as did the bare powdered rock of the moon. The trouble was that Jupiter only received one twenty-seventh of the light per square mile that the moon did. The result was that it was only one third as bright at that moment as the moon appeared to be to human beings on Earth.

Yet it was more spectacular than the moon. Its belts had become quite distinct, brownish streaks with soft fuzzy edges against a creamy-white background. It was even easy to make out the flattened straw-colored oval that was the Great Red Spot as it appeared at one edge, crossed the face of the planet, then disappeared at the other.

Bigman said, "Hey, Lucky, Jupiter looks as though it isn't really round. Is that just an optical illusion?"

"Not at all," said Lucky. "Jupiter *really* isn't round. It's flattened at the poles. You've heard that Earth is flattened at the poles, haven't you?"

"Sure. But not enough to notice."

"Of course not. Consider! Earth is twenty-five thousand miles about its equator and rotates in twenty-four hours, so that a spot on its equator moves just over a thousand miles an hour. The resulting centrifugal force bulges the equator outward so that the diameter of the Earth across its middle is about twenty-seven miles more than the diameter from North Pole to South Pole. The difference in the two diameters is only about a third of one per cent so that from space Earth looks like a perfect sphere."

"Oh."

"Now take Jupiter. It is 276,000 miles about its equator, eleven times the circumference of Earth, yet it rotates about its axis in only ten hours; five minutes less than that, to be exact. A point on its equator is moving at a speed of almost twenty-eight thousand miles an hour; or twenty-eight times as fast as any point on Earth. There's a great deal more centrifugal force and a much larger equatorial bulge, especially since the material in Jupiter's outer layers is much lighter than that in the Earth's crust. Jupiter's diameter across its equator is nearly six thousand miles more than its diameter from North Pole to South Pole. The difference in the diameters is a full fifteen per cent, and that's an easy thing to see."

Bigman stared at the flattened circle of light that was Jupiter and muttered, "Sands of Mars!"

The sun remained behind them and unseen as they sank toward Jupiter. They crossed the orbit of Callisto, Jupiter Four, outermost of Jupiter's major satellites, but did not see it to advantage. It was a world one and a half million miles from Jupiter and as large as Mercury, but it was on the other side of its orbit, a small pea close to Jupiter and heading into eclipse in its shadow.

Ganymede, which was Jupiter Three, was close enough to show a disc one third as wide as the moon seen from Earth. It lay off to one side so that part of its night surface could be seen. It was three quarters full even so, pale white, and featureless.

Lucky and Bigman found themselves ignored by the rest of the crew. The commander never spoke to them or even looked at them, but moved past with eyes fixed on nothingness. Norrich, when he was led past by Mutt, nodded cheerfully as he always did when he detected the presence of humans. When Bigman answered the greeting, however, the pleasant look vanished from his face. A gentle pressure on Mutt's harness started the dog moving and he was gone.

The two found it more comfortable to eat in their own quarters.

Bigman grumbled. "Who in space do they think they are? Even that guy Panner gets busy all at once when I'm around."

Lucky said, "In the first place, Bigman, when the commander makes it so obvious that we're in his bad books, subordinates don't fall over themselves being friendly. Secondly, our dealings with a few of the men have been unpleasant."

Bigman said thoughtfully, "I met Red Summers today, the cobbler. There he was coming out of the engine room and there I was, facing him."

"What happened? You didn't . . ."

"I didn't do anything. I just stood there waiting for him to start something, *hoping* he would start something, but he just smiled and moved around me."

Everyone aboard the *Jovian Moon* was watching the day Ganymede eclipsed Jupiter. It wasn't a true eclipse. Ganymede covered only a tiny part of Jupiter. Ganymede was 600,000 miles away, not quite half the size of the moon as seen from Earth. Jupiter was twice the distance, but it was a swollen globe now, fourteen times as wide as Ganymede, menacing and frightening.

Ganymede met Jupiter a little below the latter's equator, and slowly the two globes seemed to melt together. Where Ganymede cut in, it made a circle of dimmer light, for Ganymede had far less of an atmosphere than Jupiter had and reflected a considerably

smaller portion of the light it received. Even if that had not been so, it would have been visible as it cut across Jupiter's belts.

The remarkable part was the crescent of blackness that hugged Ganymede's rear as the satellite moved completely onto Jupiter's disk. As the men explained to one another in breathless whispers, it was Ganymede's shadow falling on Jupiter.

The shadow, only its edge seen, moved with Ganymede, but slowly gained on it. The sliver of black cut finer and finer until in the mid-eclipse region, when Jupiter, Ganymede, and the *Jovian Moon* all made a straight line with the sun, the shadow was completely gone, covered by the world that cast it.

Thereafter, as Ganymede continued to move on, the shadow began to advance, appearing before it, first a sliver, then a thicker crescent, until both left Jupiter's globe.

The entire eclipse lasted three hours.

The *Jovian Moon* reached and passed the orbit of Ganymede when that satellite was at the other end of its seven-day orbit about Jupiter.

There was a special celebration when that happened. Men with ordinary ships (not often, to be sure) had reached Ganymede and landed on it, but no one, not one human being, had ever penetrated closer than that to Jupiter. And now the *Jovian Moon* did.

The ship passed within one hundred thousand miles of Europa, Jupiter Two. It was the smallest of Jupiter's major satellites, only nineteen hundred miles in diameter. It was slightly smaller than the moon, but its closeness made it appear twice the size of the moon as seen from Earth. Dark markings could be made out that might have been mountain ranges. Ship's telescopes proved they were exactly that. The mountains resembled those on Mercury, and there was no sign of moon-like craters. There were brilliant patches, too, resembling ice fields.

And still they sank downward, and left Europa's orbit behind.

Io was the innermost of Jupiter's major satellites, in size almost exactly equal to Earth's moon. Its distance from Jupiter, moreover, was only 285,000 miles, or little more than that of the moon from Earth.

But there the kinship ended. Whereas Earth's gentle gravitational field moved the moon about itself in the space of four weeks, Io, caught in Jupiter's gravity, whipped about in its slightly larger orbit in the space of forty-two hours. Where the moon moved about Earth at a speed of a trifle over a thousand miles an hour, Io moved about

Jupiter at a speed of twenty-two thousand miles an hour, and a landing upon it was that much more difficult.

The ship, however, maneuvered perfectly. It cut in ahead of Io and wiped out Agrav at just the proper moment.

With a bound, the hum of the hyperatomics was back, filling the ship with what seemed a cascade of sound after the silence of the past weeks.

The *Jovian Moon* curved out of its path, finally, subject once again to the accelerating effect of a gravitational field, that of Io. It was established in an orbit about the satellite at a distance of less than ten thousand miles, so that Io's globe filled the sky.

They circled about it from dayside to nightside, coming lower and lower. The ship's batlike Agrav fins were retracted in order that they might not be torn off by Io's thin atmosphere.

Then, eventually, there was the keen whistling that came with the friction of ship against the outermost wisps of that atmosphere.

Velocity dropped and dropped; so did altitude. The ship's sidejets curved it to face stern-downward toward Io, and the hyperatomic jets sprang into life, cushioning the fall. Finally, with one last bit of drop and the softest jar, the *Jovian Moon* came to rest on the surface of Io.

There was wild hysteria on board the *Jovian Moon*. Even Lucky and Bigman had their backs pounded by men who had been avoiding them constantly all voyage long.

One hour later, in the darkness of Io's night, with Commander Donahue in the lead, the men of the *Jovian Moon*, each in his space suit, emerged one by one onto the surface of Jupiter One.

Sixteen men. The first human beings ever to land on Io!

Correction, thought Lucky. Fifteen men.

And one robot!

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## The Skies and Snows of Io

It was Jupiter they stopped to look at. It was Jupiter that held them frozen. There was no talk about it, no babble over the helmet radios. It was beyond talk.

Jupiter was a giant globe which, from rim to rim, extended one eighth of the way across the visible sky. Had it been full, it would have been two thousand times as bright as the Earth's full moon, but the night shadow cut a third of it away.

The bright zones and dark belts that crossed it were not merely brown now. They were close enough to show full clear color: pink, green, blue, and purple, amazingly bright. The edges of the bands were ragged and slowly changed shape as they watched, as though the atmosphere were being whipped into gigantic and turbulent storms, as most probably it was. Io's clear, thin atmosphere didn't obscure the smallest detail of that colored shifting surface.

The Great Red Spot was heaving ponderously into sight. It gave the impression of a funnel of gas, swirling lazily.

They watched for a long time, and Jupiter did not change position. The stars moved past it, but Jupiter remained fixed where it was, low in the western sky. It could not move, since Io presented only one side to Jupiter as it revolved. On nearly half of Io's surface Jupiter never rose, and on nearly half it never set. In an in-between region of the satellite, a region making up nearly a fifth of the total surface, Jupiter remained forever on the horizon, part showing, part hidden.

"What a place for a telescope!" murmured Bigman on the wave length allotted to Lucky during the pre-landing briefing.

Lucky said, "They'll have one soon and a lot of other equipment."

Bigman touched Lucky's face-plate to attract his attention and pointed quickly. "Look at Norrich. Poor guy, he can't see any of this!"

Lucky said, "I noticed him before. He's got Mutt with him."

"Yes. Sands of Mars, they go to trouble for that Norrich! That dog suit is a special job. I was watching them put it on the dog when you were keeping tabs on the landing. They had to test to make sure he could hear the orders and obey them and if he'd let Norrich use him once Norrich got into a space suit. Apparently it all worked out."

Lucky nodded. On impulse he moved rapidly in Norrich's direction. Io's gravity was just a trifle over that of the moon, and both he and Bigman could handle that neatly.

A few long, flat strides did the job. "Norrich," said Lucky, shifting to the engineer's wave length.

One cannot tell direction of a sound when it comes out of ear-phones, of course, and Norrich's blind eyes looked about helplessly. "Who is it?"

"Lucky Starr." He was facing the blind man, and through the face-plate could make out clearly the look of intense joy on Norrich's face. "You're happy to be here?"

"Happy? You might call it that. Is Jupiter very beautiful?"

"Very. Would you want me to describe it to you?"

"No. You don't have to. I've seen it by telescope when—when I had eyes, and I can see it in my mind now. It's just that . . . I don't know if I can make you understand. We're some of the few people to stand on a new world for the first time. Do you realize what a special group that makes us?"

His hand reached down to stroke Mutt's head and contacted only the metal of the dog's helmet, of course. Through the curved face-plate, Lucky could see the dog's lolling tongue, and his uneasy eyes turning restlessly this way and that, as though disturbed by the strange surroundings or by the presence of his master's voice without the familiar body that went with it.

Norrich said quietly, "Poor Mutt! The low gravity has him all confused. I won't keep him out much longer."

Then, with an increase of passion again, "Think of all the trillions of people in the galaxy. Think how few of them have had the luck to be the first on a world. You can almost name them all off. Janofski and Sterling were the first men on the moon, Ching the first man on Mars, Lubell and Smith on Venus. Add them all up. Even count in

all the asteroids and all the planets outside the solar system. Add up all the firsts and see how few there are. And we're among those few. I'm among those few."

He flung his arms out as though he were ready to embrace the whole satellite. "And I owe that to Summers, too. When he worked out a new technique for manufacturing the lead contact point—it was just a matter of a bent rotor, but it saved two million dollars and a year's time, and he not even a trained mechanic—they offered to let him be in the party as reward. You know what he said. He said I deserved it in his place. They said sure, but I was blind, and he reminded them why I was blind and said he wouldn't go without me. So they took us both. I know you two don't think much of Summers, but that's what I think of when I think of him."

The commander's voice sounded ringingly in all helmets: "Let's get to work, men. Jupiter will stay where it is. Look at it later."

For hours the ship was unloaded, equipment was set up, tents unfurled. Temporary air tights were prepared for possible use as oxygen-supplied headquarters outside the ship.

The men were not to be kept from watching the unusual sky, though. As it happened, all three of Jupiter's other large satellites were in the sky.

Europa was closest, appearing somewhat smaller than Earth's moon. It was a crescent, near the eastern horizon. Ganymede, appearing smaller still, was nearer zenith and half full. Callisto, only a quarter the width of Earth's moon, was nudging close to Jupiter and, like Jupiter, was some two thirds full. All three together gave not one quarter the light of Earth's full moon and were completely inconspicuous in the presence of Jupiter.

Bigman said exactly that.

Lucky looked down at his small Martian friend after having studied the eastern horizon thoughtfully. "You think nothing could beat Jupiter, do you?"

"Not out here," Bigman said stoutly.

"Then keep watching," said Lucky.

In Io's thin atmosphere there was no twilight to speak of and no warning. There was a diamondlike sparkle along the frost-covered top-line of the ridge of low hills, and seven seconds later the sun had topped the horizon.

It was a tiny seed-pearl of a sun, a little circle of brilliant white, and for all the light that giant Jupiter cast, the pigmy sun cast much, much more.

\* \* \*

They got the telescope up in time to catch Callisto vanishing behind Jupiter. One by one, all three satellites would do the same. Io, although it kept only one face to Jupiter, revolved about it in forty-two hours. That meant that the sun and all the stars seemed to march around Io's skies in those forty-two hours.

As for the satellites, Io moved faster than any of them, so it kept overtaking them in the race about Jupiter. It overtook the farthest and slowest, Callisto, most rapidly; so Callisto circled Io's heavens in two days. Ganymede took four days and Europa seven. Each traveled from east to west and each in due turn was to pass behind Jupiter.

The excitement in the case of the Callisto eclipse, which was the first to be witnessed, was extreme. Even Mutt seemed to be affected by it. He had grown increasingly used to low gravity, and Norrich gave him periods of freedom during which he floundered grotesquely about and tried vainly to inspect by nose the numerous strange things he encountered. And in the end, when Callisto reached Jupiter's glowing curve and passed behind, and all the men grew silent, Mutt, too, sat on his swathed haunches and, tongue lolling, stared upward at the sky.

But it was the sun they were really waiting for. Its apparent motion was faster than that of any of the satellites. It gained on Europa (whose crescent thinned to nothingness) and passed behind it, remaining in eclipse for something less than thirty seconds. It emerged, and then Europa was a crescent again, with its horns facing in the other direction now.

Ganymede had plunged behind Jupiter before the sun could reach it, and Callisto, having emerged from behind Jupiter, was below the horizon.

It was the sun and Jupiter now, those two.

The men watched greedily as the seed-pearl sun climbed higher in the sky. As it did, Jupiter's phase grew narrower, its lighted portion always, of course, facing the sun. Jupiter became a "half-moon," then a fat crescent, then a thin one.

In Io's thin atmosphere the sunlit sky was a deep purple, and only the dimmer stars had been blotted out. Against that background there burnt the gigantic crescent in the sky, bulging out toward the relentlessly approaching sun.

It was like David's pebble hurled from some cosmic slingshot toward Goliath's forehead.

The light of Jupiter shrank still further and became a yellowish curved thread. The sun was almost touching.



It did touch and the men cheered. They had masked their face-plates in order to watch, but now that was no longer necessary, for the light had dimmed to bearable dimensions.

Yet it had not vanished entirely. The sun had moved behind the edge of Jupiter but it still shone murkily through that giant planet's thick, deep atmosphere of hydrogen and helium.

Jupiter itself was now completely blanked out, but its atmosphere had sprung to life, refracting and bending the sunlight through itself and around the curve of the planet, a smoothly bending film of milky light.

The film of light spread as the sun moved farther behind Jupiter. It curved back on itself until faintly, very faintly, the two horns of light met on Jupiter's other side. Jupiter's vanished body was outlined in light and one side bulged with it. It was a diamond ring in the sky, big enough to hold two thousand globes the size of the moon as seen from Earth.

And still the sun moved farther behind Jupiter so that the light began to fade and grow dim, and dimmer, until finally it was gone and, except for the pale crescent of Europa, the sky was black and belonged to the stars.

"It will stay like this five hours," said Lucky to Bigman. "Then everything will repeat itself in reverse as the sun comes out."

"And this happens every forty-two hours?" said Bigman, awed.

"That's right," said Lucky.

Panner approached them the next day and called out to them, "How are you? We're almost done here." He spread his arm about in a broad circle to indicate the Ioan valley, now littered with equipment. "We'll be leaving soon, you know, and we'll leave most of this stuff here."

"We will?" said Bigman, surprised.

"Why not? There's nothing living on the satellite to disturb the stuff and there's no weather to speak of. Everything's coated for protection against the ammonia in the atmosphere and it will keep nicely till a second expedition comes round." His voice was suddenly lower. "Is there anyone else on your private wave length, Councilman?"

"My receivers don't detect anyone."

"Do you want to take a walk with me?" He headed out, out of the shallow valley and up the gentle slope of the surrounding hills. The other two followed.

Panner said, "I must ask your pardon if I seemed unfriendly on board ship. I thought it better so."

"There are no hard feelings," Lucky assured him.

"I thought I'd try an investigation of my own, you see, and I thought it safer not to seem hand in glove with you. I was sure that if I only watched carefully, I would catch someone giving himself away, doing something non-human, if you know what I mean. I failed, I'm afraid."

They had reached the top of the first rise and Panner looked back. He said with amusement, "Look at that dog, will you? He's getting the real feel of low gravity."

Mutt had learned a lot in the past few days. His body arched and straightened as he lunged in low, twenty-foot leaps, and he seemed to indulge in them for the sheerest pleasure.

Panner switched his radio to the wave length that had been reserved for Norrich's use in calling Mutt and shouted, "Hey, Mutt, hey, boy, come, Mutt," and whistled.

The dog heard, of course, and bounded high in the air. Lucky switched to the dog's wave length and heard his delighted barking.

Panner waved his arm and the dog headed toward them, then stopped and looked back as though wondering if he did right to leave his master. He approached more slowly.

The men walked onward again. Lucky said, "A Sirian robot built to fool a man would be a thorough job. Casual examination wouldn't detect the fraud."

"Mine wasn't casual examination," protested Panner.

Lucky's voice held more than a tinge of bitterness. "I'm beginning to think that the examination by anyone but an experienced robotics man can be nothing *but* casual."

They were passing over a drift of snowlike material, glittering in Jupiter light, and Bigman looked down upon it in amazement.

"This thing melts if you look at it," he said. He picked some up in his gauntleted hand, and it melted down and ran off like butter on a stove. He looked back, and where the three had stepped were deep indentations.

Lucky said, "It's not snow, it's frozen ammonia, Bigman. Ammonia melts at a temperature eighty degrees lower than ice does, and the heat radiating from our suits melts it that much faster."

Bigman lunged forward to where the drifts lay deeper, gouging holes wherever he stepped, and shouted, "This is fun."

Lucky called, "Make sure your heater is on if you're going to play in the snow."

"It's on," yelled Bigman, and running down a ridge with long low leaps, he flung himself headlong into a bank. He moved like a diver in slow motion, hit the drifted ammonia, and, for a moment, disappeared. He floundered to his feet.

"It's like diving into a cloud, Lucky. You hear me? Come on, try it. More fun than sand skiing on the moon."

"Later, Bigman," Lucky said. Then he turned to Panner. "For instance, did you try in any way to test any of the men?"

Out of the corner of his eye Lucky could see Bigman plunging into a bank for a second time, and, after a few moments had elapsed, his eyes turned full in that direction. Another moment and he called out anxiously, "Bigman!" Then, more loudly and much more anxiously, "*Bigman!*"

He started running.

Bigman's voice came, weak and gasping. "Breath . . . knocked out . . . hit rock . . . river down here . . ."

"Hold on, I'll be with you." Lucky and Panner, too, were devouring space with their strides.

Lucky knew what had happened, of course. The surface temperature of Io was not far removed from the melting point of ammonia. Underneath the ammonia drifts, melting ammonia could be feeding hidden rivers of that foul-smelling, choking substance that existed so copiously on the outer planets and their satellites.

There was the rattle of Bigman's coughing in his ear. "Break in air hose . . . ammonia getting in . . . choking."

Lucky reached the hole left by Bigman's diving body and looked down. The ammonia river was plainly visible, bubbling slowly downhill over sharp crags. It must have been against one of those that Bigman's air hose had been damaged.

"Where are you, Bigman?"

And though Bigman answered feebly, "Here," he was nowhere to be seen.

# 13

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## Fall!

Lucky jumped recklessly into the exposed river, drifting gently downward under the pull of Io's weak gravity. He was angry at the slowness of his fall, at Bigman for the childish enthusiasms that seized him so suddenly, and—unpredictably—at himself for not having stopped Bigman when he might.

Lucky hit the stream, and ammonia sprayed high in the air, then fell back with surprising quickness. Io's thin atmosphere could not support the small droplets even at low gravity.

There was no sense of buoyancy to the ammonia river. Lucky had not expected any to speak of. Liquid ammonia was less dense than water and had less lifting power. Nor was the force of the current great under Io's weak pull. Had Bigman not damaged his air hose, it would have been only a matter of walking out of the river and through any of the drifts that might have packed it round.

As it was . . .

Lucky splashed downstream furiously. Somewhere ahead the small Martian must be struggling feebly against the poisonous ammonia. If the break in the hose was large enough, or had grown large enough, to allow liquid ammonia to enter, Lucky would be too late.

He might be too late, already, and his chest constricted and tightened at the thought.

A form streaked past Lucky, burying itself in the powdered ammonia. It disappeared, leaving a tunnel into which ammonia slowly collapsed.

"Panner," Lucky said tentatively.

"Here I am." The engineer's arm fell upon Lucky's shoulder from

behind. "That was Mutt. He came running when you yelled. We were both on his wave length."

Together they forged through the ammonia on the track of the dog. They met him, returning.

Lucky cried eagerly, "He's got Bigman."

Bigman's arms feebly enfolded the dog's suit-encased haunches, and though that hampered Mutt's movements, low gravity enabled the dog to make respectable headway through use of shoulder muscles alone.

Even as Lucky bent for Bigman, the little Martian's straining hold relaxed and he fell.

Lucky scooped him up. He wasted no time on investigation or talk. There was only one thing to do. He turned up Bigman's oxygen flow to full capacity, slung him over his shoulders, and ran for the ship. Even allowing for Io's gravity he had never run so recklessly in his life. With such haste did he kick the ground away when coming down from each hurtling, horizontal stride that the effect was almost one of low-level flying.

Panner pumped along in the rear, and Mutt stayed excitedly at Lucky's heels.

Lucky used the communal wave length to alert the others even as he was running and one of the air tights was made ready.

Lucky hurtled inside the air tight, scarcely breaking his stride. The flap closed behind him and the interior flooded with additional air under pressure to make up the loss during the flap's opening.

With flying fingers he unbuckled Bigman's helmet, then more slowly drew off the rest of the suit.

He felt for the heartbeat and, to his relief, found it. The air tight was equipped, of course, with a first-aid kit. He made the necessary injections for general stimulation and waited for warmth and plentiful oxygen to do the rest.

And eventually Bigman's eyes fluttered and focused with difficulty on Lucky. His lips moved and made the word "Lucky," though no sound was involved.

Lucky laughed with relief and finally took the time to remove his own space suit.

On board the *Jovian Moon* Harry Norrich stopped at the open door of the compartment within which Bigman was completing his recuperation. His unseeing, china-blue eyes were warm with pleasure.

"How's the invalid?"

Bigman struggled up in his bunk and shouted, "Fine! Sands of

Mars, I feel great! If it weren't that Lucky wants to keep me down, I'd be up and around."

Lucky grunted his disbelief.

Bigman ignored that. He said, "Hey, let Mutt come in. Good old Mutt! Here, boy, here!"

Mutt, the hold on his harness released, trotted over to Bigman, his tail wagging furiously and his intelligent eyes doing everything but talk a greeting.

Bigman's small arm embraced the dog's neck in a bear hug. "Boy *there's* a friend. You heard what he did, Norrich, didn't you?"

"Everyone did," and it was plain to see that Norrich took a great personal pride in his dog's accomplishment.

"I just barely remember it," Bigman said, "before I blacked out altogether. I got that lungful of ammonia and couldn't seem to straighten out. I rolled downhill, just going through the ammonia snow as though it were nothing. Then there was this thing coming at me and I was sure it was Lucky when I heard the sound of something moving. But he knocked enough of the snow off us to let some of the Jupiter light come in and I could just make out it was Mutt. The last thing I remember was grabbing him."

"And a good thing, too," Lucky said. "The extra time that would have been required for me to find you would have been your finish."

Bigman shrugged. "Aw, Lucky, you make such a big deal out of it. Nothing would have happened if I hadn't just caught the hose on a rock and torn it. At that if I had had enough brains to turn up my oxygen pressure, I could have kept the ammonia out. It was just the first lungful that seemed to put me out of kilter. I couldn't think."

Panner passed by, just then, and looked. "How are you, Bigman?"

"Sands of Mars! Looks like everyone thinks I'm an invalid or something. There's nothing wrong with me. Even the commander stopped by and managed to find his tongue long enough to grunt at me."

"Well," said Panner, "maybe he's getting over his mad."

"Never," said Bigman. "He just wants to make sure his first flight won't be spoiled by a casualty. He wants his record pure white, that's all."

Panner laughed. "All set for the take-off?"

Lucky said, "Are we leaving Io?"

"Any hour. The men are reloading the equipment we're taking with us and securing what we leave behind. If you two can make the

pilot room once we're underway, do so. We'll get a better look at Jupiter than ever."

He tickled Mutt behind one ear and left.

They radioed Jupiter Nine that they were leaving Io, as days earlier they had radioed that they had surfaced on the satellite.

Bigman said, "Why don't we call Earth? Chief Councilman Conway ought to know we've made it."

"Officially," said Lucky, "we haven't made it all the way until we've returned to Jupiter Nine."

He did not add aloud that he was not at all anxious to return to Jupiter Nine, still less anxious to talk to Conway. He had, after all, accomplished nothing on this trip.

His brown eyes surveyed the control room. The engineers and crewmen were at their stations for the takeoff. The commander, his two officers and Panner, however, were in the control room.

Lucky wondered again about the officers as time and again he had wondered about each of the ten men whom the V-frog had not had a chance to eliminate. He had spoken to each of them on occasion, as had Panner even more frequently. He had searched their quarters. He and Panner together had gone over their records. Nothing had resulted.

He would be going back to Jupiter Nine with the robot unlocated, and thereafter location would be harder than ever and he might have to report back to Council headquarters with news of failure.

Once more, desperately, the thought of X rays entered his mind, or some other means of forceful inspection. As always, he thought at once of the possibility of triggering off an explosion, probably a nuclear explosion.

It would destroy the robot. It would also kill fifteen men and blow up a priceless ship. Worst of all, it would show no safe way of detecting the humanoid robots which, Lucky felt certain, were preying in other parts of the Solar Confederation.

He was startled by Panner's sudden cry, "Here we go!"

There was the familiar distant *whoosh* of the initial thrust, the gathering backward press of acceleration, and Io's surface dropped away, faster and faster.

The visiplat could not center Jupiter in its entirety: it was too large. It centered the Great Red Spot instead and followed it in its rotation about the globe.

Panner said, "We've gone into Agrav again, yes, but it's only temporary, just to let Io pull away from us."

"But we're still falling toward Jupiter," Bigman said.

"That's right, but only till the proper moment is reached. Then we go into hyperatomic drive and plunge toward Jupiter on a hyperbolic orbit. Once that is established, we cut the drive and let Jupiter do the work. Our closest approach will be about 150,000 miles. Jupiter's gravity will zoom us around as though we were a pebble in a slingshot and shoot us out again. At the proper point our hyperatomic drive cuts in again. By taking advantage of the slingshot effect, we actually save a bit on energy over the alternative of leaving directly from Io, *and* we get some super close-ups of Jupiter."

He looked at his watch. "Five minutes," he said.

He was referring, as Lucky knew, to the moment when the ship would switch from Agrav to hyperatomic drive and begin to curve off into the planned orbit about Jupiter.

Still staring at his watch, Panner said, "The time is selected so that we come out heading toward Jupiter Nine as squarely as possible. The fewer side adjustments we have to make, the more energy we save. We've got to come back to Jupiter Nine with as much of our original energy store as possible. The more we come back with, the better Agrav looks. I've set my goals at eighty-five per cent. If we can come back with ninety, that would be superlative."

Bigman said, "Suppose you come back with more energy than you had when you left? How would that be?"

"Super-superlative, Bigman, but impossible. There's something called the second law of thermodynamics that stands in the way of making a profit on the deal or, for that matter, of breaking even. We've got to take some loss." He smiled broadly and said, "One minute."

And at the appropriate second the sound of the hyperatomics filled the ship with its muted murmurings, and Panner placed his watch in his pocket with a satisfied expression.

"From here on in," he said, "until actual landing maneuvers at the Jupiter Nine approach, everything is quite automatic."

He had no sooner said that when the humming ceased again, the lights in the room flickered and went out. Almost at once they went on again, but now there was a little red sign on the control panel that said, EMERGENCY.

Panner sprang to his feet. "What in Space . . . ?"

He left the pilot room at a run, leaving the others staring after him and at one another in various degrees of horror. The commander had gone dead-white, his lined face a tired mask.



Lucky, with sudden decision, followed Panner, and Bigman, of course, followed Lucky.

They came upon one of the engineers clambering out of the engine compartment. He was panting. "Sir!"

"What is it, man?" snapped Panner.

"The Agrav is off, sir. It can't be activated."

"What about the hyperatomics?"

"The main reserve is shorted. We cut it just in time to keep it from blowing. If we touch it, the whole ship will go up. Every bit of the stored energy will blow."

"Then we're working on the emergency reservoir?"

"That's right."

Panner's swarthy face was congested with blood. "What good is that? We can't set up an orbit about Jupiter with the emergency reservoir. Out of the way. Let me down there."

The engineer stepped aside, and Panner swung into the shaft. Lucky and Bigman were at his heels.

Lucky and Bigman had not been in the engine compartment since that first day aboard the *Jovian Moon*. The scene was different now. There was no august silence, no sensation of mighty forces quietly at work.

Instead, the puny sound of men rose high about them.

Panner sprang off into the third level. "Now what's wrong?" he called. "Exactly what's wrong?"

Men parted to let him through and they all huddled over the gutted insides of a complex mechanism, pointing things out in tones of mingled despair and anger.

There were sounds of other footsteps coming down the rungs of the shaft, and then the Commander himself made his appearance.

He spoke to Lucky, who was standing gravely to one side. "What is it, Councilman?" It was the first time he had addressed Lucky since they had left Jupiter Nine.

Lucky said, "Serious damage of some sort, Commander."

"How did it happen? *Panner!*"

Panner looked up from the close examination of something that had been held out to him. He shouted in annoyance, "What in space do you want?"

Commander Donahue's nostrils flared. "Why has something been allowed to go wrong?"

"Nothing has been *allowed* to go wrong."

"Then what do you call this?"

"Sabotage, Commander. Deliberate, murdering sabotage!"

“*What!*”

“Five gravitic relays have been completely smashed and the necessary replacements have been removed and can’t be located. The hyperatomic thrust-control has been fused and shorted beyond repair. None of it happened by accident.”

The commander stared at his chief engineer. He said, hollowly, “Can anything be done?”

“Maybe the five relay replacements can be located or cannibalized out of the rest of the ship. I’m not sure. Maybe a makeshift thrust-control can be set up. It would take days anyway and I couldn’t guarantee results.”

“Days!” cried the commander. “It can’t take days. *We’re falling toward Jupiter!*”

There was a complete silence for a few moments, and then Pan-ner put into words what all of them knew. “That’s right, Commander. We’re falling toward Jupiter and we can’t stop ourselves in time. It means we’re through, Commander. We’re all dead men!”

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## Jupiter Close Up

It was Lucky who broke the deadly silence that followed, in sharp, incisive tones. "No man is dead while he has a mind capable of thought. Who can handle this ship's computer most rapidly?"

Commander Donahue said, "Major Brant. He's the regular trajectory man."

"Is he up in the control room?"

"Yes."

"Let's get to him. I want the detailed *Planetary Ephemeræ* . . . Panner, you stay here with the men and get to work cannibalizing and improvising."

"What good will it—?" Panner began.

Lucky cut in at once. "Perhaps no good at all. If so, we'll hit Jupiter and you'll die after having wasted a few hours of labor. Now I've given you an order. Get to work!"

"But . . ." Commander Donahue seemed stuck after that one word.

Lucky said, "As councilman of science, I'm assuming command of this vessel. If you wish to dispute that, I'll have Bigman lock you in your cabin and you can argue it out at the court-martial proceedings, assuming we survive."

Lucky turned away and moved quickly up the central shaft. Bigman motioned Commander Donahue up with a quick jerk of his thumb and followed last.

Panner looked after them scowling, turned savagely to the engineers, and said, "All right, you bunch of corpses. No use waiting for it with our fingers in our mouths. Hop to it."

Lucky strode into the control room.

The officer at the controls said, "What's wrong down there?" His lips were white.

"You're Major Brant," said Lucky. "We haven't been formally introduced, but never mind that. I'm Councilman David Starr, and you're taking orders from me. Get at that computer and do what you're told with all the speed you have."

Lucky had the *Planetary Ephemeræ* before him. Like all great reference works, it was in book form rather than film. The turning of pages, after all, made for the more rapid location of a specific piece of information, than did the long-drawn-out unwinding of film from end to end.

He turned the pages now with practiced hand, searching among the rows and columns of numbers that located the position of every chunk of matter in the solar system over ten miles in diameter (and some under) at certain standard times, together with their planes of revolution and velocity of motion.

Lucky said, "Take the following co-ordinates as I call them out, together with the line of motion, and calculate the characteristics of the orbit and the position of the point at this moment and for succeeding moments for the space of forty-eight hours."

The major's fingers flew as figures were converted by the special punch machine into a coded tape which was fed into the computer.

Even while that was taking place, Lucky said, "Calculate from our present position and velocity our orbit with respect to Jupiter and the point of intersection with the object whose orbit you have just calculated."

Again the major worked.

The computer spat out its results in coded tape that wound on to a spool and dictated the tapping of a typewriter that spelled out the results in figures.

Lucky said, "At the point of intersection, what is time discrepancy between our ship and the object?"

Again the major worked. He said, "We miss it by four hours, twenty-one minutes, and forty-four seconds."

"Calculate how the velocity of the ship must be altered in order to hit the point squarely. Use one hour from now as the starting time."

Commander Donahue broke in. "We can't do anything this close to Jupiter, Councilman. The emergency power won't break us away. Don't you understand that?"

"I'm not asking the major to break us away, Commander. I'm

asking him to accelerate the ship toward Jupiter, for whatever our reserve power is worth."

The commander rocked back on his heels. "Toward Jupiter?"

The computer was making the calculation and the results were coming in. Lucky said, "Can you accelerate by that much on the power available?"

Major Brant said shakily, "I think so."

"Then do it."

Commander Donahue said again, "Toward Jupiter?"

"Yes. Exactly. Io isn't the innermost of Jupiter's satellites. Amalthea is closer, Jupiter Five. If we can intersect its orbit properly, we can land on it. If we miss it, well, then, we will have hurried death by two hours."

Bigman felt a surge of sudden hope. He could never entirely despair while Lucky was in action, but until that moment he had not seen what it was that Lucky intended doing. He remembered now his earlier conversation with Lucky on the subject. The satellites were numbered in order of discovery. Amalthea was a small satellite, just a hundred miles in diameter, and it was discovered only after the four major satellites were known. So, though the closest to Jupiter, it was Jupiter Five. Somehow one tended to forget that. Because Io was called Jupiter One, there was always the tendency to think there was nothing between it and the planet itself.

And one hour later the *Jovian Moon* began a carefully plotted acceleration toward Jupiter, hastening toward the death trap.

They no longer centered the visiplat on any part of Jupiter. Though the latter swelled hourly, the center of sight remained on a portion of the star field a considerable distance from Jupiter's rim. The star field was under maximum magnification. At that point should be Jupiter Five, streaking for its rendezvous with a ship which was hurtling and straining down, down toward Jupiter. Either the ship would be caught by the speck of rock and saved, or it would miss and be lost forever.

"There it is," said Bigman in excitement. "That star shows a visible disk."

"Calculate observed position and motion," ordered Lucky, "and check with the computed orbit."

This was done.

"Any correction?" Lucky asked.

"We'll have to slow down by—"

"Never mind the figures. Do it!"

Jupiter Five circled Jupiter in twelve hours, moving in its orbit at a speed of nearly three thousand miles an hour. This was one and a half times as rapid as Io's motion and its gravitational field was only one twentieth that of Io. For both reasons, it made the harder target.

Major Brant's fists trembled on the controls as the all-important side thrusts bent the *Jovian Moon's* orbit ever so slightly to meet the onrushing Jupiter Five, slip behind it and round, matching speeds for just those vital moments that would enable the satellite's gravity to establish the ship in an orbit about itself.

Jupiter Five was a large, brilliant object now. If it stayed so, good. If it began to grow smaller, they had missed.

Major Brant whispered, "We've made it," and his head fell forward into his shaking palms as he released the controls.

Even Lucky closed his eyes momentarily in a kind of weary relief.

In one way the situation on Jupiter Five was far different from what it had been on Io. There, all the crew had been sight-seers; the consideration of the heavens had taken precedence over the leisurely preparations in the valley.

Here on Jupiter Five, however, no one emerged from the *Jovian Moon*. What there was to see, no one saw.

The men stayed aboard the ship and worked on the repair of the engines. Nothing else mattered. If they failed, the landing on Jupiter Five could only postpone doom and stretch it out into greater agony.

No normal ship could land on Jupiter Five to rescue them, and no other Agrav ship existed or would exist for a year at least. If they failed, there would be time enough to watch Jupiter and the vision of the skies while they waited for death.

Yet under less urgent conditions the vision would have been worth watching. It was Io all over again with everything doubled and tripled.

From the point at which the *Jovian Moon* landed, Jupiter's lower rim seemed to sweep the flat, powdery horizon. The giant looked so close in the airlessness that a watcher would have imagined he could reach out his hand and bury it in that circle of light.

From the horizon Jupiter stretched upward, halfway to zenith. At the moment the *Jovian Moon* landed, Jupiter was almost full, and within the unbearable circle of brilliant stripes and colors nearly ten thousand full moons Earth variety could have been placed. Almost one sixteenth of the entire vault of the sky was covered by Jupiter.

And because Jupiter Five circled Jupiter in twelve hours, the visible moons—there were four here rather than three as on Io, since Io itself was now a moon—moved three times as fast as they did on Io. So did all the stars and everything else in the sky, except for frozen Jupiter, which one side of the satellite eternally faced and which therefore never moved.

In five hours the sun would rise and it would be exactly the same in appearance as on Io; it would be the one thing that hadn't changed. But it would race toward a four-times-as-large Jupiter at three times the speed and make an eclipse a hundred times as terrifyingly beautiful.

But no one saw it. It took place twice while the *Jovian Moon* stayed and no one saw it. No one had the time. No one had the heart.

Panner finally sat down and stared out of bleary eyes. The flesh around them was red and puffy. His voice was a hoarse whisper.

"All right. Everyone to your normal stations. We'll have a dry run." He hadn't slept in forty hours. The others had worked in shifts, but Panner had stopped neither to eat nor to sleep.

Bigman, who had confined himself to unskilled labor, to fetching and carrying, to reading dials under direction and holding levers according to instruction, had no place in a dry run, no station, no duties. So he wandered somberly about the ship in search of Lucky and found him in the control room with Commander Donahue.

Lucky had his shirt off and was wiping his shoulders, forearms, and face on a large plastofluff towel.

As soon as he saw Bigman, he said briskly, "The ship will be moving, Bigman. We'll be taking off soon."

Bigman's eyes raised. "We're only doing a dry run, Lucky."

"It will work. That Jim Panner worked miracles."

Commander Donahue said stiffly, "Councilman Starr, you have saved my ship."

"No, no. Panner deserves the credit. I think half the engine is being held together with copper wire and mucilage, but it will work."

"You know what I mean, Councilman. You drove us on to Jupiter Five when the rest of us were ready to give up and panic. You saved my ship, and I will report that fact fully when I stand court-martial on Earth for having failed to co-operate with you on Jupiter Nine."

Lucky flushed in embarrassment. "I can't allow that, Commander. It is important that councilmen avoid publicity. As far as the official record is concerned, you will have remained in command at all times. There will be no mention of any actions of mine."

"Impossible. I couldn't allow myself to be praised for what you have done."

"You will have to. It's an order. And let's have no talk of court-martials."

Commander Donahue drew himself up with a kind of pride. "I deserve court-martial. You warned me of the presence of Sirian agents. I did not listen and as a result my ship was sabotaged."

"The blame is mine, too," Lucky said calmly. "I was on board ship and did not prevent it. Nevertheless, if we can bring back the saboteur, there will be no question of court-martial."

The commander said, "The saboteur, of course, is the robot you warned me of. How I could be so blind!"

"I'm afraid you still don't see entirely. It wasn't the robot."

"Not the robot?"

"A robot could not have sabotaged the ship. It would have been bringing harm to humans and that would have meant breaking the First Law."

The commander frowned as he considered that. "It might not have been aware that it was doing harm."

"Everyone aboard ship, including the humanoid, understands Agrav. The robot would have known it was doing harm. In any case I think we have the identity of the saboteur, or will have in a moment."

"Oh? Who is he, Councilman Starr?"

"Well, consider this for a moment. If a man so sabotages a ship as to insure that it will either blow up or fall into Jupiter, he would be either a madman or a superhumanly dedicated person to stay on board that ship."

"Yes, I suppose so."

"Since the time we left Io, the air locks have never opened. If they had there would have been slight drops in air pressure, and the ship's barometer indicates no such drops. You see, then, the saboteur must never have gotten on the ship at Io. He's still there, unless he's been taken off."

"How could he be taken off? No ship could get to Io, except this one."

Lucky smiled grimly. "No *Earth* ship."

The commander's eyes widened. "Surely no Sirian ship, either."

"Are you sure?"

"Yes, I'm sure." The commander frowned. "And for that matter, wait a moment. Everyone reported on board before we left Io. We wouldn't have left without everyone reported present."



"In that case everyone is still on board."

"I would presume so."

"Well," said Lucky, "Panner has ordered all men to stations under emergency conditions. The whereabouts of every man should be fixed during this dry run. Call Panner and ask if anyone is missing."

Commander Donahue turned to the intercom, and signaled Panner.

There was some delay, and then Panner's voice, infinitely tired, answered. "I was about to call, Commander. The run was successful. We can take off. If we're lucky, things will hold till we're back on Jupiter Nine."

The commander said, "Very good. Your work will be properly acknowledged, Panner. Meanwhile, are all men at stations?"

Panner's face on the visiplate above the intercom seemed to harden all at once. "No! By Space, I meant to tell you! We can't locate Summers."

"Red Summers," Bigman cried in sudden excitement. "That murdering clobber. Lucky . . ."

"One moment, Bigman," Lucky said. "Dr. Panner, you mean Summers isn't in his quarters?"

"He isn't anywhere. Except that it's impossible, I'd say he wasn't on board."

"Thank you." Lucky reached over to break contact. "Well, Commander."

Bigman said, "Listen, Lucky. You remember once I told you I met him coming out of the engine room? What was he doing down there?"

"We know now," said Lucky.

"And we know enough to get him," said the commander, white-faced. "We're landing on Io and . . ."

"Wait," said Lucky, "first things first. There is something more important even than a traitor."

"What?"

"The matter of the robot."

"That can wait."

"Perhaps not. Commander, you said that all men reported on board the *Jovian Moon* before we left Io. If so, the report was obviously a false one."

"Well?"

"I think we ought to try to find the source of the false report. A robot can't sabotage a ship, but if a man has sabotaged the ship

without the robot's knowledge, it would be very simple for the robot to help that man remain off the ship if its help is requested."

"You mean whoever is responsible for the false report that Summers was on board ship is the robot?"

Lucky paused. He tried not to allow himself to grow too hopeful or feel too triumphant, and yet the argument seemed perfect.

He said, "It seems so."

## Traitor!

Commander Donahue said, "Major Levinson, then." His eyes darkened. "And yet I find that impossible to believe."

"Find what impossible to believe?" Lucky asked.

"That he is a robot. He's the man who took the report. He keeps our records. I know him well and I swear that he *can't* be a robot."

"We'll question him, Commander. And one thing—" Lucky's expression was somber. "Don't accuse him of being a robot; don't ask him if he's one or even imply that he might be one. Do nothing to make him feel he's under suspicion."

The commander looked astonished. "Why not?"

"The Sirians have a way of protecting their robots. Open suspicion may trigger some explosive device within the major if he is indeed a robot."

The commander exhaled explosively. "Space!"

Major Levinson showed the signs of strain that were universal among the men aboard the *Jovian Moon*, but he stood at brisk military attention. "Yes, sir."

The commander said cautiously, "Councilman Starr has a few questions to ask."

Major Levinson shifted to face Lucky. He was quite tall, topping even Lucky's inches, with fair hair, blue eyes, and a narrow face.

Lucky said, "All men were reported on board the *Jovian Moon* at the time of take-off from Io, and you prepared that report. Is that right, major?"

"Yes, sir."

"Did you see each man individually?"

"No, sir. I used the intercom. Each man answered at take-off station or in his cabin."

"Each man? Did you hear each man's voice? Each individual voice?"

Major Levinson looked astonished. "I suppose so. That's not the sort of thing one remembers, really."

"Nevertheless it's quite important and I'm asking you to remember."

The major frowned and bent his head. "Well, now wait. Come to think of it, Norrich answered for Summers because Summers was in the bathroom." Then, with a sudden spark of excitement, he added, "Hold on, they're looking for Summers right now."

Lucky held up a palm. "Never mind that, Major. Would you get Norrich and send him up?"

Norrich came in on Major Levinson's arm. He looked bewildered. He said, "Commander, no one seems to be able to find Red Summers. What's happened to him?"

Lucky forestalled the commander's answer. He said, "We're trying to find out. Did you report Summers present when Major Levinson checked those aboard before we left Io?"

The blind engineer reddened. He said tightly, "Yes."

"The major says you said Summers was in the bathroom. Was he?"

"Well . . . No, he wasn't, Councilman. He had gotten off ship for a moment to pick up some item of equipment he had left behind. He didn't want the commander chewing him out—pardon me, sir—for carelessness, and he asked me to cover for him. He said he would be back well before take-off."

"Was he?"

"I . . . I thought . . . I had the impression he was. Mutt barked, I think, and I was sure Summers was coming back, but there isn't anything for me to do at take-off, so I was turning in for a nap and I guess I just didn't give the matter too much thought at the moment. Then there was the mess in the engine room almost right away, and after that there was no time to think of anything."

Panner's voice came over the central intercom with sudden loudness. "Warning to all men. We are taking off. Everyone to stations."

The *Jovian Moon* was in space again, lifting itself against Jupiter's gravity with powerful surges. It was expending energy at a rate that would have bankrupted five ordinary vessels and and only the

faint tremor in the sound of the hyperatomics remained to show that the ship's mechanism depended, in part, on makeshift devices.

Panner gloomily pondered on the poor showing the ship would now make energy-wise. He said, "As is, I'll get back with only seventy per cent of original energy, when it could have been eighty-five or ninety. If we land on Io and make another take-off, we'll get back with only fifty. And I don't know if we can stand another take-off."

But Lucky said, "We must get Summers, and you know why."

With Io growing large-sized once again in the visiplat, Lucky said thoughtfully, "It's not entirely certain we can find him, Bigman."

Bigman said incredulously, "You don't think the Sirians actually picked him up, do you?"

"No, but Io's a big place. If he wanders off to some rendezvous, we might never locate him. I'm counting on his staying put. He'd have to carry air, food, and water with him if he moved, so it would be most logical for him to stay put. Particularly when he'd have no reason to expect us to come back."

Bigman said, "We should have known it was that clobber all along, Lucky. He tried to kill you first thing. Why should he want to do that, if he weren't playing along with the Sirians?"

"True enough, Bigman, but remember this: we were looking for a spy. Summers couldn't be the spy. He had no access to the leaked information. Once it was clear to me that the spy was a robot, that cleared Summers on another account. The V-frog had detected emotion in him, so he couldn't be a robot and therefore couldn't be the spy. Of course that didn't prevent him from being a traitor and saboteur, and I should not have allowed the search for a spy to blind me to that possibility."

He shook his head and added, "This seems to be a case riddled with disappointment. If it had been anyone else *but* Norrich who had covered for Summers, we would have had our robot. The trouble is that Norrich is the only man who could have had convincingly innocent reason to co-operate with Summers. He was friendly with Summers; we know that. Then, too, Norrich could innocently be ignorant that Summers never returned before take-off. After all, he's blind."

Bigman said, "Besides which, he showed emotion, too, so he can't be the robot."

Lucky nodded. "True enough." Yet he frowned and grew silent.

Down, down they came to Io's surface, landing almost in the marks of their previous take-off. The dots and smeared shadows in

the valley resolved themselves into the equipment they had set up as they approached.

Lucky was surveying the surface intently through the visiplat. "Were any air tights left behind on Io?"

"No," said the commander.

"Then we may have our man. One air tight, as you may notice, is fully expanded behind that rock formation. Do you have the list of material unaccounted for on board?"

The commander delivered a sheet of paper without comment, and Lucky studied it. He said, "Bigman and I will go out after him. I doubt that we'll need help."

The tiny sun was high in the sky, and Bigman and Lucky walked on their own shadows. Jupiter was a thinnish crescent.

Lucky spoke on Bigman's wave length. "He must have seen the ship; unless he's sleeping."

"Or unless he's gone," said Bigman.

"I doubt that he's gone."

And almost at once Bigman cried, "Sands of Mars, Lucky, look up there!"

A figure appeared at the top of the line of rock. It stood out blackly against the thinning yellow line of Jupiter.

"Don't move," came a low, tired voice on Lucky's own wave length. "I'm holding a blaster."

"Summers," said Lucky, "come down and surrender."

A note of bitter mockery entered the other's strained voice. "I guessed the right wave length, didn't I, Councilman? Though it was an easy guess from the size of your friend . . . Get back to your ship or I'll kill you both."

Lucky said, "Don't bluff pointlessly. At this distance you couldn't hit us in a dozen tries."

Bigman added with tenor fury, "And I'm armed, too, and I can hit you even at *this* distance. Just remember that and don't even move a finger near the activating button."

Lucky said, "Throw down your blaster and surrender."

"Never!" said Summers.

"Why not? To whom are you being loyal?" Lucky demanded. "The Sirians? Did they promise to pick you up? If so, they lied to you and betrayed you. They're not worth loyalty. Tell me where the Sirians' base in the Jupiter system is located."

"You know so much! Figure it out for yourself."

"What subwave combination do you use to contact them?"

"Figure that out, too . . . Don't move any closer."

Lucky said, "Help us out now, Summers, and I'll do my best to get you mild treatment on Earth."

Summers laughed weakly. "The word of a councilman?"

"Yes."

"I wouldn't take it. Get back to your ship."

"Why have you turned against your own world, Summers? What have the Sirians offered you? Money?"

"Money!" The other's voice was suddenly furious. "Do you want to know what they offered me? I'll tell you. A chance at a decent life." They could hear the tiny gritting sound Summers made as his teeth ground together. "What did I have on Earth? Misery all my life. A crowded planet with no decent chance at making a name and a position for myself. Everywhere I went I was surrounded by millions of people clawing at each other for existence, and when I tried to claw also, I was put in jail. I made up my mind that if ever I could do anything to get back at Earth, I would."

"What do you expect to get from Sirius in the way of a decent life?"

"They invited me to emigrate to the Sirian planets, if you must know." He paused, and his breathing made small whistling noises. "New worlds out there. Clean worlds. There's room for men there; they need men and talent. I'd have a chance there."

"You'll never get there. When are they coming for you?"

Summers was silent.

Lucky said, "Face it, man. They're not coming for you. They have no decent life for you; no life at all for you. Only death for you. You expected them before this, didn't you?"

"I didn't."

"Don't lie. It won't improve the situation for you. We've checked the supplies missing from the *Jovian Moon*. We know exactly how much oxygen you smuggled off the ship. Oxygen cylinders are clumsy things to carry even under Io's gravity when you have to sneak them off without being caught and in a hurry. Your air supply is almost gone now, isn't it?"

"I have plenty of air," said Summers.

Lucky said, "I say it's almost gone. Don't you see the Sirians aren't coming for you? They can't come for you without Agrav and they haven't got Agrav. Great Galaxy, man, have you let yourself get so hungry for the Sirian worlds that you'll let them kill you in as open and crude a double-cross as I've ever seen? Now, tell me, what have you done for them?"

Summers said, "I did what they asked me to do and that wasn't much. And if I have any regrets," he shouted in sudden, breathless bravado, "it's only that I didn't get the *Jovian Moon*. How did you get away, anyway? I fixed it. I *fixed* the rotten, slimy . . ." he ended, choking.

Lucky motioned to Bigman and broke into the soaring lope characteristic of running on low-gravity worlds. Bigman followed, veering off so as not to offer a single target.

Summers' blaster came up and made a thin popping sound, all that was possible in Io's thin wisps of atmosphere. Sand kicked up and around, and a crater formed yards from Lucky's fleeting figure.

"You won't catch me," Summers yelled with a kind of weak violence. "I'm not coming back to Earth. They'll come for me. The Sirians will come for me."

"Up, Bigman," said Lucky. He had reached the rock formation. Jumping upward, he caught a projection and hurled himself further upward. At sixth-normal gravity, a man, even in a space suit, could outdo a mountain goat in climbing.

Summers screamed thinly. His hands moved up to his helmet and he leaped backward and disappeared.

Lucky and Bigman reached the top. The rock formation was nearly sheer on the other side, with sharp outcroppings breaking the clifflike face. Summers was a spread-eagled figure, dropping slowly downward, striking against the face of the rock, and rebounding.

Bigman said, "Let's get him, Lucky," and jumped far outward, wide of the cliff. Lucky followed.

It would have been a killing leap on Earth, even on Mars. On Io it was little more than a tooth-jarring drop.

They hit with bent knees and let themselves roll to take up some of the force of impact. Lucky was on his feet first and made for Summers, who lay prone and unmoving.

Bigman came up panting. "Hey, that wasn't the easiest jump I—What's the matter with the clobber?"

Lucky said grimly. "He's dead. I knew his oxygen was low from the way he sounded. He was almost unconscious. It's why I rushed him."

"You could go a long time being unconscious," said Bigman.

Lucky shook his head. "He made sure. He really didn't want to be taken. Just before he jumped, he opened his helmet to Io's poison air and he hit the cliff."

He stepped aside and Bigman caught a glimpse of the smashed face.



Lucky said, "Poor fool!"

"Poor *traitor!*" Bigman raged. "He might have had the answer and he wouldn't tell us. Now he can't tell us."

Lucky said, "He doesn't have to, Bigman. I think I know the answer now."

# 16



## Robot!

“You do?” The little Martian’s voice rose to a squeak. “What is it, Lucky?”

But Lucky said, “Not now.” He gazed down at Summers, whose dead eyes stared sightlessly toward the alien heavens. He said, “Summers has one distinction. He is the first man ever to die on Io.”

He looked up. The sun was edging behind Jupiter. The planet was becoming only a faint silvery circle of twilight atmosphere.

Lucky said, “It will be dark. Let’s go back to the ship.”

Bigman paced the floor of their cabin. It took only three steps one way, three steps the other, but he paced. He said, “But if you *know*, Lucky, why don’t you . . .”

Lucky said, “I can’t take an ordinary action and risk explosion. Let me do it in my own time and my own way, Bigman.”

There was a firmness in his tone that quite subdued Bigman. He changed the subject and said, “Well, then, why waste any more time on Io because of that clobber out there? He’s dead. There’s nothing more to do about him.”

“One thing,” said Lucky. The door signal flashed and he added, “Open it, Bigman. It should be Norrich.”

It was. The blind engineer stepped in, his dog, Mutt, going before.

Norrich’s blue, unseeing eyes blinked rapidly. He said, “I’ve heard about Summers, Councilman. It’s a terrible thing to think he tried to . . . to . . . Terrible that he was a traitor. Yet somehow I’m sorry for him.”

Lucky nodded. “I knew you would be. It’s why I asked you to

come here. It's dark out on Io now. The sun's in eclipse. When the eclipse is over, will you come out with me to bury Summers?"

"Gladly. We should do that much for any man, shouldn't we?" Norrich's hand dropped as if for consolation on Mutt's muzzle, and the dog came close and moved softly against his master as though feeling some dim need to offer sympathy.

Lucky said, "I thought you would want to come along. After all, you were his friend. You might want to pay your last respects."

"Thank you. I would like to." Norrich's blind eyes were moist.

Lucky said to Commander Donahue just before he placed the helmet over his head, "It will be our last trip out. When we return, we will take off for Jupiter Nine."

"Good," the commander said, and there seemed some unspoken understanding as their eyes met.

Lucky put on his helmet and in another corner of the pilot room, Norrich's sensitive fingers moved delicately over Mutt's flexible space suit, making sure all fastenings were secure. Inside the glass-fronted, odd-shaped helmet that fitted over Mutt's head, Mutt's jaws moved in a faintly heard bark. It was obvious the dog knew he was headed for a trip into low gravity and that he enjoyed the prospect.

The first grave on Io was done. It had been dug out of hard, rocky soil by the use of force diggers. It was filled in with a mound of gravel and topped by an oval boulder as a marker.

The three men stood round it while Mutt wandered off in the distance, trying vainly, as always, to examine his surroundings, though metal and glass blocked the use of his sense of smell.

Bigman, who knew what Lucky expected him to do but didn't know why, waited tensely.

Norrich stood with his head bowed and said softly, "This was a man who wanted something very much, did wrong for that reason, and has paid for it."

"He did what the Sirians asked him to do," Lucky added. "That was his crime. He committed sabotage and . . ."

Norrich stiffened as the pause in Lucky's remarks lengthened. He said, "And *what?*"

"And he got *you* on board ship. He refused to join the crew without you. You yourself told me that it was only through him that you were assigned to the *Jovian Moon.*"

Lucky's voice grew stern. "You are a robot spy placed here by the Sirians. Your blindness makes you seem innocent to the others

on the project, but you don't need a sense of sight. You killed the V-frog and covered for Summers to get him off the ship. Your own death meant nothing to you in the face of orders, as Third Law states. And, finally, you fooled me by the display of emotion I caught through the V-frog, a synthetic emotion built into you by the Sirians."

This was the cue for which Bigman had been waiting. Lifting the butt of his blaster high, he hurled himself at Norrich, whose incoherent protestations did not coalesce into words.

"I knew it was you," Bigman shrieked, "and I'm smashing you."

"It's not true," Norrich wailed, finding his voice. He threw up his hands and stumbled backward.

And suddenly Mutt was a streak in the pale, white light. He hurled himself furiously across the quarter mile that separated him from the men, aiming with desperate passion at Bigman.

Bigman paid no attention. One hand caught at Norrich's shoulder. The other swung the blaster upward.

Then Mutt collapsed!

While he was still ten feet from the struggling pair, his legs stiffened uselessly and he tumbled and rolled past them, coming to a frozen halt at last. Through the glass of his helmet his jaws could be seen hanging open, as though in mid-bark.

Bigman held his threatening position over Norrich as though he, too, were frozen.

Lucky approached the animal with quick steps. He used his force shovel as a kind of unwieldy knife and slit Mutt's space suit lengthwise from neck to tail.

Then, tensely, he slit through the skin at the back of the neck and probed deftly with his mail-shod fingers. They closed on a small sphere that was not bone. He lifted the sphere and met resistance. Holding his breath, he snapped the wires that held it in place and stood up, almost weak with relief. The base of the brain had been the logical place for a mechanism to be activated by the brain, and he had found it. Mutt could endanger no one now.

Norrich cried out, as though through instinctive knowledge of his loss.

"My dog! What are you doing to my dog?"

Lucky said softly, "It's no dog, Norrich. Never was. It was a robot. Come, Bigman, lead him back to the ship. I'll carry Mutt."

Lucky and Bigman were in Panner's room. The *Jovian Moon* was in flight again, and Io was falling rapidly away, already only a bright coin in the sky.

"What gave it away?" said Panner.

Lucky said somberly, "A number of things which I never saw. Every clue pointed firmly to Mutt, but I was so intent on finding a humanoid robot, so inwardly convinced that a robot had to look human, that I looked past the truth though it stared me in the face."

"Then when *did* you see?"

"When Summers killed himself by jumping off the rock. I stared at him, lying there, and thought of Bigman falling through the ammonia snow and nearly dying. I thought: There's no Mutt that can save this one. . . . And that did it."

"How? I don't understand."

"How *did* Mutt save Bigman? When the dog came running up past us, Bigman was somewhere under the ice, nowhere to be seen. Yet Mutt plunged in, made for Bigman without hesitation, and dragged him out. We accepted that without thought because we somehow expect dogs to find what can't be seen through their sense of smell. But Mutt's head was enclosed. He could neither see nor smell Bigman, yet had no trouble locating him. We ought to have seen that unusual sense perception was involved. We'll find out exactly which when our roboticists work over the carcass."

"Now that you explain," said Panner, "it looks plain enough. The dog had to give itself away because First Law compelled it not to allow a human being to come to harm."

"That's right," said Lucky. "Once suspicions of Mutt finally penetrated, a few other things started falling into place. Summers had maneuvered Norrich on board, yes, but in doing so, he also got Mutt on board. Moreover, Summers was the one who got Mutt for Norrich in the first place. The chances are that there is a spy ring on Earth whose only task is to distribute these robot dogs to people working in or near critical research centers.

"Dogs are perfect spies. If you find a dog nosing through your papers or walking through a super-secret section of a laboratory, are you concerned? Chances are you pet the dog and feed him a dog biscuit. I checked through Mutt as best I could and I think he has a built-in subetheric transmitter which keeps him in contact with his Sirian masters. They can see what he sees, hear what he hears. For instance, they saw the V-frog through Mutt's eyes, recognized its danger, and directed him to kill it. He could be made to handle an energy projector with which to fuse the lock of a door. Even if he was caught in the act, there was a good chance we would put it all down to the accidental happenings of a dog playing with a weapon he had found.

"But once all this had occurred to me, I was only at the beginning

of the practical problem. I had to try to take the dog intact. I was sure that any obvious suspicion of Mutt would trigger an explosion inside him. So first I brought Norrich and Mutt to a safe distance from the ship by suggesting we dig Summers' grave. In that way if Mutt did explode, the ship, at least, and its men would escape. Naturally I left a note with Commander Donahue, to be opened in case I did not return, so that Earth would at least investigate dogs in research centers.

"I then accused Norrich . . ."

Bigman broke in, "Sands of Mars, Lucky, for a while I thought you really meant it when you said Norrich had killed the V-frog and fooled us with built-in emotion."

Lucky shook his head. "No, Bigman. If he could fool us with built-in emotion, why bother to kill the V-frog? No, I was making sure that if Sirians were listening through Mutt's senses, they would be convinced I was on the wrong track. In addition, I was setting up a situation for Mutt's benefit.

"You see, Bigman, under instructions, attacked Norrich. As a Seeing Eye dog, Mutt was built with strong orders to defend his master against attack, and obedience to orders are Second Law. Usually there's no problem here. Few people attack a blind man and those who do will usually stop if the dog simply growls and bares its fangs.

"But Bigman persisted in his attack, and Mutt, for the first time since being built, had to carry through all the way. But how could he? He couldn't hurt Bigman. First Law. Yet he couldn't allow Norrich to be hurt either. It was a complete dilemma and Mutt went out of commission. Once that happened, I gambled that any bomb he contained could no longer be triggered. So I removed it and after that we were safe."

Panner took a deep breath. "Very neat."

Lucky snorted. "Neat? I could have done this the first day I landed on Jupiter Nine, if I had my wits about me. I almost had it, at that. The thought was at the edge of my mind constantly and I never caught it."

Bigman said, "What was it, Lucky? I still don't know."

"It was simple enough. The V-frog detected animal emotion as well as human emotion. We had an example of that when we first landed on Jupiter Nine. We detected hunger in the mind of a cat. Then, later, we met Norrich and he urged you to aim a blow at him in order to show off Mutt's protectiveness. You did so. I detected Norrich's emotions and yours, Bigman, through the V-frog, but al-

though Mutt showed every outward sign of anger, I detected no trace of such an emotion. There was the absolute proof as early as that, that Mutt had no emotions and was therefore no dog but a robot. Yet I was so convinced that I was looking for some human that my mind refused to see that point. . . . Well, let's go to dinner and visit Norrich on the way. I want to promise him that we'll get him another dog, a real one."

They arose, and Bigman said, "Anyway, Lucky, maybe it took some time, but we've stopped the Sirians."

Lucky said quietly, "I don't know that we've stopped them, but certainly we've slowed them down."





# **LUCKY STARR AND THE RINGS OF SATURN**

# DEDICATION

In the memory of

Henry Kuttner

and

Cyril Kornbluth

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# 1

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## The Invaders

The Sun was a brilliant diamond in the sky, just large enough to the naked eye to be made out as something more than a star; as a tiny white-hot pea-sized globe.

Out here in the vastness of space, near the second largest planet of the Solar System, the Sun gave out only one per cent of the light it cast on man's home planet. It was still, however, the brightest object in the sky, as four thousand full Moons would be.

Lucky Starr gazed thoughtfully at the visiplate which centered the image of the distant Sun. John Bigman Jones watched with him, an odd contrast to Lucky's tall and rangy figure. When John Bigman Jones stretched himself to his full height, he stood five foot two exactly. But the little man did not measure himself in inches and he allowed people to call him by his middle name only: Bigman.

Bigman said, "You know, Lucky, it's nearly nine hundred million miles away. The Sun, I mean. I've never been out this far."

The third man in the cabin, Councilman Ben Wessilewsky, grinned over his shoulder from his place at the controls. He was another large man, though not as tall as Lucky, and his shock of yellow hair topped a face that had grown space-brown in the service of the Council of Science.

He said, "What's the matter, Bigman? Scared way out here?"

Bigman squawked, "Sands of Mars, Wess, you get your hands off those controls and say that again."

He had dodged around Lucky and was making for the Councilman, when Lucky's hands came down on Bigman's shoulders and lifted him bodily. Bigman's legs still pumped, as though carrying

him toward Wess at a charge, but Lucky put his Mars-born friend back in his original position.

"Stay put, Bigman."

"But, Lucky, you heard him. This long clobber thinks there's more *to* a man just because there's more *of* him. If that Wess is six feet tall, that just means there's an extra foot of flab——"

"All right, Bigman," said Lucky. "And, Wess, let's save the humor for the Sirians."

He spoke quietly to both, but there was no questioning his authority.

Bigman cleared his throat and said, "Where's Mars?"

"On the other side of the Sun from us."

"Wouldn't you know," said the little fellow disgustedly. Then, brightening, "But hold on, Lucky, we're a hundred million miles below the plane of the Ecliptic. We ought to be able to see Mars below the Sun; peeking out from behind, sort of."

"Uh-huh, we should. Actually, it's a degree or so away from the Sun, but that's close enough for it to be drowned out in the glare. You can make out Earth, though, I think."

Bigman allowed a look of haughty disgust to cross his face. "Who in space wants to see Earth? There isn't anything there but people; mostly groundhogs who've never even been a hundred miles off the surface. I wouldn't look at it if that were all there was in the sky to look at. You let Wess look at it. That's his speed."

He walked moodily away from the visiplat.

Wess said, "Hey, Lucky, how about getting Saturn on and taking a good look at it from this angle? Come on, I've been promising myself a treat."

"I don't know," said Lucky, "that the sight of Saturn these days is exactly what you might call a treat."

He said it lightly, but for a moment silence fell uneasily within the confined pilot room of *The Shooting Starr*.

All three felt the change in atmosphere. Saturn meant danger. Saturn had taken on a new face of doom to the peoples of the Terrestrial Federation. To six billion people on Earth, to additional millions on Mars, the Moon, and Venus, to scientific stations on Mercury, Ceres, and the outer moons of Jupiter, Saturn had become something newly and unexpectedly deadly.

Lucky was the first to shrug off that moment of depression, and, obedient to the touch of his fingers, the sensitive electronic scanners set into the hull of *The Shooting Starr* rotated smoothly on their

universal gimbals. As that happened, the field of vision in the visiplat shifted.

The stars marched across the visiplat in steady procession, and Bigman said with a curl of hatred in his upper lip, "Any of those things Sirius, Lucky?"

"No," said Lucky, "we're working through the Southern Celestial Hemisphere and Sirius is in the Northern. Would you like to see Canopus?"

"No," said Bigman. "Why should I?"

"I just thought you might be interested. It's the second brightest star and you could pretend it was Sirius." Lucky smiled slightly. It always amused him that the patriotic Bigman should be so annoyed because Sirius, home star of the great enemies of the Solar System (though themselves descendants of Earthmen), was the brightest star in Earth's heavens.

Bigman said, "Very funny. Come on, Lucky, let's see Saturn, and then when we get back to Earth you can get on some comedy show and panic everybody."

The stars kept their smooth motion, then slowed and stopped. Lucky said "There it is—unmagnified, too."

Wess locked the controls and twirled in the pilot's seat so that he might see also.

It was a half-moon in appearance, somewhat bulging into more than half, just large enough to be seen as such, bright with a soft yellow light that was dimmer in the center than along the edges.

"How far away are we?" Bigman asked in astonishment.

Lucky said, "About a hundred million miles, I think."

"Something's wrong," Bigman said. "Where are the rings? I've been counting on a good look."

*The Shooting Starr* was high above the south pole of Saturn. From that position it should see the rings broad on.

Lucky said, "The rings are blurred into the globe of the planet, Bigman, because of the distance. Suppose we magnify the image and take a closer look."

The spot of light that was Saturn expanded and stretched in every direction, growing. And the half-moon that it had seemed to be broke up into three segments.

There was still a central globe, half-mooned. Around it, however, touching the globe at no point, was a circularly curved ribbon of light, divided into two unequal halves by a dark line. As the ribbon curved about Saturn and entered its shadow, it was cut off in darkness.

"Yes, sir, Bigman," said Wess, lecturing, "Saturn itself is only seventy-eight thousand miles in diameter. At a hundred million miles, it would just be a dot of light, but count in the rings and there are nearly two hundred thousand miles of reflecting surface from one end to the other."

"I know all that," said Bigman indignantly.

"And what's more," continued Wess, unheeding, "at a hundred million miles, the seven-thousand-mile break between Saturn's surface and the innermost portion of the rings just couldn't be seen; let alone the twenty-five-hundred-mile break that divides the rings in two. That black line is called Cassini's division, you know, Bigman."

"I said I know," roared Bigman. "Listen, Lucky, that clobber is trying to make out I didn't go to school. Maybe I didn't get much schooling, but there isn't anything he has to tell me about space. Say the word, Lucky; say you'll let him stop hiding behind you and I'll squash him like a bug."

Lucky said, "You can make out Titan."

At once Bigman and Wess said in chorus, "Where?"

"Right there." Titan showed as a tiny half-moon about the size, under current magnification, that Saturn and its ring system had appeared to be without magnification. It was near the edge of the viewport.

Titan was the only sizable moon in the Saturnian system. But it wasn't its size that made Wess stare at it with curiosity and Bigman with hate.

It was, instead, that the three were almost certain that Titan was the only world in the Solar System populated by men who did not acknowledge the overlordship of Earth. Suddenly and unexpectedly it had been revealed as a world of the enemy.

It brought the danger suddenly closer. "When do we get inside the Saturnian system, Lucky?"

Lucky said, "There's no real definition as to what is the Saturnian system, Bigman. Most people consider a world's system to include all the space out to the distance where the farthest body is moving under the gravitational influence of that world. If that's so, we're still outside the Saturnian system."

"The Sirians say, though——" began Wess.

"To Sun-center with the Sirian coppers!" roared Bigman, slapping his high boots in anger. "Who cares what they say?" He slapped his boots again as though every Sirian in the system were under the force of his blows. His boots were the most truly Martian thing about him. Their raucous coloring, orange and black in a curving check-



erboard design, was the loud proclamation that their owner had been born and bred among the Martian farms and domed cities.

Lucky blanked out the visiplat. The detectors on the ship's hulls retracted, leaving the ship's outer skin smooth, gleaming, and unbroken except for the bulge that ringed the stern and held *The Shooting Starr's* Agrav attachment.

Lucky said, "We can't allow ourselves the luxury of the who-cares-what-they-say attitude, Bigman. At the moment the Sirians have the upper hand. Maybe we'll get them out of the Solar System eventually, but right now the only thing we can do is to play it their way for the while."

Bigman muttered rebelliously, "We're in our own system."

"Sure, but Sirius is occupying this part of it and, pending an interstellar conference, there isn't anything Earth can do about it, unless it's willing to start a war."

There was nothing to be said to that. Wess returned to his controls, and *The Shooting Starr*, with minimum expenditure of thrust, making use of Saturn's gravity to the maximum, continued to sink rapidly toward the polar regions of the planet.

Down, down, deeper into the grip of what was now a Sirian world, its space swarming with Sirian ships some fifty trillion miles from their home planet and only seven hundred million miles from Earth. In one giant step Sirius had covered 99.999 per cent of the distance between itself and Earth and established a military base on Earth's very doorstep.

If Sirius were allowed to remain there, then in one sudden moment Earth would sink to the status of second-class power at Sirius's mercy. And the interstellar political situation was such that for the moment all of Earth's giant military establishment, all of her mighty ships and weapons were helpless to deal with the situation.

Only three men in one small ship, on their own initiative and unauthorized by Earth, were left to try, by skill and craft, to reverse the situation, knowing that if they were caught they could be executed out of hand as spies—in their own Solar System by invaders of that Solar System—and that Earth could not do a solitary thing to save them.

# 2

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## Pursuit

As little as a month ago there had been no thought of the danger, no barest notion, until it exploded in the face of Earth's government. Steadily and methodically the Council of Science had been cleaning up the nest of robot spies that had riddled Earth and its possessions and whose power had been broken by Lucky Starr on the snows of Io.

It had been a grim job and, in a way, a frightening one, for the espionage had been thorough and efficient and, moreover, had come within an ace of succeeding and damaging Earth desperately.

Then, at the moment when the situation seemed completely in the clear at last, a crack appeared in the healing structure, and Hector Conway, Chief Councilman, awakened Lucky in the small hours one night. He showed signs of hurried dressing, and his fine white hair was in rumpled disarray.

Lucky, blinking sleep out of his eyes, offered coffee and said in amazement, "Great Galaxy, Uncle Hector" (Lucky had called him that since his early orphaned days, when Conway and Augustus Henree had been his guardians), "are the visiphone circuits out?"

"I dared not trust the visiphone, my boy. We're in a dreadful mess."

"In what way?" Lucky asked the question quietly, but he removed the upper half of his pajamas and began washing.

Bigman came in, stretching and yawning. "Hey, what's all this Mars-forsaken noise about?" Recognizing the Chief Councilman, he snapped into wakefulness. "Trouble, sir?"

"We've let Agent X slip through our fingers."

"Agent X? The mysterious Sirian?" Lucky's eyes narrowed a bit. "The last I heard of him, the Council had decided he didn't exist."

"That was before the robot spy business turned up. He's been clever, Lucky, darned clever. It takes a clever spy to convince the Council he doesn't exist. I should have put you on his track, but there always seemed something else you had to do. Anyway——"

"Yes?"

"You know how all this robot spy business showed there must be a central clearing agency for the information being gathered and that it pointed to a position on Earth itself as the location of the agency. That got us on the trail of Agent X all over again, and one of the strong possibilities for that role was a man named Jack Dorrance at Acme Air Products right here in International City."

"I hadn't known this."

"There were many other candidates for the job. But then Dorrance took a private ship off Earth and blasted right through an emergency block. It was a stroke of luck we had a Councilman at Port Center who took the right action at once and followed. Once the report of the ship's block-blasting reached us, it took only minutes to find that of all the suspects only Dorrance was out of surveillance check. He'd gotten past us. A few other matters fit in then and—anyway, he's Agent X. We're sure of it now."

"Very well, then, Uncle Hector. Where's the harm? He's gone."

"We know one more thing now. He's taken a personal capsule with him, and we have no doubt that that capsule contains information he has managed to collect from the spy network over the Federation, and, presumably, has not yet had time to deliver to his Sirian bosses. Space knows exactly what he has, but there must be enough there to blow our security to pieces if it gets into Sirian hands."

"You say he was followed. Has he been brought back?"

"No." The harassed Chief Councilman turned pettish. "Would I be here if he had been?"

Lucky asked suddenly, "Is the ship he took equipped to make the Jump?"

"No," cried the ruddy-faced Chief Councilman, and he smoothed his silvered thatch of hair as though it had risen in horror at the very thought of the Jump.

Lucky drew a deep breath of relief too. The Jump was, of course, the leap through hyperspace, a movement that carried a ship outside ordinary space and brought it back again into a point in space many light-years away, all in an instant.

In such a ship Agent X would, very likely, get away.

Conway said, "He worked solo; his getaway was solo. That was part of the reason he slipped through our fingers. And the ship he took was an interplanetary cruiser designed for one-man operation."

"And ships equipped with hyperspatials don't come designed for one-man operation. Not yet, anyway. But, Uncle Hector, if he's taken an interplanetary cruiser, then I suppose that's all he needs."

Lucky had finished washing and was dressing himself rapidly. He turned to Bigman suddenly. "And how about you? Snap into your clothes, Bigman."

Bigman, who was sitting on the edge of the couch, virtually turned a somersault getting off it.

Lucky said, "Probably, waiting for him somewhere in space, is a Sirian-manned ship that is equipped with hyperspatials."

"Right. And he's got a fast ship, and with his start and speed, we may not catch him or even get within weapons range. And that leaves——"

"*The Shooting Starr*. I'm ahead of you, Uncle Hector. I'll be on the *Shooter* in an hour, and Bigman with me, assuming he can drag his clothes on. Just get me the present location and course of the pursuing ships and the identifying data on Agent X's ship and we'll be on our way."

"Good." Conway's harried face smoothed out a bit. "And, David"—he used Lucky's real name, as he always did in moments of emotion—"you *will* be careful?"

"Did you ask that of the personnel on the other ten ships too, Uncle Hector?" Lucky asked, but his voice was soft and affectionate.

Bigman had one hip boot pulled up now and the other in his hand. He patted the small holster on the velvety inner surface of the free boot. "Are we on our way, Lucky?" The light of action glowed in his eyes, and his puckish little face was wrinkled in a fierce grin.

"We're on our way," said Lucky, reaching out to tousle Bigman's sandy hair. "We've been rusting on Earth for how long? Six weeks? Well, that's long enough."

"And how," agreed Bigman joyfully, and pulled on the other boot.

They were out past the orbit of Mars before they made satisfactory sub-etheric contact with the pursuing ships, using the tightest scrambling.

It was Councilman Ben Wessilewsky on the T.S.S. *Harpoon* who answered.

He shouted, "Lucky! Are you joining us? Swell!" His face

grinned out of the visiplat and he winked. "Got room to squash Bigman's ugly puss into a corner of your screen? Or isn't he with you?"

"I'm with him," howled Bigman as he plunged between Lucky and the transmitter. "Think Councilman Conway would let this big lunk go anywhere without me to keep an eye on him so's he doesn't trip over his big feet?"

Lucky picked Bigman up and tucked him, squawking, under one arm. He said, "Seems to be a noisy connection, Wess. What's the position of the ship we're after?"

Wess, sobering, gave it. He said, "The ship's *The Net of Space*. It's privately owned, with a legitimate record of manufacture and sale. Agent X must have bought it under a dummy name and prepared for emergency a long time ago. It's a sweet ship and it's been accelerating ever since it took off. We're falling behind."

"What's its power capacity?"

"We've thought of that. We've checked the manufacturer's record of the craft, and at the rate he's expending power, he can't go much farther without either cutting motors or sacrificing maneuverability once he reaches destination. We're counting on driving him into that exact hole."

"Presumably, though, he may have had the sense to rev up the ship's power capacity."

"Probably," said Wess, "but even so he can't keep this up forever. The thing I worry about is the possibility that he might evade our mass detectors by asteroid-skipping. If he can get the breaks in the asteroid belt, we may lose him."

Lucky knew that trick. Place an asteroid between yourself and a pursuer, and the pursuer's mass detectors locate the asteroid rather than the ship. When a second asteroid comes within reach, the ship shifts from one to the other, leaving the pursuer with his instrument still fastened on the first rock.

Lucky said, "He's moving too fast to make the maneuver. He'd have to decelerate for half a day."

"It would take a miracle," agreed Wess frankly, "but it took a miracle to put us on his trail, and so I almost expect another miracle to cancel the first."

"What was the first miracle? The Chief said something about an emergency block."

"That's right." Wess told the story crisply, and it didn't take long. Dorrance, or Agent X (Wess called him by either name), had slipped surveillance by using an instrument that distorted the spy-beam into

uselessness. (The instrument had been located, but its workings were fused and it could not even be determined if it was of Sirian manufacture.) He reached his getaway ship, *The Net of Space*, without trouble. He was ready to take off with his proton micro-reactor activated, his motor and controls checked, clear space above—and then a limping freight ship, meteor-struck and unable to radio ahead, had appeared in the stratosphere, signaling desperately for a clear field.

The emergency block was flashed. All ships in port were held fast. Any ship in the process of take-off, unless it was already in actual motion, had to abandon take-off procedure.

*The Net of Space* ought to have abandoned take-off, but it did not. Lucky Starr could well understand what the feelings of Agent X aboard must have been. The hottest item in the Solar System was in his possession, and every second counted. Now that he had made his actual move he could not rely on too long a time before the Council would be on his heels. If he abandoned take-off it would mean an untold delay while a riddled ship limped down and ambulances slowly emptied it. Then, when the field was cleared again, it would mean reactivation of the micro-reactor and another controls check. He could not afford the delay.

So his jet blasted and up he went.

And still Agent X might have escaped. The alarm sounded, the port police put out wild messages to *The Net of Space*, but it was Councilman Wessilewsky, serving a routine hitch at Port Center, who took proper action. He had played his part in the search for Agent X, and a ship that blasted off against an emergency block somehow smelled wildly of just enough desperation to mean Agent X. It was the wildest possible guess, but he acted.

With the authority of the Council of Science behind him (which superseded all other authority except that contained in a direct order from the President of the Terrestrial Federation), he ordered ships into space, contacted Council Headquarters, and then boarded the T.S.S. *Harpoon* to guide the pursuit. He had already been in space for hours before the Council as a whole caught up with events. But then the message came through that he was indeed pursuing Agent X and that other ships would be joining him.

Lucky listened gravely and said, "It was a chance that paid off, Wess. And the right thing to do. Good work."

Wess grinned. Councilmen traditionally avoided publicity and the trappings of fame, but the approval of one's fellows in the Council was something greatly to be desired.

Lucky said, "I'm moving on. Have one of your ships maintain mass contact with me."

He broke visual contact, and his strong, finely formed hands closed almost caressingly on his ship's controls—his *Shooting Starr*, which in so many ways was the sweetest vessel in space.

*The Shooting Starr* had the most powerful proton micro-reactors that could be inserted into a ship of its size; reactors almost powerful enough to accelerate a battle cruiser at fleet-regulation pace; reactors almost powerful enough to manage the Jump through hyperspace. The ship had an ion drive that cut out most of the apparent effects of acceleration by acting simultaneously on all atoms aboard ship, including those that made up the living bodies of Lucky and Bigman. It even had an Agrav, recently developed and still experimental, which enabled it to maneuver freely in the intense gravitational fields of the major planets.

And now *The Shooting Starr's* mighty motors hummed smoothly into a higher pitch, just heard, and Lucky felt the slight pressure of such backward drag as was not completely compensated for by the ion drive. The ship bounded outward into the far reaches of the Solar System, faster, faster, still faster. . . .

And still Agent X maintained his lead, and *The Shooting Starr* gained too slowly. With the main body of the asteroid belt far behind, Lucky said, "It looks bad, Bigman."

Bigman looked surprised. "We'll get him, Lucky."

"It's where he's heading. I was sure it would be a Sirian mother-ship waiting to pick him up and make the Jump homeward. But such a ship would be either way out of the plane of the Ecliptic or it would be hidden in the asteroid belt. Either way, it could count on not being detected. But Agent X stays in the Ecliptic and heads beyond the asteroids."

"Maybe he's just trying to shake us before he heads for the ship."

"Maybe," said Lucky, "and maybe the Sirians have a base on the outer planets."

"Come on, Lucky." The small Martian cackled his derision. "Right under our noses?"

"It's hard to see under our noses sometimes. His course is aimed right at Saturn."

Bigman checked the ship's computers, which were keeping constant tab on the other's course. He said, "Look, Lucky, the clobber is still on a ballistic course. He hasn't touched his motors in twenty million miles. Maybe he's out of power."

"And maybe he's saving his power for maneuvers in the Satur-

nian system. There'll be a heavy gravitational drag there. At least I *hope* he's saving power. Great Galaxy, I hope he is." Lucky's lean, handsome face was grave now and his lips were pressed together tightly.

Bigman looked at him with astonishment. "Sands of Mars, Lucky, why?"

"Because if there is a Sirian base in Saturn's system, we'll need Agent X to lead us to that base. Saturn has one tremendous satellite, eight sizeable ones, and dozens of splinter worlds. It would help to know exactly where it was."

Bigman frowned. "The cobbler wouldn't be dumb enough to lead us there."

"Or maybe to let us catch him. . . . Bigman, calculate his course forward to the point of intersection with Saturn's orbit."

Bigman did so. It was a routine moment of work for the computer.

Lucky said, "And how about Saturn's position at the moment of intersection? How far will Saturn be from Agent X's ship?"

There was the short pause necessary for getting the elements of Saturn's orbit from the Ephemeris, and then Bigman punched it in. A few seconds of calculation and Bigman suddenly rose to his feet in alarm. "Lucky! Sands of Mars!"

Lucky did not need to ask the details. He said, "I'm thinking that Agent X may have decided on the one way to keep from leading us to the Sirian base. If he continues on ballistic course exactly as he is now, he will strike Saturn itself—and sure death."



# 3

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## Death in the Rings

There came to be no possible doubt about it as the hours passed. Even the pursuing guard ships, far behind *The Shooting Starr*, too far off to get completely accurate fixes on their mass detectors, were perturbed.

Councilman Wessilewsky contacted Lucky Starr. "Space, Lucky," he said, "where's he going?"

"Saturn itself, it seems," said Lucky.

"Do you suppose a ship might be waiting for him on Saturn? I know it has thousands of miles of atmosphere with million-ton pressures, and without Agrav motors they couldn't—Lucky! Do you suppose they *have* Agrav motors and forcefield bubbles?"

"I think he may be simply crashing to keep us from catching him."

Wess said dryly, "If he's all that anxious to die, why doesn't he turn and fight, force us to destroy him and maybe take one or two of us with him?"

"I know," said Lucky, "or why not short-circuit his motors, leaving Saturn a hundred million miles off course? In fact, it bothers me that he should be attracting attention to Saturn this way." He fell into a thoughtful silence.

Wess broke in. "Well, then, can you cut him off, Lucky? Space knows *we're* too far away."

Bigman shouted from his place at the control panel, "Sands of Mars, Wess, if we rev up enough ion beam to catch him, we'll be moving too fast to maneuver him away from Saturn."

"Do *something*."

"Space, there's an intelligent order," said Bigman. "Real helpful. 'Do something.'"

Lucky said, "Just keep on the move, Wess. I'll do something."

He broke contact and turned to Bigman. "Has he answered our signals at all, Bigman?"

"Not one word."

"Forget that for now and concentrate on tapping his communication beam."

"I don't think he's using one, Lucky."

"He may at the last minute. He'll have to take a chance then if he has anything to say at all. Meanwhile we're going for him."

"How?"

"Missile. Just a small pea-shot."

It was his turn to bend over the computer. While *The Net of Space* moved in an unpowered orbit, it required no great computation to direct a pellet at the proper moment and velocity to strike the fleeing ship.

Lucky readied the pellet. It was not designed to explode. It didn't have to. It was only a quarter of an inch in diameter, but the energy of the proton micro-pile would hurl it outward at five hundred miles a second. Nothing in space would diminish that velocity, and the pellet would pass through the hull of *The Net of Space* as though it were butter.

Lucky did not expect it would, however. The pellet would be large enough to be picked up on its quarry's mass detectors. *The Net of Space* would automatically correct course to avoid the pellet, and that would throw it off the direct course to Saturn. The time lost by Agent X in computing the new course and correcting it back to the old one might yet allow *The Shooting Starr* to come close enough to make use of a magnetic grapple.

It all added up to a slim chance, perhaps vanishingly slim, but there seemed no other possible course of action. Lucky touched a contact. The pellet sped out in a soundless flash, and the ship's mass-detector needles jumped, then quieted rapidly, as the pellet receded.

Lucky sat back. It would take two hours for the pellet to make (or almost make) contact. It occurred to him that Agent X might be completely out of power; that the automatic procedures might direct a course change which could not be followed through; that the pellet would penetrate, blow up the ship, perhaps, and in any case leave its course unchanged and still marked for Saturn.

He dismissed the idea almost at once. It would be incredible to suppose that Agent X would run out of the last bit of power at the

moment his ship took on the precise collision course. It was infinitely more likely that some power was left him.

The hours of waiting were deadly. Even Hector Conway, far back on Earth, grew impatient with the periodic bulletins and made direct contact on the sub-ether.

"But where in the Saturnian system do you suppose the base might be?" he asked worriedly.

"If there is one," said Lucky cautiously, "If what Agent X is doing is not a tremendous effort to mislead us, I would say the most obvious choice is Titan. It's Saturn's one really large satellite, with three times the mass of our own Moon and over twice the surface area. If the Sirians have holed up underground, trying to dredge all of Titan for them would take a long time."

"It's hard to believe that they would have dared do this. It's virtually an act of war."

"Maybe so, Uncle Hector, but it wasn't so long ago they tried to establish a base on Ganymede."

Bigman called out sharply, "Lucky, he's moving."

Lucky looked up in surprise. "Who's moving?"

"*The Net of Space*. The Sirian cobbler."

Lucky said hastily, "I'll get in touch with you later, Uncle Hector," and broke contact. He said, "But he can't be moving, Bigman. He can't possibly have detected the pellet yet."

"Look and see for yourself, Lucky. I tell you he's moving."

Lucky, in one stride, was at the mass detectors of *The Shooting Starr*. For a long time now it had had a fix on the fleeing quarry. It had been adjusted for the ship's unpowered motion through space, and the blob that represented the detectable mass had been a small bright star mark on the screen.

But now the mark was drifting. It was a short line.

Lucky's voice was softly intense. "Great Galaxy, *of course!* Now it makes sense. How could I think his first duty would be merely to avoid capture? Bigman——"

"Sure, Lucky. What?" The little Martian was ready for anything.

"We're being outmaneuvered. We've got to destroy him now even if it means crashing into Saturn ourselves." For the first time since the ion-beam jets had been placed aboard *The Shooting Starr* the year before, Lucky added the emergency thrusts to the main drive. The ship reeled as every last atom of power it carried was turned into a giant thrust backward that all but burned it out.

Bigman struggled for breath. "But what's it all about, Lucky?"

"It's not Saturn he's headed for, Bigman. He was just making

use of the full power of its gravitational field to help him keep ahead of us. Now he's cutting around the planet to get into orbit. It's the rings he's headed for. Saturn's rings." The young Councilman's face was drawn with tension. "Keep after that communication beam, Bigman. He'll have to talk now. Now or never."

Bigman bent over his wave analyzer with a quickening heartbeat, though for the life of him he could not understand why the thought of Saturn's rings should so disturb Lucky.

*The Shooting Starr's* pellet came nowhere near its mark, not within fifty thousand miles. But now it was *The Shooting Starr* itself that was a pellet, striving for junction; and it, too, would miss.

Lucky groaned. "We'll never make it. There's not enough room left to make it."

Saturn was a giant in the sky now, with its rings a thin gash across its face. Saturn's yellow globe was almost at the full as *The Shooting Starr* burned toward it from the direction of the Sun.

And Bigman suddenly exploded, "Why, the dirty clobber! He's melting into the rings, Lucky. Now I see what got you about the rings."

He worked furiously at the mass detector, but it was hopeless. As a portion of the rings came into focus, each of the countless solid masses that composed them formed its own star mark on the screen. The screen turned pure white and *The Net of Space* was gone.

Lucky shook his head. "That's not an insoluble problem. We're close enough to get a visual fix now. It's something else that I'm sure is coming."

Lucky, pale and engrossed, had the visiplat under maximum telescopic enlargement. *The Net of Space* was a tiny metal cylinder obscured but not hidden by the material of the rings. The individual particles in the rings were no larger than coarse gravel and were only sparkles as they caught and threw back the light of the distant Sun.

Bigman said, "Lucky! I've got his communications beam. . . . No, no, wait now. . . . Yes, I have it."

There was a wavering voice crackling in the control room now, obscured and distorted. Bigman's deft fingers worked at the unscrambler, trying to fit it better and ever better with the unknown characteristics of the Sirian scrambling system.

The words would die out, then come back. There was silence except for the faint hum of the recorder taking down permanently whatever came through.

"... not ... wor ... hither ... " (Quite a pause while Bigman fought frantically with his detectors.) "... on trail and ... couldn't

shake . . . done for and I must transmit . . . rn's rings in normal orb  
. . . dy launch . . . stics of or . . . follow . . . co-ordinate read thus . . ."

It broke off altogether at that precise point; the voice, the static, everything.

Bigman yelled, "Sands of Mars, something's blown!"

"Nothing here," said Lucky. "It's *The Net of Space*."

He had seen it happen two seconds after transmission ceased. Transmission through the sub-ether was at virtually infinite velocity. The light that he saw through the visiplate traveled at only 186,000 miles a second.

It took two seconds for the sight of it to reach Lucky. He saw the rear end of *The Net of Space* glow a cherry-red, then open and spatter into a flower of melting metal.

Bigman caught the tail end of it, and he and Lucky watched wordlessly until radiation cooled the spectacle.

Lucky shook his head. "That close to the rings, even though you're outside the main body of them, space has more than its share of speeding material. Maybe he had no further power to run the ship out of the way of one of those bits. Or maybe two pieces converged at him from slightly different directions. In any case, he was a brave man and clever enemy."

"I don't get it, Lucky. What was he doing?"

"Don't you see even now? While it was important for him not to fall into our hands, it wasn't enough for him to die. I should have seen that earlier myself. His most important task was to get the stolen information in his possession to Sirius. He didn't dare risk the sub-ether for reeling off what may have been thousands of words of information—with ships in pursuit and possibly tapping his beam. He had to restrict his message to the briefest essentials and see to it that the capsule was placed bodily in the grip of the Sirians."

"How could he do that?"

"What we caught of his message contains the syllable 'orb'—probably for 'orbit'—and 'dy launch,' meaning 'already launched.'"

Bigman caught at Lucky's arms, his small fingers pinching tightly on the other's sinewy wrists. "He launched the capsule into the rings; is that it, Lucky? It'll be a piece of gravel along with a zillion other pieces, like—a pebble on the Moon—or a water drop in an ocean."

"Or," said Lucky, "like a piece of gravel in Saturn's rings, which is worst of all. Of course he was destroyed before he could give the coordinates of the orbit he had chosen for the capsule, so the Sirians

and we start even, and we had better make the most of that without delay.”

“Start looking? Now?”

“Now! If he was ready to give the co-ordinates, knowing I was hot after him, he must also have known the Sirians were close by. . . . Contact the ships, Bigman, and give them the news.”

Bigman turned to the transmitter but never touched it. The reception button was glowing with intercepted radio waves. Radio! Ordinary etheric communication! Obviously someone was close by (certainly within the Saturnian system), and someone, moreover, felt not the least desire for secrecy, since a radio beam, unlike sub-etheric communication, was childishly simple to tap.

Lucky’s eyes narrowed. “Let’s receive, Bigman.”

The voice came through with that trace of accent, that broadening of vowels and sharpening of consonants. It was a Sirian voice.

It said, “—fy yourselves before we are forced to place a grapple on you and take you into custody. You have fourteen minutes to acknowledge reception.” There was a minute’s pause. “By authority of the Central Body, you are ordered to identify yourself before we are forced to place a grapple on you and take you into custody. You have thirteen minutes to acknowledge reception.”

Lucky said coldly, “Reception acknowledged. This is *The Shooting Starr* of the Terrestrial Federation, orbiting peacefully in the spatial volume of the Terrestrial Federation. No authority other than that of the Federation exists in these spaces.”

There was a second or two of silence (radio waves travel with only the speed of light) and the voice retorted, “The authority of the Terrestrial Federation is not recognized on a world colonized by the Sirian peoples.”

“Which world is that?” asked Lucky.

“The uninhabited Saturnian system has been taken possession of in the name of our government under the interstellar law that awards any uninhabited world to those who colonize it.”

“Not any uninhabited world. Any uninhabited stellar system.”

There was no answer. The voice said stolidly, “You are now within the Saturnian system and you are requested to leave forthwith. Any delay in acceleration outward will result in our taking you into custody. Any further ships of the Terrestrial Federation entering our territory will be taken into custody without additional warning. Your acceleration out of the Saturnian system must begin within eight minutes or we will take action.”

Bigman, his face twisted with unholy glee, whispered, "Let's go in and get them, Lucky. Let's show them the old *Shooter* can fight."

But Lucky paid no attention. He said into the transmitter, "Your remark is noted. We do not accept Sirian authority, but we choose, of our own will, to leave and will now do so." He snapped off contact.

Bigman was appalled. "Sands of Mars, Lucky! Are we going to run from a bunch of *Sirians*? Are we going to leave that capsule in Saturn's rings for the *Sirians* to pick up?"

Lucky said, "Right now, Bigman, we have to." His head was bent and his face was pale and strained, but there was something in his eyes that was not quite that of a man backing down. Anything but that.

# 4

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## Between Jupiter and Saturn

The ranking officer in the pursuing squadron (not counting Councilman Wessilewsky, of course) was Captain Myron Bernold. He was a four-striper, still under fifty, and with the physique of a man ten years younger. His hair was graying, but his eyebrows were still their original black and his beard showed blue about his shaven chin.

He stared at the much younger Lucky Starr with undisguised scorn. "*And you backed away?*"

*The Shooting Starr*, having headed inward toward the Sun again, had met the ships of the squadron approximately halfway between the orbits of Jupiter and Saturn. Lucky had boarded the flagship.

He said now quietly, "I did what was necessary to be done."

"When the enemy had invaded our home system, retreat can never be necessary. You might have been blown out of space, but you would have had time to warn us and we would have been there to take over."

"With how much power left in your micro-pile units, Captain?"

The captain flushed. "Nor would it matter if we got blasted out of space. That couldn't have been done before we had, in our turn, alerted home base."

"And started a war?"

"*They've* started the war. The Sirians. . . . It is now my intention to move on to Saturn and attack."

Lucky's own rangy figure stiffened. He was taller than the captain, and his cool glance did not waver. "As full Councilman of the Council of Science, Captain, I outrank you and you know it. I will give no orders to attack. The orders I give you are to return to Earth."

"I would sooner—" The captain was visibly struggling with his



temper. His fists clenched. He said in a strangled voice, "May I ask the reason for the order, sir?" He emphasized the syllable of respect with heavy irony. "If, sir, you would be so good as to explain the excellent reason you no doubt have, sir. My own reasoning is based on a small tradition that the fleet happens to have. A tradition, sir, that the fleet does not retreat, sir."

Lucky said, "If you want my reasons, Captain, sit down and I'll give them to you. And don't tell me the fleet does not retreat. Retreat is a part of the maneuver of war, and a commanding officer who would rather have his ships destroyed than retreat has no business in command. I think it's only your anger that's speaking. Now, Captain, are we ready to start a war?"

"I tell you they have already started. They have invaded the Terrestrial Federation."

"Not exactly. They've occupied an unoccupied world. The trouble is, Captain, that the Jump through hyperspace has made travel to the stars so simple that Earthmen have colonized the planets of other stars long before ever colonizing the remoter portions of our own Solar System."

"Terrestrials have landed on Titan. In the year——"

"I know about the flight of James Francis Hogg. He landed on Oberon in the Uranian system also. But that was just exploration, not colonization. The Saturnian system was left empty, and an unoccupied world belongs to the first group that colonizes it."

"If," said the captain heavily, "that unoccupied planet or planetary system is part of an unoccupied stellar system. Saturn isn't that, you'll admit. It's part of our Solar System, which, by the howling devils of space, is occupied."

"True, but I don't think there is any official agreement to that effect. Perhaps it may be decided that Sirius is within its rights in occupying Saturn."

The captain brought his fist down upon his knee. "I don't care what the space lawyers say. Saturn is ours, and any Earthman with blood in him will agree. We'll kick the Sirians off and let our weapons decide the law."

"But that's exactly what Sirius would want us to do!"

"Then let's give her what she wants."

"And we will be accused of aggression. . . . Captain, there are fifty worlds out there among the stars who never forget that they were our colonies once. We gave them their freedom without a war, but they forget that. They only remember we are still the most populous and most advanced of all the worlds. If Sirius shouts we have

committed unprovoked aggression, she'll unite them against us. It is just for that reason that she is trying to provoke us to attack now, and it is just for that reason that I refused the invitation and came away."

The captain bit at his lower lip and would have answered, but Lucky drove on.

"On the other hand, if we do nothing, we can accuse the Sirians of aggression and we'll split public opinion in the outer worlds wide open. We can exploit that and bring them to our own side."

"The outer worlds to *our* side?"

"Why not? There isn't a stellar system in existence that doesn't have hundreds of unoccupied worlds of all sizes. They won't want to set up a precedent that would set every system to raiding every other system for bases. The only danger is that we will stampede them into opposition to us by making it look as if we are powerful Earth throwing our weight about against our former colonies."

The captain rose from his seat and strode the length of his quarters and then back. He said, "Repeat your orders."

Lucky said, "Do you understand my reason for retreat?"

"Yes. May I have my orders?"

"Very well. I order you to deliver this Capsule I now give you to Chief Councilman Hector Conway. You are not to discuss anything that has happened during this pursuit with anyone else, either on the sub-ether or in any other fashion. You are to take no hostile action—repeat, no hostile action—against any Sirian forces, unless directly attacked. And if you go out of your way to meet such forces, or if you deliberately provoke attack, I shall see you court-martialed and convicted. Is all clear?"

The captain stood frozen-faced. His lips moved as though they were carved out of wood and badly hinged. "With all due respect, sir, would it be possible for the Councilman to take over command of my ships and deliver the message himself?"

Lucky Starr shrugged slightly and said, "You are very obstinate, Captain, and I even admire you for it. There are times in battle when this kind of bulldoggedness can be useful. . . . It is impossible for me to deliver this message, since it is my intention to return to *The Shooting Starr* and blast off for Saturn again."

The captain's military rigidity came unstuck. "What? Howling space, *what?*"

"I thought my statement was plain, Captain. I have left something undone there. My first task was to see to it that Earth was warned of the terrible political danger we are facing. If you will take care of

that warning for me, I can carry on where I now belong—back in the Saturnian system.”

The captain was grinning broadly. “Well, now, that’s different. I would like to come along with you.”

“I know that, Captain. Sheering away from a fight is the harder task for you, and I’m asking you to do it because I expect you are used to hard tasks. Now I want each of your ships to transfer some of their power into the micro-pile units of *The Shooting Starr*. There’ll be other supplies I’ll need from your stores.”

“You need only ask.”

“Very good. I will return to my ship and I will ask Councilman Wessilewsky to join me in my mission.”

He shook hands briefly with the now thoroughly friendly captain, and then Councilman Wessilewsky joined him as Lucky stepped into the inter-ship tube that snaked between the flagship and *The Shooting Starr*.

The inter-ship tube was at nearly its full extension, and it took several minutes to negotiate its length. The tube was airless, but the two Councilmen could maintain space-suit contact easily and sound waves would travel along the metal to emerge squawkily but distinctly enough. And, after all, no form of communication is quite as private as sound waves over short range, so it was in the air tube that Lucky was able to speak briefly to the other.

Finally Wess, changing the subject slightly, said, “Listen, Lucky, if the Sirians are trying to start trouble, why did they let you go? Why not have harassed you till you were forced to turn and fight?”

“As for that, Wess, you listen to the recording of what the Sirian ship had to say. There was a stiffness about the words; a failure to threaten actual harm, only magnetic grappling. I’m convinced it was a robot-piloted ship.”

“Robots!” Wess’s eyes widened.

“Yes. Judge from your own reaction what Earth’s would be if that speculation got about. The fact is that those robot-piloted ships could have done no harm to a human-piloted ship. The First Law of Robotics—that no robot can harm a human—would have prevented it. And that just made the danger greater. If I had attacked, as they probably expected me to, the Sirians would have insisted that I had made a murderous and unprovoked assault on defenseless vessels. And the outer worlds appreciate the facts of robotics as Earth does not. No, Wess, the only way I could cross them was to leave, and I did.”

With that, they were at the air-lock of *The Shooting Starr*.

Bigman was waiting for them. There was the usual grin of relief on his face at meeting Lucky again after even the smallest separation.

"Hey," he said. "What do you know? You didn't fall out of the inter-ship tube after all and—What's Wess doing here?"

"He's coming with us, Bigman."

The little Martian looked annoyed. "What for? This is a two-man ship we've got here."

"We'll manage a guest temporarily. And now we'd better get set to drain power from the other ships and receive equipment along the tube. After that we make ready for instant blast-off."

Lucky's voice was firm, his change of subject definite. Bigman knew better than to argue.

He muttered, "Sure thing," and stepped across into the engine room after one malignant scowl in the direction of Councilman Wesilewsky.

Wess said, "Now what's eating him? I haven't said a word about his size."

Lucky said, "Well, you have to understand the little fellow. He's not a Councilman officially, although he is one for all practical purposes. He's the only one who doesn't realize that. Anyway, he thinks that because you're another Councilman we'll get chummy and cut him out; have our little secrets from him."

Wess nodded. "I see. Are you suggesting then that we tell him——"

"No." The stress on the word was soft, but emphatic. "I'll tell him what has to be told. You say nothing."

At that moment Bigman stepped into the pilot room again and said, "She's sopping up the power," then looked from one to the other and growled, "Well, sorry I'm interrupting. Shall I leave the ship, gentlemen?"

Lucky said, "You'll have to knock me down first, Bigman."

Bigman made rapid sparring motions and said, "Oh boy, what a difficult task. You think an extra foot of clumped fat makes it any job?"

With blinding speed he was inside Lucky's arm as it was thrown out laughingly toward him, and his fists landed one-two, thwackingly, in Lucky's midsection.

Lucky said, "Feel better?"

Bigman danced back. "I pulled my punch because I didn't want Councilman Conway bawling me out for hurting you."

Lucky laughed. "Thank you. Now listen, I've got an orbit for you to calculate and send on to Captain Bernold."

"Sure thing." Bigman seemed quite at ease now, any rancor gone.

Wess said, "Listen, Lucky, I hate to act the wet blanket, but we're not very far from Saturn. It seems to me that the Sirians will have a fix on us right now and know exactly where we are, when we leave, and where we go."

"I think so too, Wess."

"Well, then, how in space do we leave the squadron and head back for Saturn without their knowing exactly where we are and heading us off too far from the system for our purposes?"

"Good question. I was wondering if you'd guess how. If you didn't, I was reasonably certain the Sirians wouldn't guess either, and they don't know the details of our system nearly as well as we do."

Wess leaned back in his pilot's chair. "Let's not make a mystery of it, Lucky."

"It's perfectly plain. All the ships, including ourselves, blast-off in tight formation, so that, considering the distance between the Sirians and ourselves, we'll register as a single spot on their mass detectors. We maintain that formation, flying on almost the minimum orbit to Earth, but just enough off course to make a reasonable approach to the asteroid Hidalgo, which is now moving out toward aphelion."

"Hidalgo?"

"Come on, Wess, you know it. It's a perfectly legitimate asteroid and known since the primeval days before space travel. The interesting thing about it is that it doesn't stay in the asteroid belt. At its closest to the Sun it moves in as close as the orbit of Mars, but at its farthest it moves out almost as far as Saturn's orbit. Now when we pass near it, Hidalgo will register on the Sirian mass-detection screens also, and from the strength with which it will register they'll know it to be an asteroid. Then they'll spot the mass of our ships moving on past Hidalgo toward Earth and they won't spot the less than ten per cent total decrease in ship's mass that will result when *The Shooting Starr* turns and heads back out from the Sun in Hidalgo's shadow. Hidalgo's path isn't directly toward the present position of Saturn by any means, but after two days in its shadow we can head well out of Ecliptic toward Saturn and rely on not being detected."

Wess raised his eyebrows. "I hope it works, Lucky."

He saw the strategy. The plane in which all the planets and commercial space-flight routes lay was the Ecliptic. One practically never looked for anything moving well above or below that zone. It was reasonable to suppose that a space ship moving on the orbit being

planned by Lucky would evade Sirian instruments. Yet there was still the look of uncertainty on Wess's face.

Lucky said, "Do you think we'll make it?"

Wess said, "Maybe we will. But even if we do get back—— Lucky, I'm in this and I'll do my part, but just let me say this once and I'll never say it again. I think we're as good as dead!"

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## Skimming Saturn's Surface

And so *The Shooting Starr* flashed alongside Hidalgo and then out on the flight beyond the Ecliptic and up again toward the southern polar regions of the Solar System's second largest planet.

At no time in their still short history of space adventure had Lucky and Bigman remained in space for so long a period without a break. It had been nearly a month now since they had left Earth. However, the small bubble of air and warmth that was *The Shooting Starr* was a bit of Earth that could keep itself so for an almost indefinite period to come.

Their power supply, built to maximum by the donation of the other ships, would last nearly a year, barring a full-scale battle. Their air and water, recirculated by way of the algae tanks, would last a lifetime. The algae even provided a food reserve in case their more orthodox concentrates ran out.

It was the presence of the third man that made for the only real discomfort. As Bigman had pointed out, *The Shooting Starr* was built for two. Its unusual concentration of power, speed, and armaments was made possible partly by the unusual economy of its living quarters. So turns had to be taken in sleeping on a quilt in the pilot room.

Lucky pointed out that any discomfort was made up for by the fact that four-hour watches at the controls could now be set up rather than the usual six-hour watches.

To which Bigman replied hotly, "Sure, and when I'm trying to sleep on this doggone blanket and Fatface Wess is at the controls, he keeps flashing every signal light right in my face."

"Twice each watch," said Wess patiently, "I check the various emergency signals to make sure they're in order. That's protocol."

"And," said Bigman, "he keeps whistling through his teeth. Listen, Lucky, if he gives me one more chorus of 'My Sweet Aphrodite of Venus'—just once more—I'll up and break off his arms halfway between shoulder and elbow, then beat him to death with the stumps."

Lucky said gravely, "Wess, please refrain from whistling refrains. If Bigman is forced to chastise you, he will get blood all over the pilot room."

Bigman said nothing, but the next time he was at the controls, with Wess asleep on the blanket and snoring musically, he managed somehow to step on the fingers of Wess's outstretched hand as he made for the pilot's stool.

"Sands of Mars," he said, holding up both hands, palms forward, and rolling his eyes at the other's sudden, tigerish yell. "I did think I felt something under my heavy Martian boots. My, my, Wess, was it your little thumbikins?"

"You better stay awake from now on," yelled Wess in furious agony. "Because if you go to sleep while I'm in the control room, you Martian sand rat, I'll squash you like a bug."

"I'm so frightened," said Bigman, going into a paroxysm of mock weeping that brought Lucky wearily out of his bunk.

"Listen," he said, "the next one of you two who wakes me trails the *Shooter* in his suit at the end of a cable for the rest of the trip."

But when Saturn and its rings came into near view, they were all in the pilot room, watching. Even as seen in the usual manner, from an equatorial view, Saturn was the most beautiful sight in the Solar System, and from a polar view . . .

"If I recall correctly," said Lucky, "even Hogg's exploratory voyage touched this system only at Iapetus and Titan, so that he saw only an equatorial view of Saturn. Unless the Sirians have done differently, we're the first human beings ever to see Saturn this close from this direction."

As with Jupiter, the soft yellow glow of Saturn's "surface" was really the reflected sunlight from the upper layers of a turbulent atmosphere a thousand miles or more in depth. And, as with Jupiter, the atmospheric disturbances showed up as zones of varying colors. But the zones were not the stripes they appeared to be from the usual equatorial view. Instead, they formed concentric circles of soft brown, lighter yellow, and pastel green about the Saturnian pole as a center.

But even that faded to nothing compared to the rings. At their present distance, the rings stretched over an arc of twenty-five degrees, fifty times the width of Earth's full Moon. The inner edge of



the rings was separated from the planet by a space of forty-five minutes of arc in which there was room to hold an object the size of the full Moon loosely enough to allow it to rattle.

The rings circled Saturn, touching it nowhere from the viewpoint of *The Shooting Starr*. They were visible for about three fifths of their circle, the rest being cut off sharply by Saturn's shadow. About three fourths of the way toward the outer edge of the ring was the black separation known as "Cassini's division." It was about fifteen minutes wide, a thick ribbon of blackness, dividing the rings into two paths of brightness of unequal width. Within the inner lip of the rings was a scattering of sparkle that shimmered but did not form a continuous whiteness. This was the so-called "crepe ring."

The total area exposed by the rings was more than eight times as great as that of the globe of Saturn. Furthermore, the rings themselves were obviously brighter, area for area, than Saturn itself, so that on the whole at least ninety per cent of the light reaching them from the planet came from its rings. The total light reaching them was about one hundred times that of Earth's full Moon.

Even Jupiter as seen from that startling nearness of Io was somehow nothing like this. When Bigman finally spoke, it was in a whisper.

He said, "Lucky, how come the rings are so bright? It makes Saturn itself look dim. Is that an optical illusion?"

"No," said Lucky, "it's real. Both Saturn and the rings get the same amount of light from the Sun, but they don't reflect the same amount. What we're seeing from Saturn is the light reflected from an atmosphere made up of hydrogen and helium, mainly, plus some methane. That reflects about sixty-three per cent of the light that hits it. The rings, however, are mostly solid chunks of ice, and they send back a minimum of eighty per cent, which makes them that much brighter. Looking at the rings is like looking at a field of snow."

Wess mourned, "And we've got to find one snowflake in the field of snow."

"But a *dark* snowflake," said Bigman excitedly. "Listen, Lucky, if all the ring particles are ice and we're looking for a capsule that's metal——"

"Polished aluminum," said Lucky, "will reflect even more light than will ice. It will be just as shiny."

"Well, then"—Bigman looked despairingly at the rings half a million miles away, yet so tremendous in area even at that distance—"this thing is hopeless."

"We'll see," said Lucky noncommittally.

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Bigman sat at the controls, adjusting orbit in short, quiet bursts of the ion drive. The Agrav controls had been connected so that *The Shooting Starr* was far more maneuverable in this volume of space, so close to the mass of Saturn, than any Sirian ship could possibly be.

Lucky was at the mass detector, the delicate probe of which scoured space for any matter, fixing its position by measuring its response to the gravitational force of the ship, if it were small, or the effect of its gravitational force upon the ship, if it were large.

Wess had just awakened and entered the pilot room, and all was silence and tension as the ship sank toward Saturn. Bigman watched Lucky's face out of the corner of his eye. Lucky had grown more and more abstracted as Saturn came near, abstracted and uncommunicative. Bigman had witnessed this before. Lucky was uncertain; he was gambling on poor odds and he would not talk of it.

Wess said, "I don't think you have to be sweating over the mass detector so, Lucky. There'll be no ships up here. It's when we get down to the rings that we'll find the ships. Plenty of them, probably. The Sirians will be looking for the capsule too."

"I agree with that," said Lucky, "as far as it goes."

"Maybe," said Bigman gloomily, "those cobbbers have found the capsule already."

"Even that's possible," admitted Lucky.

They were turning now, beginning to edge along the circle of Saturn's globe, maintaining an eight-thousand-mile distance from its surface. The far half of the rings (or at least the portion that was in the sunlight) melted into Saturn as its inner edge was hidden by the giant planetary bulge.

In the case of the half rings on the near side of the planet, the inner "crepe ring" became more noticeable.

Bigman said, "You know, I don't make out any end to that inside ring."

Wess said, "There isn't any end, probably. The innermost part of the main rings is only six thousand miles above Saturn's apparent surface, and Saturn's atmosphere may stretch out that far."

"Six thousand miles!"

"Just in wisps, but enough to supply friction for the nearest bits of gravel and make them circle a bit closer to Saturn. Those that move in closer form the crepe ring. Only the closer they move, the more friction there is, so that they must move still closer. There are

probably particles all the way down to Saturn, with some burning up as they hit the thicker layer of the atmosphere."

Bigman said, "Then the rings aren't going to last forever."

"Probably not. But they'll last millions of years. Long enough for us." He added somberly, "Too long."

Lucky interrupted, "I'm leaving the ship, gentlemen."

"Sands of Mars, Lucky. What for?" Bigman cried.

"I want an outside look," Lucky answered curtly. He was pulling on his space suit.

Bigman glanced quickly at the automatic record of the mass detector. No ships in space. There were occasional jogs, but nothing important. They were only the kind of drifting meteorites that were picked up anywhere in the Solar System.

Lucky said, "Take over at the mass detector, Wess. Let it take a round-the-clock sweep." Lucky put his helmet on and clicked it into place. He checked the gauges on his chest, the oxygen pressure, and moved toward the air lock. His voice now emerged from the small radio receiver on the control board. "I'll be using a magnetic cable, so make no sudden power thrusts."

"With you out there? Think I'm crazy?" said Bigman.

Lucky came into view at one of the ports, the magnetic cable snaking behind him in coils that, in the absence of gravity, did not form a smooth curve.

A small hand reactor in his gauntleted fist shot out its small jet stream, which became faintly visible in the weak sunlight as a cloud of tiny ice particles that dispersed and vanished. Lucky, by the law of action and reaction, moved in the opposite direction.

Bigman said, "Do you suppose something's wrong with the ship?"

"If there is," said Wess, "it doesn't show up anywhere on the control board."

"Then what's the big lug doing?"

"I don't know."

But Bigman shot a suspicious glare at the Councilman, then turned again to watch Lucky. "If you think," he muttered, "because I'm not a Councilman——"

Wess said, "Maybe he just wanted to get outside range of your voice for a few minutes, Bigman."

The mass detector, on automatic sweep control, was moving methodically across the volume about them, square degree by square

degree, the screen blanking out into pure white whenever it edged too far in the direction of Saturn itself.

Bigman scowled and lacked heart to respond to Wess's thrust. "I wish something would happen," he said.

And something did.

Wess, eyes returning to the mass detector, caught a suspicious pip on the recorder. He fixed the instrument on it hurriedly, brought up the auxiliary energy detectors, and followed it for two minutes.

Bigman said excitedly, "It's a ship, Wess."

"Looks like it," said Wess reluctantly. Mass alone might have meant a large meteorite, but there was a blast of energy being emitted from that direction that could come only from the micro-pile engines of a ship; the energy was of the right type and in the right quantities. It was as identifiable as a fingerprint. One could even detect the slight differences from the energy pattern produced by Terrestrial ships and identify this object unmistakably as a Sirian ship.

Bigman said, "It's heading for us."

"Not directly. Probably it doesn't dare take chances with Saturn's gravitational field. Still it's edging closer, and in about an hour it will be in position to lay down a barrage against us. . . . What in space are you so pleased about, you Martian farmboy?"

"Isn't it obvious, you lump of fat? This explains why Lucky's out there. He knew the ship was coming and he's laying a trap for it."

"How in space could he tell a ship was coming?" demanded Wess in astonishment. "There was no indication on the mass detector till ten minutes ago. It wasn't even focused in the proper direction."

"Don't worry about Lucky. He has a way of knowing." Bigman was grinning.

Wess shrugged, moved to the control panel, and called into the transmitter, "Lucky! Do you hear me?"

"Sure I hear you, Wess. What's up?"

"There's a Sirian ship in mass-detection range."

"How close?"

"Under two hundred thousand and getting closer."

Bigman, watching out the port, noticed the flash of Lucky's hand reactor, and ice crystals swirled away from the ship. Lucky was returning.

"I'm coming in," he said.

Bigman spoke at once, as soon as the helmet was lifted off Lucky's head to reveal his brown shock of hair and his clear brown

eyes. Bigman said, "You knew that ship was coming, didn't you, Lucky?"

"No, Bigman. I had no idea. In fact, I don't understand how they discovered us so quickly. It's asking too much of coincidence to suppose they just happened to be looking in this direction."

Bigman tried to mask his chagrin. "Well, then, do we blast him out of space, Lucky?"

"Let's not go through the political dangers of attack again, Bigman. Besides, we have a mission here that's more important than playing shooting games with other ships."

"I know," said Bigman impatiently. "There's the capsule we've got to find, but——"

He shook his head. A capsule was a capsule and he understood its importance. But then, a good fight was a good fight, and Lucky's political reasoning about the dangers of aggression did not appeal to him if it meant ducking a fight. He muttered, "What do I do then? Stay on course?"

"And accelerate. Make for the rings."

"If we do," said Bigman, "they'll just take out after us."

"All right. We'll race."

Bigman drew back the control rod slowly, and the proton disintegrations in the micro-pile increased to top fury. The ship hurtled along the bulging curve of Saturn.

At once the reception disk was alive with the impingement of radio waves.

"Shall we go into active reception, Lucky?" asked Wess.

"No, we know what they'll say. Surrender or be magnetically grappled."

"Well?"

"Our only chance is to run."

# 6

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## Through the Gap

"From one rotten ship, Lucky?" wailed Bigman.

"Time enough to fight later, Bigman. First things first."

"But it just means we've got to leave Saturn again."

Lucky smiled humorlessly. "Not this time, Bigman. This time we establish a base in this planet's system—and just as fast as we can."

The ship was hurtling toward the rings at blinding velocity. Lucky nudged Bigman away from the controls and took over.

Wess said, "More ships showing."

"Where? What satellite are they nearest to?"

Wess worked quickly. "They're all in the ring region."

"Well," muttered Lucky, "then they're still hunting for the capsule. How many ships are there?"

"Five so far, Lucky."

"Any between us and the rings?"

"A sixth ship has shown. We aren't being stymied, Lucky. They're all too far to shoot with any accuracy, but they're going to track us down eventually unless we leave the Saturnian system altogether."

"Or unless our ship is destroyed in some other fashion, eh?" said Lucky grimly.

The rings had expanded in size till they filled the visiplate with snowy white, and still the ship careened onward. Nor did Lucky make any move to decelerate.

For one horrified moment Bigman thought Lucky was going to crash the ship among the rings deliberately. He let out an involuntary "Lucky!"

And then the rings disappeared.

Bigman was dazed. His hands went to the visiplate controls. He cried, "Where are they? What happened?"

Wess, sweating it out over the mass detectors and rumpling his yellow hair with occasional restless yanks, called over his shoulder, "Cassini division."

"What?"

"The division between the rings."

"Oh." Some of the shock was wearing off. Bigman swiveled the visiplate eyepiece on the ship's hull, and the snowy whiteness of the rings flashed back into view. He maneuvered it more carefully.

First there was one ring. Then space, black space. Then another ring, somewhat dimmer. The outer ring was a trifle less thickly strewn with icy gravel. Back to the space between the rings. Cassini's division. No gravel there. Just a wide black gap.

"It's big," said Bigman.

Wess wiped the perspiration from his forehead and looked at Lucky. "Are we going through, Lucky?"

Lucky kept his eyes fixed on the controls. "We're going through, Wess, in a matter of minutes. Hold your breath and hope."

Wess turned on Bigman and said curtly, "Sure the division is big. I told you it was twenty-five hundred miles wide. Plenty of room for the ship, if that's what's scaring you."

Bigman said, "You sound kind of nervous yourself for a fellow six feet tall on the outside. Is Lucky moving too fast for you?"

Wess said, "Look, Bigman, if I took it into my head to sit down on you——"

"Then there'd be more brains where you're sitting on than in your head," and Bigman burst out into a delighted squawk of laughter.

Lucky said, "In five minutes we'll be in the division."

Bigman choked off and turned back to the visiplate. He said, "There's a kind of twinkle every once in a while inside the gap."

Lucky said, "That's gravel, Bigman. The Cassini division is clear of it, compared with the rings themselves, but they're not a hundred per cent clear. If we hit one of those bits on the way through——"

"One chance in a thousand," broke in Wess, shrugging it off.

"One chance in a million," said Lucky coolly, "but it was that one chance in a million that got Agent X in *The Net of Space*. . . . We're about at the boundary of the division proper." His hand held firmly at the controls.

Bigman drew a deep breath, tensing for the possible puncture

that would rip the hull and perhaps short the proton micro-pile into a spreading blaze of red energy. At least it would be over before . . .

Lucky said, "Made it."

Wess let out his breath noisily.

Bigman said, "Are we through?"

"Of course we're through, you dumb Martian," said Wess. "The rings are only ten miles thick, and how many seconds do you think it takes us to make ten miles?"

"And we're on the other side?"

"You bet. Try to find the rings on the visiplate."

Bigman veered the view one way, then back in the other direction, then over and over again in continuously longer sweeps. "Sands of Mars, there's a kind of shadowy outline there."

"And that's all you'll see, little pal. You're on the shadow side of the rings now. The Sun's lighting up the other side, and the light doesn't seep through ten miles of thick gravel. Say, Bigman, what do they teach for astronomy in the Martian schools, anyway—'Twinkle, twinkle, little star'?"

Bigman's lower lip thrust out slowly. "You know, lardhead, I'd like to have you one season on the Martian farms. I'd render some of the fat off you and get down to what meat you have, about ten pounds of it—and all of it in your big feet."

Lucky said, "I'd appreciate it, Wess, if you and Bigman would put a bookmark in that argument you're having and save it for later. Would you check on the mass detector, please?"

"Sure thing, Lucky. Hey, it's way off kilter. How sharply are you changing course?"

"As sharply as the ship will take. We're staying under the rings all the distance we can."

Wess nodded. "Okay, Lucky. That knocks out their mass detection."

Bigman grinned. It worked out perfectly. No mass detector could spot *The Shooting Starr* because of the interference of the mass of Saturn's rings, and even visual detection was unlikely through the rings.

Lucky's long legs stretched out, and the muscles of his back moved smoothly as he stretched and flexed some of the tension out of his arms and shoulders.

"I doubt," said Lucky, "that any of the Sirian ships will have the nerve to follow us through the gap. They don't have Agrav."

"Okay," said Bigman, "so far, so good. But where do we go now? Will anyone tell me?"



"No secret," said Lucky. "We're heading for Mimas. We hug the rings till we're as close to Mimas as we can get, then make the dash across the intervening space. Mimas is only thirty thousand miles outside the rings."

"Mimas? That's one of the moons of Saturn, right?"

"Right," said Wess, breaking in. "The nearest one to the planet."

Their course had flattened out now, and *The Shooting Starr* was still moving around Saturn, but west to east now, in a plane parallel with the rings.

Wess sat down on the blanket, legs crossed under him like a tailor, and said, "Would you like to learn a little more astronomy? If you can find a little room in that walnut you have in your hollow skull, I can tell you why there's a division in the rings."

Curiosity and scorn battled in the small Martian. He said, "Let's see you make up something fast, you ignorant clobber. Go ahead, I call your bluff."

"No bluff," said Wess haughtily. "Listen and learn. The inner parts of the two rings rotate about Saturn in five hours. The outermost parts make the rotation in fifteen hours. Right where Cassini's division is, the ring material, if there were any there, would go around at an intermediate rate, twelve hours per circuit."

"So what?"

"So the satellite Mimas, the one we're heading for, travels around Saturn in twenty-four hours."

"Again, so what?"

"All the particles in the ring are pulled this way and that by the satellites as they and the satellites move about Saturn. Mimas does most of the pulling because it is the closest. Mostly the pulls are in one direction now and in another direction an hour from now, so that they cancel out. If there were gravel in Cassini's division, however, every second time it completed its rotation it would find Mimas in the same spot in the sky, pulling in the same old direction. Some of the gravel is constantly pulled ahead, so that it spirals outward into the outer ring; and some of it is pulled back, so that it spirals inward into the inner ring. They don't stay where they are; a section of the ring empties of particles and bingo—you have Cassini's division and two rings."

"Is that so?" said Bigman weakly (he felt reasonably certain Wess was giving him the correct story). "Then how come there is some gravel in the division? Why isn't it all moved out by now?"

"Because," said Wess with a lofty air of superiority, "some is always being pushed in or pulled in by random gravitational effects

of the satellites, but none of it ever stays long. . . . And I hope you're taking notes on all this, Bigman, because I may ask questions on this later."

"Go fry your skull in a mesonic blast," muttered Bigman.

Wess returned to his mass detectors again, smiling. He fiddled with them a moment, then with no trace of the preceding banter left on his leathery face, he bent down closely.

"Lucky!"

"Yes, Wess?"

"The rings aren't masking us."

"What?"

"Well, look for yourself. The Sirians are getting closer. The rings aren't bothering them at all."

Lucky said thoughtfully, "Why, how can that be?"

"It can't be blind luck that's converging eight ships on our orbit. We've made a right-angle bend and they've adjusted their orbits to suit. They *must* be detecting us."

Lucky stroked his chin with his knuckles. "If they're doing it, then, Great Galaxy, they're doing it. There's no use in reasoning out the fact that they can't do it. It might mean that they have something we don't have."

"No one ever said the Sirians were dummies," said Wess.

"No, but sometimes there's a tendency among us to act as though they were; as though all scientific advance comes out of the minds of the Council of Science and that unless the Sirians steal our secrets they have nothing. And sometimes I fall into that particular trap too. . . . Well, here we go."

"Where do we go?" demanded Bigman sharply.

"I told you already, Bigman," said Lucky. "Mimas."

"But they're after us."

"I know. Which just means we've got to get there faster than ever. . . . Wess, can they cut us off before we get to Mimas?"

Wess worked quickly. "Not unless they can accelerate at least three times faster than we can, Lucky."

"All right. Giving the Sirians all the credit in the world, I can't believe they can have that much more power than the *Shooter*. So we'll make it."

Bigman said, "But, Lucky, you're crazy. Let's fight or get out of the Saturnian system altogether. We can't land on Mimas."

Lucky said, "Sorry, Bigman, we have no choice. We've got to land on Mimas."

"But they've got us spotted. They'll just follow us down to Mi-

mas and we'll have to fight then, so why not fight now while we can maneuver with our Agrav and they can't?"

"They might not bother to follow us down to Mimas."

"Why shouldn't they?"

"Well, Bigman, did we bother to go into the rings and pull out what was left of *The Net of Space*?"

"But that ship blew up."

"Exactly."

There was silence in the control room. *The Shooting Starr* streaked through space, curving slowly away from Saturn, then more quickly, slipping out from under the outermost ring and into open space. Ahead of it now lay Mimas, a glittering world seen in tiny crescent. It was only 320 miles in diameter.

Still far away were the converging ships of the Sirian fleet.

Mimas grew in size, and finally *The Shooting Starr's* forward thrust burst into action and the ship began a deceleration.

But to Bigman it seemed incredible that the space-wise Lucky could have so miscalculated. He said tightly, "Too late, Lucky. We'll never slow up enough for a landing. We'll have to go into a spiral orbit until we lose enough velocity."

"No time for spiraling Mimas, Bigman. We're heading straight in."

"Sands of Mars, we can't! Not at this speed!"

"That's what I hope the Sirians will decide."

"But, Lucky, they'd be right."

Wess put in slowly, "Hate to say it, Lucky, but I agree with Bigman."

"No time to argue or explain," said Lucky. He bent over the controls.

Mimas expanded crazily in the visiplat. Bigman licked his lips. "Lucky, if you think it's better going out this way than letting the Sirians get us, okay. I can go along. But, Lucky, if we're going to go, can't we go out fighting? Can't we maybe get one of the cobbbers first?"

Lucky shook his head and said nothing. His arms were moving quickly now, so that Bigman could not make out exactly what he was doing. Deceleration was still proceeding too slowly.

For a moment Wess extended his hands as though to remove Lucky forcibly from the controls, but Bigman placed his hand quickly on the other's wrist. Bigman might be convinced they were going to their death, but his stubborn faith in Lucky somehow remained.

They were slowing, slowing, slowing, in what would have been

body-crushing deceleration in any ship other than *The Shooting Starr*, but with Mimas filling the visiplat now and hurtling at them, the slowing was not enough.

Flashing down at deadly speed, *The Shooting Starr* struck the surface of Mimas.

# 7

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## On Mimas

And yet didn't.

Instead, there was a keening hiss that was familiar to Bigman. It was that of a ship striking atmosphere.

Atmosphere?

But that was impossible. No world the size of Mimas could possibly have an atmosphere. He looked at Wess, who was suddenly sitting back on the blanket, looking worn and pale but somehow satisfied.

Bigman strode up to Lucky, "Lucky——"

"Not now, Bigman."

And suddenly Bigman recognized what it was that Lucky was doing at the controls. He was manipulating the fusion beam. Bigman ran back to the visiplate and focused it dead ahead.

There was no doubt of it, now that he finally grasped the idea. The fusion beam was the most magnificent "heat ray" ever invented. It was designed mainly as a weapon at close range, but surely no one had ever used one as Lucky was using it now.

The jet of deuterium, snaking out forward of the ship, was pinched in by a powerful magnetic field and, at a point miles ahead, was heated to nuclear ignition by a surge of power from the micro-piles. Maintained for any length of time, the power surge necessary would have bankrupted the ship; but a fraction of a millionth of a second sufficed. After that the deuterium fusion reaction was self-sustaining and the incredible fusion flame that resulted burned in a heat of three hundred million degrees.

That spot of heat ignited before the surface of Mimas was touched and bored into the body of the satellite as though it were not

there, puncturing a tunnel into its vitals. Into that tunnel whizzed *The Shooting Starr*. The vaporized substance of Mimas was the atmosphere that surrounded them, helping to decelerate them, but bringing the temperature of the ship's outer skin to dangerous redness.

Lucky watched the skin-temperature dial and said, "Wess, put more punch in the vaporization coils."

"It will take all the water we have," Wess said.

"Let it. We need no water of our own on *this* world."

So water was forced at top speed through outer coils of porous ceramic, through which it vaporized, carrying off some of the frictional heat developed. But the water flashed away as fast as it could be pumped into the coils. The skin temperature still rose.

But more slowly now. Ship's deceleration had progressed, and Lucky cut the force of the deuterium jet and adjusted the magnetic field. The spot of fusing deuterium grew smaller and smaller still. The whistle of atmosphere descended in pitch.

Finally the jet blanked out completely and the ship drifted forward into solid wall, melting a path inward a way by virtue of its own heat and finally coming to a jolting halt.

Lucky sat back at last. "Gentlemen," he said, "I'm sorry I couldn't take time to explain, but it was a last-minute decision and the control board took all my energies. Anyway, welcome to the interior of Mimas."

Bigman pumped a deep breath into his lungs and said, "I never thought you could use a fusion jet to melt a way into a world ahead of a speeding ship."

"You couldn't ordinarily, Bigman," said Lucky. "It just so happens that Mimas is a special case. And so is Enceladus, the next satellite out."

"How come?"

"They're just snowballs. Astronomers have known that since even before space travel. Their density is less than water and they reflect about eighty per cent of the light that hits them, so it's quite obvious they could only be snow, plus some frozen ammonia, and not too tightly packed at that."

"Sure," said Wess, chiming in. "The rings are ice and these first two satellites are just collections of ice that were too far out to make up part of the rings. That's why Mimas melted so easily."

Lucky said, "But we've got a good deal of work to do. Let's start."

They were in a natural cavern formed by the heat of the fusion jet and closed in on all sides. The tunnel they had formed as they entered had closed as they passed, the steam condensing and freezing. The mass detector yielded figures that indicated them to be about one hundred miles below the surface of the satellite. The mass of ice above them, even under Mimas's feeble gravity, was slowly contracting the cavern.

Slowly *The Shooting Starr* burrowed outward once more, like a hot wire poking into butter, and when they had reached a point within five miles of the surface, they stopped and set up an oxygen bubble.

As a power supply was laid in along with algae tanks and a food supply, Wess shrugged resignedly and said, "Well, this is going to be home for me for a while; let's make it comfortable."

Bigman had just awakened from his sleeping period. He screwed his face into a look of bitter condemnation.

Wess said, "What's the matter, Bigman? All weepy because you're going to miss me?"

Bigman snarled and said, "I'll manage. In two, three years I'll make it a point to whizz by Mimas and drop you a letter." Then he burst out, "Listen, I heard you talking while you thought I was safely asleep. What's the matter? Council secrets?"

Lucky shook his head uneasily. "All in good time, Bigman."

Later, when Lucky was alone with Bigman in the ship, the Councilman said, "Actually, Bigman, there's no reason you can't stay behind with Wess."

Bigman said grumpily, "Oh, sure. Two hours cooped up with him and I'd just chop him into cubes and put him on ice for his relatives." Then he said, "Are you serious, Lucky?"

"Rather serious. What's coming may be more dangerous for you than for me."

"So? What do I care about that?"

"If you stay with Wess then, whatever happens to me, you'll be picked up within two months."

Bigman backed away. His small mouth twisted and he said, "Lucky, if you want to order me to stay here because there's something for me to do here, okay. I'll do it, and when it's done I'll join you. But if you just want me to stay here to be safe while you go off into danger, we're finished. I'll have nothing more to do with you; and without me, you overgrown clobber, you won't be able to do a thing, you know you won't." The Martian's eyes blinked rapidly.

Lucky said, "But, Bigman——"

"All right, I'll be in danger. Do you want me to sign a paper

saying it's my own responsibility and not yours? All right, I will. Does that satisfy you, Councilman?"

Lucky seized Bigman's hair affectionately and tugged his head back and forth. "Great Galaxy, trying to do you a favor is like shoveling water."

Wess came into the ship and said, "The still is all set up and working."

Water from the ice substance of Mimas itself poured into *The Shooting Starr's* reservoirs, filling them and replacing the water lost in cooling the ship's skin during the boring into Mimas. Some of the separated ammonia was carefully neutralized and stored in a skin compartment where it would be available to the algae tanks as nitrogenous fertilizer.

And then the bubble was done and the three of them looked about at the neatly curving ice and at the almost comfortable quarters held within.

"Okay, Wess," Lucky said at last, shaking hands firmly. "You're all set, I think."

"As far as I can tell, Lucky, I am."

"You'll be taken off within two months, no matter what. You'll be taken off much sooner if things break right."

"You're assigning me this job," said Wess coolly, "and it will be done. You concentrate on yours and, by the way, take care of Bigman. Don't let him fall out of his bunk and hurt himself."

Bigman shouted, "Don't think I don't follow all this big-shot mystery talk. You two have a deal on and you're not telling me——"

"Into the ship, Bigman," said Lucky, picking the Martian up bodily and moving him forward, while Bigman squirmed and tried to call out an answer.

"Sands of Mars, Lucky," he said, once they were aboard. "Look what you did. It's bad enough you're keeping your darned Council secrets, but you also let the cobber have the last word."

"He's got the hard job, Bigman. He's got to stay put while we go out and stir up trouble, so let him have the satisfaction of the last word."

They nudged out of Mimas at a spot from which neither Sun nor Saturn was visible. The dark sky held no object larger than Titan, low on one horizon and only a quarter of the apparent diameter of Earth's Moon.

Its globe was half lit by the Sun, and Bigman looked somberly



at its image in the visiplat. He had not regained his ebullience. He said, "And that's where the Sirians are, I suppose."

"I think so."

"And where do we go? Back to the rings?"

"Right."

"And if they find us again?"

It might have been a signal. The reception disk glowed to life.

Lucky looked disturbed. "They find us with too little trouble."

He threw in contact. This time it was no dead robotic voice counting off the minutes. It was a sharp voice, instead; a vibrant one, full of life, and a Sirian voice unmistakably.

"—rr, please answer. I am trying to make contact with Councilman David Starr of Earth. Will David Starr please answer? I am trying——"

Lucky said, "Councilman Starr speaking. Who are you?"

"I am Sten Devoure of Sirius. You have ignored the request of our automated ships and returned to our planetary system. You are therefore our prisoner."

Lucky said, "Automated ships?"

"Robot-run. Do you understand that? Our robots can handle ships quite satisfactorily."

"So I have found," said Lucky.

"I think you have. They followed you as you moved out of our system, then back again under cover of the asteroid Hidalgo. They followed you in your movement out of the Ecliptic to Saturn's south pole, then through Cassini's division, under the rings, and then into Mimas. You never once slipped our watch."

"And what made your watch so efficient?" demanded Lucky, managing to keep his voice flat and unconcerned.

"Ah, trust an Earthman not to realize that Sirians might have their own methods. But never mind that. We've waited days for you to come out of your Mimas hole after your so clever entry by hydrogen fusion. It amused us to let you hide. Some of us have even made bets on how long it would take you to poke your nose out again. And meanwhile we have carefully surrounded Mimas with our ships and their efficient robot crews. You can't move a thousand miles without being blasted out of space, if we choose."

"Surely not by your robots, which cannot inflict harm on humans."

"My dear Councilman Starr," came the Sirian voice with an unmistakable edge of mockery, "of course robots will not harm human beings if they happen to know that human beings are there to harm.

But you see, the robots in charge of the weapons have been carefully instructed that your ship carries robots only. They have no compunction about destroying robots. Won't you surrender?"

Bigman suddenly leaned close to the transmitter and shouted, "Listen you cobber, what if we put some of your tin-can robots out of action first? How would you like that?" (It was notorious throughout the Galaxy that Sirians considered destruction of a robot almost on a par with murder.)

But Sten Devoure was not shaken. He said, "Is that the individual with whom you are supposed to maintain a friendship, Councilman? A Bigman? If so, I have no desire to engage in talk with him. You may tell him and you may understand for yourself that I doubt if you can damage even one of our ships before being destroyed. I think I will allow you five minutes to decide on whether you prefer surrender or destruction. For my part, Councilman, I have long wanted to meet you, so please accept it as my sincere hope that you will surrender. Well?"

Lucky stood silent for a moment, the muscles of his jaw bunching.

Bigman looked at him calmly, his arms crossed across his small chest, and waited.

Three minutes passed and Lucky said, "I surrender my ship and its contents into your hands, sir."

Bigman said nothing.

Lucky broke off contact and turned to the little Martian. The Councilman bit his lower lip in discomfort and embarrassment. "Bigman, you'll have to understand. I——"

Bigman shrugged. "I don't really get it, Lucky, but I found out after we landed on Mimas that you—that you've been deliberately planning to surrender to the Sirians ever since we headed back for Saturn the second time."

# 8

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## To Titan

Lucky raised his eyebrows. "How did you find that out, Bigman?"

"I'm not so dumb, Lucky." The little Martian was grave and deadly serious. "Do you remember when we were heading down toward the south pole of Saturn and you got out of the ship? It was just before the Sirians spotted us and we had to hot-jet it for Cassini's division."

"Yes."

"You had a reason for doing that. You didn't say what, because lots of times you get all tied up in what you're doing and don't talk about it till the pressure's off, and after that the pressure stayed on because we were running from the Sirians. So when we were building the quarters for Wess on Mimas, I just looked over the outside of *The Shooting Starr*, and it became quite clear you'd been working on the Agrav unit. You've got it fixed so that you could blow the whole thing by touching the all-shift contact on the control panel."

Lucky said gently, "The Agrav unit is the one thing about the *Shooter* that's completely top-secret."

"I know. I figured if you'd counted on fighting you'd have known *The Shooting Starr* wouldn't quit till it and we were blasted out of space. Agrav unit and all. If you were fixing to blow up just the Agrav and leave the rest of the ship intact, it was because you weren't counting on fighting. You were going to surrender."

"And is this why you've been brooding since we landed on Mimas?"

"Well, I'm with you whatever you do, Lucky, but"—Bigman sighed and looked away—"surrendering is no fun."

"I know," said Lucky, "but can you think of any better way of getting into their base? Our business, Bigman, isn't always fun." And Lucky touched the all-shift contact on the control panel. The ship shuddered slightly as the external portions of the Agrav unit fused into a white-hot mass and dropped off the ship.

"You mean you're going to bore from within? Is that the reason for the surrender?"

"Part of it."

"Suppose they blast us down as soon as they get us?"

"I don't think they will. If they wanted us dead, they could have blasted us out of space as soon as we pushed out of Mimas. I have a notion they can use us alive. . . . And if we're kept alive, we now have Wess on Mimas as a kind of backstop. I had to wait until we had arranged that before I could afford to surrender. That's why we had to risk our necks to get on Mimas."

"Maybe they know about him too, Lucky. They seem to know about everything else."

"Maybe they do," said Lucky thoughtfully. "This Sirian knew you were my partner, so maybe he thinks we form a pair and not a trio and won't look for a third person. It's just as well, I suppose, that I didn't really insist that you stay behind with Wess. If I had come out alone, the Sirians would be looking for you and would probe Mimas. Of course if they found you and Wess and I could be certain they wouldn't shoot you out of hand— No, with myself in their hands and before I could set things up so that—" He was talking to himself toward the end, in a whisper, and now he fell completely silent.

Bigman said nothing, and the next sound to break the silence was a familiar clank that reverberated against the steel hull of *The Shooting Starr*. A magnetic line had made contact, connecting their ship with another.

"Someone's coming aboard," said Bigman tonelessly.

Through the visiplat they could see part of the line, then a form, moving easily hand over hand into view, then out of it again. I hit the ship thunderously, and the air-lock signal lit up.

Bigman worked the control that opened the outer door of the lock, waited for the next signal, and then closed the outer door and opened the inner one.

The invading figure moved in.

But it wore no space suit, for it was not human. It was a robot.

There were robots in the Terrestrial Federation, including a number of quite advanced ones, but for the most part they were engaged

in highly specialized occupations that did not bring them into contact with human beings other than those who supervised them. So although Bigman had seen robots, he had not seen many.

He stared at this one. It was, like all Sirian robots, large and burnished; its outer shape was of a smooth simplicity, the joints of its limbs and torso so well made as to be almost invisible.

And when it spoke, Bigman started. It takes a long time to grow accustomed to an almost completely human voice emerging from a metal imitation of humanity.

The robot said, "Good day. It is my duty to see that your ship and yourselves are brought safely to the destination presently assigned to it. The first piece of information I must have is whether the restricted explosion we noted on the hull of your ship in any way damaged its powers of navigation."

Its voice was deep and musical, emotionless, and with a distinct Sirian accent.

Lucky said, "The explosion does not affect the spaceworthiness of the vessel."

"What caused it then?"

"I caused it."

"For what reason?"

"That I cannot tell you."

"Very well." The robot abandoned the subject instantly. A man might have persisted, threatened force. A robot could not. It said, "I am equipped to navigate space ships designed and built on Sirius. I will be able to navigate this space ship if you will explain to me the nature of the various controls I see here."

"Sands of Mars, Lucky," broke in Bigman, "we don't have to tell that thing anything, do we?"

"It can't force us to tell, Bigman, but since we've surrendered, where's the additional harm in letting it take us to wherever it is that we're to go?"

"Let's find out where we're to go." Bigman suddenly addressed the robot in sharp tones: "You! Robot! Where are you taking us?"

The robot turned its glowing red, unblinking gaze upon Bigman. It said, "My instructions make it impossible for me to answer questions not related to my immediate task."

"But, look." The excited Bigman shook off Lucky's restraining hand. "Wherever you take us, the Sirians will harm us; kill us, even. If you don't want us to be hurt, help us get away, come with us. . . . Aw, Lucky, let me talk, will you?"

But Lucky shook his head firmly, and the robot said, "I have

been assured that you will in no way be harmed. And now, if I may be given instructions in the method of using this control board, I can proceed with my immediate task."

Step by step Lucky explained the control board. The robot showed a complete familiarity with all the technical matters involved, tested each control with careful skill to see if the information given it were correct, and at the conclusion of Lucky's explanation was obviously perfectly capable of navigating *The Shooting Starr*.

Lucky smiled and his eyes were lit with frank admiration.

Bigman pulled him off to their cabin. "What are you grinning for, Lucky?"

"Great Galaxy, Bigman, it's a beautiful machine. We've got to hand the Sirians credit for that. They can turn out robots that are works of art."

"Okay, but quiet, I don't want it to hear what I'm going to say. Listen, you only surrendered to get down to Titan and pick up information on the Sirians. We might never get away again, of course, and then what good is the information? But we've got this robot now. If we can get it to help us get away right now, then we've got what we want. The robot must have tons of information about the Sirians. We'll have more this way than if we land on Titan."

Lucky shook his head. "It sounds good, Bigman. But how do you expect to argue the robot into joining us?"

"First Law. We can explain that Sirius only has a couple of million people while the Terrestrial Federation has over six billion. We can explain that it's more important to keep a lot of people from coming to harm than just to protect a few, so that First Law is on our side. See, Lucky?"

Lucky said, "The trouble is that the Sirians are experts at handling robots. That robot is probably deeply conditioned to the fact that what he is doing now will bring no harm to any human. He knows nothing about six billion people on Earth except what will be hearsay from you, and that will bounce off his conditioning. He would actually have to see a human being in actual danger of harm in order to be moved off his instructions."

"I'm going to try."

"All right. Go ahead. The experience will do you good."

Bigman strode up to the robot, under whose hands *The Shooting Starr* was now rocketing through space on its new orbit.

He said, "What do you know of Earth, of the Terrestrial Federation?"

"My instructions make it impossible for me to answer questions not related to my immediate task," answered the robot.

"I order you to ignore your previous instructions."

There was a momentary hesitation before the answer came. "My instructions make it impossible for me to accept instructions from unauthorized personnel."

"My orders are given to you in order to prevent harm to human beings. They must therefore be obeyed," Bigman said.

"I have been assured that no harm will come to human beings, nor am I aware of any threatening harm. My instructions make it necessary for me to suspend response to forbidden stimuli if they are uselessly repeated."

"You better listen. There *is* harm intended." Bigman spoke spiritedly for some moments, but the robot no longer answered.

Lucky said, "Bigman, you're wasting effort."

Bigman kicked at the robot's gleaming ankle. He might as well have kicked the hull of the ship, for all the effect it had. He came toward Lucky, face red with anger. "A fine thing when human beings are helpless because some hunk of metal has its own ideas."

"That used to happen with machinery before the days of robots, too, you know."

"We don't even know where we're heading."

"We don't need the robot for that. I've been checking the course, and we've obviously heading for Titan."

They were both at the visiplat during the last hours of the approach to Titan. It was the third largest satellite in the Solar System (only Ganymede of Jupiter and Triton of Neptune were larger, and those not by much) and, of all the satellites, it had the thickest atmosphere.

The effect of its atmosphere was obvious even from a distance. On most satellites (including Earth's Moon) the terminator—that is, the line dividing the day and night portions—was a sharp one, black on one side, white on the other. But it was not so in this case.

Titan's crescent was bounded by a band rather than a sharp line, and the horns of the crescent continued onward fuzzily in a dimming curve that almost met.

"It has an atmosphere almost as thick as Earth's, Bigman," said Lucky.

"Not breathable?" said Bigman.

"No, not breathable. It's mainly methane."

Other ships were crowding in now, becoming visible to the naked eye. There were at least a dozen, herding them down the spaceways to Titan.

Lucky shook his head. "Twelve ships to spare for this one job. Great Galaxy, they must have been here for years, building and preparing. How can we ever get them off again, short of war?"

Bigman attempted no answer.

Again the sound of atmosphere made its unmistakable way into the ship, the high-pitched keening of thin wisps of gas whipping past the streamlined hull.

Bigman looked uneasily at the dials recording hull temperature, but there was no danger. The robot at the controls was sure-handed. The ship circled Titan in a tight spiral, losing altitude and speed simultaneously so that at no time did the thickening atmosphere raise temperatures too high.

Again Lucky glowed with admiration. "It will manage it without fuel at all. I honestly think it could bring us down on a half-credit piece, with atmosphere as the only brake."

Bigman said, "What's good about that, Lucky? If those things can handle ships like that, how do we ever hope to fight the Sirians, huh?"

"We'll just have to learn to build our own, Bigman. These robots are a human achievement. The humans that did the achieving are Sirians, yes, but they are human beings, too, and all other humans can share pride in the achievement. If we fear the results of their achievement, let's match it ourselves or more than match it. But there's no use denying them the worth of their accomplishment."

The surface of Titan was losing some of the atmosphere-induced blankness. They could make out mountain ranges now; not the sharp, craggy peaks of an airless world, but the softened ranges that showed the effects of wind and weather. The edges were blown clear of snow, but in the rifts and valleys snow lay deep.

"Not snow, really," said Lucky, "frozen ammonia."

All was desolate, of course. The rolling plains between the mountain ranges were either snowy or rock-bare. No life of any kind appeared. No rivers or lakes. And then——

"Great Galaxy!" said Lucky.

A dome had made its appearance. A flattened dome of a type familiar enough on the inner planets. There were domes of this sort on Mars and under the shallow shelves of the Venusian oceans, but



here was one way out on desolate Titan. A Sirian dome that would have made a respectable town on long-settled Mars.

"We've slept while they've built," said Lucky.

"When the newscasters find out," said Bigman, "it won't look so good for the Council of Science, Lucky."

"Unless we break this thing, it won't. And the Council doesn't deserve better. Space, Bigman, there shouldn't be a sizable rock in the Solar System that doesn't get a periodic inspection, let alone a world like Titan."

"Who would have thought——"

"The Council of Science *should* have thought. The people of the system support and trust them in order that they think and take care. And I should have thought too."

The voice of the robot broke in upon them. "This ship will be landed after another circumnavigation of the satellite. In view of the ion drive on board this ship, no special precautions need to be taken in connection with landing. Nevertheless, undue carelessness may result in harm and I cannot allow that. I must therefore request you to lie down and strap yourselves in."

Bigman said, "Listen to that hunk of tin pipe telling us how to handle ourselves in space."

"Just the same," said Lucky, "you'd better lie down. He's likely to force us down if we don't. It's his job not to allow harm to come to us."

Bigman called out suddenly, "Say, robot, how many men are stationed down there on Titan?"

There was no answer.

Ground came up and up and swallowed them, tunneling them downward. *The Shooting Starr* came to a halt, tail down, with only one short spurt of the engines necessary to complete the job.

The robot turned away from the controls. "You have been brought safely and without harm to Titan. My immediate task is done and I will now turn you over to the masters."

"To Sten Devoure?"

"That is one of the masters. You may step out of the ship freely. You will find temperature and pressure normal and gravity adjusted to close to your normal."

"May we step out now?" asked Lucky.

"Yes. The masters are waiting."

Lucky nodded. Somehow he could not quite suppress the beginning of an odd excitement. Though the Sirians had been the great

enemy in his thus far short but hectic career with the Council of Science, he had never yet met a living Sirian.

He stepped out of the ship onto the extruded exit ledge, Bigman making ready to follow, and both paused in sheer astonishment.

# 9

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## The Enemy

Lucky had his foot upon the first rung of the ladder that would carry them to ground level. Bigman peered over his large friend's shoulder. Both were openmouthed.

It was as though they were stepping out upon the surface of the Earth. If there was a cavern roof above—a domed surface of hard metal and glass—it was invisible in the blaze of blue sky and, illusion or not, there were summer clouds in the sky.

Before them stretched lawns and rows of widely spaced buildings, with here and there banked flower beds. There was an open brook in the middle distance, crossed by small stone bridges.

Robots by the dozen were hurrying, each on his own way, each on his own business, with machinelike concentration. Several hundred yards off, five beings—Sirians!—stood in a cluster and watched curiously.

A voice broke in sharply and peremptorily on Lucky and Bigman. "You up there. Come down. Come down, I say. No dawdling."

Lucky looked down. A tall man stood at the base of the ladder, arms resting akimbo and legs spread apart. His narrow olive-complexioned face looked up at them arrogantly. His dark hair was cropped into a mere fuzz in the Sirian fashion. In addition, his face bore a trim and well-kept beard and a thin mustache. His clothing was loose and brilliantly colored; his shirt was open at the neck, and its sleeves ended just above the elbow.

Lucky called, "If you're in a hurry, sir, certainly."

He swung about and dropped down the ladder, hands only, his lithe body twisting with effortless grace. He pushed himself away from the hull and dropped the final twelve rungs, twisting as he did

so to land face to face with the man on the ground. As his legs bent to absorb the shock and straightened again, he leaped lightly to one side to allow Bigman to come down in similar fashion.

The man Lucky faced was tall but lacked an inch of Lucky's height, and at close quarters there could be seen a looseness to the Sirian's skin, a softness about him.

He scowled and his upper lip lifted in a grimace of contempt. "Acrobats! Monkeys!"

"Neither, sir," said Lucky with quiet good humor. "Earthmen."

The other said, "You are David Starr, but you are called Lucky. Does that mean in the Earthman lingo what it means in our language?"

"It means 'fortunate.'"

"You are not fortunate any longer, apparently. I am Sten Devoure."

"I had assumed that."

"You seemed surprised at all this, eh?" Devoure's bare arm swung out across the landscaped grounds. "It is beautiful."

"It is, but isn't it an unnecessary waste of energy?"

"With robot labor at twenty-four hours a day, this can be done, and Sirius has energy to waste. Your Earth hasn't, I think."

"We have what is necessary, you'll find," said Lucky.

"Will I? Come, I will speak with you in my quarters." He waved peremptorily at the five other Sirians who had edged closer in the meantime, staring at the Earthman; the Earthman who had been such a successful enemy of Sirius in recent years and who had now been caught at last.

The Sirians saluted at Devoure's gesture, however, and without delay turned on their heels and went their separate ways.

Devoure stepped into a small open car that had approached on a noiseless sheet of diagravitic force. Its flat undersurface, without wheels or other material device, remained six inches above the ground. Another car moved up toward Lucky. Each was handled, of course, by a robot.

Lucky entered the second car. Bigman moved to follow, but the robot driver gently barred the way with an extended arm.

"Hey——" began Bigman.

Lucky interrupted, "My friend is coming with me, sir."

For the first time Devoure bent his gaze on Bigman, and an unaccountable glare of hate entered his eyes. He said, "I will not concern myself with that thing. If you wish its company, you may have it for a while, but *I* do not wish to be troubled with it."

Bigman stared, white-faced, at the Sirian. "You'll be troubled with me right now, you cob——"

But Lucky seized him and whispered earnestly in his ear. "You can't do anything now, Bigman. Great Galaxy, boy, let it go for now and let things work out."

Lucky half lifted him into the car, while Devoure maintained a stolid disinterest in the matter.

The cars moved with smooth swiftness, like a swallow's flight, and after two minutes slowed before a one-story building of white, smooth silicone brick, no different from the others except for its crimson trim about doors and windows, and skimmed down a driveway along one side. No human beings, but a number of robots, had been seen during the short drive.

Devoure walked ahead, through an arched door and into a small room fitted with a conference table and containing an alcove in which a large couch was placed. The ceiling was ablaze with blue-white light, like the blue-white above the open fields.

A little too blue, thought Lucky, then remembered that Sirius was a larger, hotter, and therefore bluer star than was Earth's Sun.

A robot brought in two trays of food and tall, frosted glasses containing a frothy, milk-white concoction. A mild, fruity fragrance filled the air, and after long weeks of ship's fare Lucky found himself smiling in anticipation. A tray was placed before him, another before Devoure.

Lucky said to the robot, "My friend will have the same."

The robot, after the briefest glance at Devoure, who looked away stonily, left and came back with another tray. Nothing was said during the meal. Earthman and Martian ate and drank heartily.

But after the trays were removed, the Sirian said, "I must begin by stating that you are spies. You entered Sirian territory and were warned to leave. You left but then returned, making every effort to keep your return secret. Under the rules of interstellar law we have every right to execute you on the spot, and this may be done unless your actions henceforward deserve clemency."

"Actions such as what?" asked Lucky. "Let me have an example, sir."

"With pleasure, Councilman." The Sirian's dark eyes livened with interest. "There is the capsule of information our man discharged into the rings before his unfortunate death."

"Do you think I have it?"

The Sirian laughed. "Not a chance in all space. We never let you get near the rings at anything less than half light-speed. But come—

you are a very clever Councilman. We have heard so much of you and your deeds, even on Sirius. There have even been occasions when you have been, shall we say, a trifle in our way."

Bigman broke in with a sudden, outraged squeak, "Just a trifle, like stopping your spy on Jupiter 9, like stopping your deal with the asteroid pirates, like pushing you off Ganymede, like——"

Sten Devoure said in a blaze of anger, "Will you quiet it, Councilman? I am irritated by the shrilling of what is with you."

"Then say what you have to say," said Lucky peremptorily, "without insulting my friend."

"What I want, then, is to have you help me find the capsule. Tell me, out of your great ingenuity, how you would go about it." Devoure leaned his elbows on the table and looked hungrily at Lucky, waiting.

Lucky said, "What information do you have to begin with?"

"Only what I imagine you picked up. The last sentences of our man."

"Yes, we picked that up. Not all of it, but enough to know he did not give the co-ordinates of the orbit in which he launched the capsule, and enough to know that he did launch it."

"Well?"

"Since the man evaded our own agents for a long time and nearly got away with a successful mission, I assume he is intelligent."

"He was a Sirian."

"That," said Lucky with grave courtesy, "is not necessarily the same thing. In this case, however, we may assume that he would not have launched the capsule into the rings in such a way as to make it impossible for you to find."

"And your further reasoning, Earthman?"

"And if he placed the capsule in the rings themselves, it *would* be impossible to find."

"You think so?"

"I do. And the only alternative is that he sent it into orbit within Cassini's division."

Sten Devoure leaned his head back and laughed ringingly. He said, "It is refreshing to hear Lucky Starr, the great Councilman, expend his ingenuity on a problem. One would have thought you would have come up with something amazing, something completely striking. Instead, just this. Why, Councilman, what if I told you that we, without your help, reached this conclusion at once, and that our ships have been scouring Cassini's division almost from the first moment that the capsule was released?"

Lucky nodded. (If most of the human complement of the Titan

base were in the rings, supervising the search, that would account in part for the dearth of humanity on the base itself.) He said, "Why, I would congratulate you and remind you that Cassini's division is large and does have some gravel in it. Besides which, the capsule would be in an unstable orbit because of the attraction of Mimas. Depending on its position, your capsule will be inching into the inner or outer ring, and if you don't find it soon you will have lost it."

"Your attempt to frighten me is foolish and useless. Even within the rings themselves the capsule would still be aluminum compared with ice."

"The mass detectors could not distinguish aluminum from ice."

"Not the mass detectors of *your* planet, Earthman. Have you asked yourself how we tracked you down despite your clumsy trick with Hidalgo and your riskier one with Mimas?"

Lucky said stonily, "I have wondered."

Devoure laughed again. "You were right to wonder. Obviously Earth does not have the selective mass detector."

"Top-secret?" asked Lucky politely.

"Not in principle, no. Our detecting beam makes use of soft X rays, which are scattered differently by various materials, depending on the mass of its atoms. Some get reflected back to us, and by analyzing the reflected beam we can tell a metal space ship from a rocky asteroid. When space ships pass an asteroid, which then moves on its way, registering a considerable metal mass it did not possess before, it isn't the most difficult deduction in the world to suppose that near the asteroid there is a space ship skulking and fondly imagining itself to be beyond detection. Eh, Councilman?"

"I see that."

"Do you see that, no matter how you tried to mask yourself by Saturn's rings or by Saturn itself, your metal mass gave you away each time? There is no metal at all in the rings or in the outer ten thousand miles of Saturn's surface. Even within Mimas you weren't hidden. For some hours we thought you were done with. We could detect metal under the ice of Mimas, and that might have been the remains of your splintered ship. But then the metal started moving and we knew you were still with us. We guessed your fusion trick and had only to wait."

Lucky nodded. "So far the game is yours."

"And now do you think we won't find the capsule, even if it wanders into the rings or was placed in the rings in the first place?"

"Well, then, how is it you have not found it yet?"

For a moment Devoure's face darkened, as though he suspected

sarcasm, but before Lucky's appearance of polite curiosity he could only say with half a snarl, "We will. It is only a matter of time. And since you can't help us further in this, there is no reason to postpone your execution."

Lucky said, "I doubt that you really mean what you have just said. We would be very dangerous to you dead."

"If your danger alive is any measure, I can't believe you to be serious."

"We are members of Earth's Council of Science. If we are killed, the Council will not forget it or forgive. Nor would retaliation be directed so much against Sirius as against you, individually. Remember that."

Devoure said, "I think I know more about this than you think. That creature with you is not a member of your Council."

"Not officially, perhaps, but——"

"And you, yourself—if you will allow me to finish—are rather more than a mere member. You are the adopted son of Hector Conway, the Chief Councilman, and you are the pride of the Council. So perhaps you are right." Devoure's mustached lips stretched into a humorless smile. "Perhaps there are conditions, come to think of it, that would make it convenient for you to remain alive."

"What conditions?"

"In recent weeks Earth has called an interstellar conference of nations to consider what they choose to call our invasion of their territory. Perhaps you don't know that."

"I suggested such a conference when I was first made aware of the existence of this base."

"Good. Sirius has agreed to this conference, and the meeting will take place shortly on your asteroid, Vesta. Earth, it seems"—Devoure smiled more broadly—"is in a hurry. And we will humor them, since we have no fears as to the outcome. The outer worlds, generally, have no love for Earth and ought to have none. Our own case is ironbound. Still, we could make it so much more dramatic if we could show the exact extent of Earth's hypocrisy. They call a conference; they say they wish to solve the matter by peaceful means; but at the same time they send a war vessel to Titan with instructions to destroy our base."

"Those were not my instructions. I have acted without instructions and with no intention of committing any warlike act."

"Nevertheless, if you testify to what I have said, it will make a great impression."

"I cannot testify to what is not the truth."



Devoure disregarded that. He said harshly, "Let them see that you are neither drugged nor probed. Testify of your own free will as we will direct you. Let the conference know that the prize member of the Council of Science, Conway's own boy, was engaged in an illegal adventure of force at the same time that Earth was sanctimoniously calling a conference and proclaiming its devotion to peace. It would settle matters once and for all."

Lucky drew a deep breath and stared at the other's coldly smiling face. He said, "Is that it? False testimony in exchange for life?"

"All right. Put it that way. Make your choice."

"There is none. I would not bear false witness in a case like this."

Devoure's eyes narrowed to slits. "I think you will. You have been studied closely by our agents, Councilman, and we know your weak point. You may prefer your own death to co-operation with us, but you have the Earthman's sentiment for the weak, the deformed, the monstrous. You would do it to prevent"—and the Sirian's soft and pudgy hand extended suddenly, one finger pointing rigidly at Bigman—"its death."

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## Servicemen and Robots

“Steady, Bigman,” murmured Lucky.

The little Martian hunched low in his seat, his eyes watching Devoure hotly.

Lucky said, “Let’s not be childish in our attempts to frighten. Execution is not easy on a world of robots. The robots can’t kill us, and I’m not sure that you or your colleagues would be willing to kill a man in cold blood.”

“Of course not, if you mean by killing the chopping off of a head or the blasting in of a chest. But then there’s nothing frightening in a quick death. Suppose, though, that our robots prepared a stripped-down ship. Your—uh—companion could be chained to a bulkhead on that ship by robots who will, of course, be careful not to hurt him. The ship can be fitted with an automatic pilot that will take it on an orbit away from your Sun and out of the Ecliptic. There isn’t a chance in a quadrillion that it would ever be spotted by anyone from Earth. It will travel on forever.”

Bigman broke in, “Lucky, it doesn’t matter what they do to me. Don’t you agree to anything?”

Devoure said, unheeding, “Your companion will have plenty of air and there’ll be a tube of water within reach if it’s thirsty. Of course it will be alone and there will be no food. Starvation is a slow death, and starvation in the ultimate loneliness of space is a horrible thing to contemplate.”

Lucky said, “That would be a dastardly and dishonorable way of treating a prisoner of war.”

“There is no war. You are merely spies. And in any case, there is no need for it to happen, eh, Councilman? You need only sign the

necessary confession that you intended to attack us and agree to confirm this in person at the conference. I am sure you will heed the beggings of the thing you have befriended."

"*Beggings!*" Bigman leaped, crimson-faced, to his feet.

Devoure raised his voice abruptly. "That thing is to be taken into custody. Proceed."

Two robots materialized silently at either side, and each seized an arm. For a moment Bigman writhed, and his body lifted off the floor with the intensity of his effort, but his arms were held motionless.

One of the robots said, "The master will please not resist, as otherwise the master may harm himself despite all we can do."

Devoure said, "You'll have twenty-four hours to make up your mind. Plenty of time, eh, Councilman?" He looked at the illuminated figures on the strip of decorative metal that encircled his left wrist. "And meanwhile, we will prepare our stripped ship. If we don't have to use it, as I expect we won't, why, what's labor to robots, eh, Councilman? Sit where you are; there is no use in trying to help your companion. He will not be hurt for the while."

Bigman was carried out of the room bodily while Lucky, half risen out of his seat, watched helplessly.

A light flashed on a small box on the conference table. Devoure leaned over to touch it, and a luminous tube sprang into being just above the box. The image of a head appeared. A voice said, "Yonge and I have the report that you have the Councilman, Devoure. Why were we told only after his landing?"

"What difference does that make, Zayon? You know now. Are you coming in?"

"We certainly are. We wish to meet the Councilman."

"Come then to my office."

Fifteen minutes later, two Sirians arrived. Both were as tall as Devoure; both were olive-skinned (the greater ultraviolet radiation of Sirius produced a dark skin, Lucky realized), but they were older. The cut hair of one was grizzled to steely gray. He was thin-lipped and spoke with rapid precision. He was introduced as Harrig Zayon, and his uniform made it clear he was a member of the Sirian Space Service.

The other was going somewhat bald. There was a long scar on his forearm and he had the keen look of one who had grown old in space. He was Barrett Yonge, also of the Space Service.

Lucky said, "Your Space Service is, I think, somewhat the equivalent of our Council of Science."

"Yes, it is," said Zayon gravely. "In that sense we are colleagues, though on opposite sides of the fence."

"Serviceman Zayon, then. Serviceman Yonge. Is Mr. Devoure——"

Devoure broke in, "I am not a member of the Space Service. It is not necessary that I be. Sirius can be served outside the Service too."

"Particularly," said Yonge, one hand resting on the scarred forearm as though to hide the mark, "if one is nephew of the director of the Central Body."

Devoure rose. "Was that meant as sarcasm, Serviceman?"

"Not at all. It was meant literally. The relationship makes it possible for you to do Sirius more service than otherwise."

But there was a dry quality to his statement, and Lucky was not unaware of the flash of hostility between the two aging Servicemen and the young and undoubtedly influential relative of Sirius's overlord.

Zayon tried to deflect the direction things had taken by turning to Lucky and saying mildly, "Has our proposition been offered you?"

"You mean the suggestion that I lie at the interstellar conference?"

Zayon looked annoyed and a bit puzzled. He said, "I mean to join us, to become a Sirian."

"I don't think we had quite reached that point, Serviceman."

"Well, then consider this. Our Service knows you well and we respect your abilities and accomplishments. They are wasted on an Earth that must lose someday as a matter of biologic fact."

"Biologic fact?" Lucky frowned. "The Sirians, Serviceman Zayon, are descended from Earthmen."

"So they are, but not from all Earthmen; only from some, from the best, from those with the initiative and strength to reach the stars as colonists. We have kept our descent pure; we have not allowed the weaklings in, or those with poor genes. We have weeded out the unfit from among ourselves so that we are now a pure race of the strong, the fit, and the healthy, while Earth remains a conglomerate of the diseased and deformed."

Devoure broke in, "We had an example here a while ago, the Councilman's companion. It infuriated and nauseated me merely to

be in the same room with him; a monkey, a five-foot travesty of a human being, a lump of deformity——”

Lucky said slowly, “He is a better man than you, Sirian.”

Devoure rose, fist drawn back, trembling. Zayon moved toward him rapidly, laying a hand on his shoulder. “Devoure, sit down, please, and let me go on. This is not the time for extraneous quarrels.” Devoure shook the other’s hand off roughly but sat down all the same.

Serviceman Zayon went on earnestly, “To the outer worlds, Councilman Starr, Earth is a terrible menace, a bomb of sub-humanity, ready to explode and contaminate the clean Galaxy. We don’t want that to happen; we can’t allow it to happen. It’s what we’re fighting for: a clean human race, composed of the fit.”

Lucky said, “Composed of those *you* consider fit. But fitness comes in all shapes and forms. The great men of Earth have come from the tall and the short, from all manner of head shapes, skin colors, and languages. Variety is our salvation and the salvation of all mankind.”

“You are simply parroting something you have been taught. Councilman, can’t you see you are really one of us? You are tall, strong, built like a Sirian; you have the courage and daring of a Sirian. Why combine with the scum of Earth against men like yourself, just because of the accident of your birth on Earth?”

Lucky said, “The upshot of all this, Serviceman, is that you wish me to come to the interstellar conference on Vesta and deliver statements designed to help Sirius.”

“To help Sirius, yes, but true statements. You have spied on us. Your ship was certainly armed.”

“But you waste your time. Mr. Devoure has already discussed the matter with me.”

“And you have agreed to be the Sirian you really are?” Zayon’s face lit up at the possibility.

Lucky cast a side glance at Devoure, who was inspecting the knuckles of his hands with an indifferent air.

Lucky said, “Why, Mr. Devoure advanced the proposition in another fashion. Perhaps he did not inform you of my arrival sooner than he did in order to have time to discuss the matter with me alone and to use his own methods. Briefly, he simply said that I was to attend the conference on Sirian terms or else my friend Bigman was to be sent out in a stripped space ship to die of starvation.”

Slowly the two Sirian Servicemen turned to look at Devoure, who merely continued the contemplation of his knuckles.

Yonge said slowly, speaking directly to Devoure, "Sir, it is not in the Service tradition——"

Devoure exploded in sudden flaming anger. "I am not a Serviceman and I don't give a half-credit piece for your tradition. I'm in charge of this base, and its security is my responsibility. You two have been appointed to accompany me as delegates to the conference on Vesta so that the Service will be represented, but I am to be chief delegate, and the success of the conference is also my responsibility. If this Earthman does not like the type of death reserved for his monkey friend, he need only agree to our terms, and he will agree to them a lot faster with that as stimulus than your offer of making a Sirian out of him.

"And listen further." Devoure rose from his seat, paced angrily to the far end of the room, and then turned to glare at the frozen-faced Servicemen who listened with disciplined self-control. "I'm tired of your interference. The Service has had enough time to make headway against Earth and has a miserable record in that regard. Let this Earthman hear me say this. He should know it better than anyone. The Service has a *miserable* record, and it is I who have trapped this Starr and not the Service. What you gentlemen need is a little more guts, and that I intend to supply——"

It was at this moment that a robot threw open the door and said, "Masters, I must be excused for entering without orders from you, but I have been instructed to tell you this concerning the small master who has been taken into custody——"

"Bigman!" cried Lucky, jumping to his feet. "What has happened to him?"

After Bigman had been carried out of the room by the two robots he had thought furiously. Not, really, of possible ways of escaping. He was not so unrealistic as to think he could make his way through a horde of robots and, singlehanded, get away from a base as well organized as this one, even if he had *The Shooting Starr* at his disposal, which he had not.

It was more than that.

Lucky was being tempted to dishonor and betrayal, and Bigman's life was the bait.

Either way, Lucky must not be subjected to this. He must not have to save Bigman's life at the cost of becoming a traitor. Nor

must he have to save his honor by sacrificing Bigman and carry the guilt with him for the rest of his life.

There was only one way to prevent both alternatives. Bigman faced that coldly. If he were to die in some way with which Lucky had nothing to do, the big Earthman could bear no blame, even in his own mind. And there would no longer be a live Bigman with which to bargain.

Bigman was forced into a small diagravitic car and taken for another two-minute drive.

But those two minutes were enough to crystallize matters firmly in his mind. His years with Lucky had been happy, exciting ones. He had lived a full lifetime in them and had faced death without fear. He could face death now, also without fear.

And a quick death would not be so quick as to prevent him from evening a tiny bit of the score with Devoure. No man in his lifetime had insulted him so without retaliation. He could not die and leave the score unevened. The thought of the arrogant Sirian so filled Bigman with anger that for a moment he could not have told whether it was friendship for Lucky or hatred of Devoure that was driving him.

The robots lifted him out of the diagravitic car, and one passed its huge metal paws gently and expertly down the sides of the Martian's body in a routine search for weapons.

Bigman felt a moment of panic and strove uselessly to knock aside the robot's arm. "I was searched on the ship before they let me get off," he howled, but the robot completed the search without paying attention.

The two seized him again, made ready to take him into a building. The time, then, was now. Once he was in an actual cell, with force planes cutting him off, his task would be much harder.

Bigman kicked his feet desperately forward and turned a somersault between the robots. He was kept from turning completely around only by the robots' hold of his arms.

One said, "It distresses me, master, that you have placed yourself in what must be a painful position. If you will hold yourself motionless so that you will not interfere with our assigned task, we will hold you as lightly as we can."

But Bigman kicked again and then shrieked piercingly, "*My arm!*"

The robots knelt at once and deposited Bigman gently on his back. "Are you in pain, master?"

"You stupid coppers, you've broken my arm. Don't touch it! Get

some human being who knows how to take care of a broken arm, or get some robot who can," he ended in a moan, his face twisted in agony.

The robots moved slowly backward, eyes upon him. They had no feelings, could have none. But inside them were the positronic brain paths whose orientation was controlled by the potentials and counter-potentials set up by the Three Laws of Robotics. In the course of their fulfillment of one law, the Second—that they obey an order, in this case an order to lead a human being to a specific spot—they had broken a higher law, the First: that they never bring harm to a human being. The result in their brains must have been a kind of positronic chaos.

Bigman cried out sharply, "Get help—— Sands of Mars—— get——"

It was an order, backed by the power of the First Law. A human being was hurt. The robots turned, started away—and Bigman's right arm flashed down to the top of his hip boot and snaked inside. He rose nimbly, with a needle gun warming the palm of his hand.

At the sound of that, one of the robots turned back, voice blurred and thickened as a sign of the weakening hold of the confused positronic brain. "Ith the mathter not in pain, then?" The second robot turned back too.

"Take me back to your Sirian masters," Bigman said tightly.

It was another order, but the First Law was no longer reinforcing it. A human being had not, after all, been harmed. There was no shock or surprise at this revelation. The nearest robot simply said, in a voice that had sharpened once more, "As your arm is not, indeed, damaged, it becomes necessary for us to carry out our original order. Please come with us."

Bigman wasted no time. His needle gun flashed noiselessly, and the robot's head was a gout of melting metal. What was left of it collapsed.

The second robot said, "It will not help to destroy our functioning," and walked toward him.

Self-protection was the Third Law only. A robot could not refuse to carry out an order (Second Law) on the basis of the Third alone. So it was bound to walk into a pointing needle gun. And other robots were coming from all directions, summoned, no doubt, by some radioed call at the moment when Bigman had first pretended the broken arm.

They would all walk into a needle gun, but there would be



enough to survive his pumping shots. Those who would survive would then overpower him and carry him into imprisonment. He would be deprived of the quick death he needed, and Lucky would still be faced with the unbearable alternative.

There was only one way out. Bigman put the needle gun to his temple.

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## Bigman Against All

Bigman cried out piercingly, "Not one step nearer. Any closer and I'll have to shoot. You'll kill me."

He nerved himself for the possible shot. If nothing else could be done, it would have to be that.

But the robots stopped. Not one moved. Bigman's eyes moved slowly to right and left. One robot was on the ground, headless, a useless lump of metal. One was standing, arms half reaching out toward him. One was a hundred feet away, caught in mid-stride.

Slowly Bigman turned. A robot was coming out of a building. It was caught on the threshold. Still others were farther off. It was as though a freezing blight had struck them all, struck them with instant paralysis.

He was not really surprised. It was the First Law. All else had to take second place: orders, their own existence, everything. They could not move if motion meant harm to a human being.

Bigman said, "Every robot but that one"—he pointed to the one facing him, the nearest, the companion of the one he had destroyed—"leave now. Back to your immediately previous task and forget me and what has just happened. Failure to obey at once will mean my death."

So all but one had to leave. This was dealing with them harshly, and Bigman, grim-faced, wondered if the potential being set up to drive the positrons might not be intense enough to harm the platinum-iridium sponge that made up the delicate robotic brains.

He had the Earthman's distrust of robots and he rather hoped that was so.

All the robots but one were gone now. The muzzle of the needle gun was still against Bigman's temple.

He said to the remaining robot, "Take me back to your master." (He wanted to use a harsher term but what would a robot understand of the insult implied. With difficulty he forced it down.)

"Now," he said, "and quickly. Do not allow any master or robot to interfere with us on our way. I have this needle gun and shall use it on any master near us, or on myself if I have to."

The robot said hoarsely (the first signs of positronic malfunction, Lucky had once told Bigman, showed up in the timbre of the voice), "I will follow orders. The master may be certain that I shall do nothing that will harm him or another master."

It turned and led the way into the diagravitic car. Bigman followed. He was half prepared for trickery on the way back, but there was none. A robot was a machine following inescapable rules of action. He had to remember that. Only human beings could lie and cheat.

When they stopped at Devoure's office, Bigman said, "I'll wait in the car. I won't leave. You go in and tell the master Devoure that the master Bigman is free and waiting for him." Bigman struggled with temptation and this time succumbed. He was too close to Devoure to resist successfully. He said, "Tell him he can take me on with needle gun or fists, I don't care which. Tell him that if he's too saffron-spined to do either, I'll come in and kick him from here to Mars."

Sten Devoure stared at the robot in disbelief, his dark face scowling and his angry eyes peering out from under hunched eyebrows.

"Do you mean he's out there free? And armed?"

He looked at the two Servicemen, who stared back with blank astonishment. (Lucky muttered "Great Galaxy!" under his breath. The irrepressible Bigman would ruin everything—and lose his life as well.)

Serviceman Zayon rose heavily to his feet. "Well, Devoure, you don't expect the robot to be lying, do you?" He stepped across to the wall phone and punched the emergency combination. "If we have an Earthman on base, armed and determined, we had better take action."

"But how does he come to be armed?" Devoure had still not wiped away the traces of confusion, but now he made for the door. Lucky followed him, and the Sirian whirled at once. "Get back, Starr."

He turned to the robot. "Stay with this Earthman. He is not to leave this building under any circumstances."

And now he seemed to have come to a decision. He rushed from the room pulling out a heavy blaster as he did so. Zayon and Yonge hesitated, cast a quick look at Lucky, then at the robot, made their own decision, and followed Devoure.

The area before Devoure's offices was wide and bathed in the artificial light that reproduced Sirius's faintly bluish tinge. Bigman stood alone in the center, and at a hundred yards' distance were five robots. Others were approaching from another direction.

"Come and get that," roared Devoure, gesturing to the nearer robots and pointing to Bigman.

"They won't come any closer," roared back Bigman. "If they make a move toward me I shall burn your heart out of your chest, and they know I'll do it. At least they can't take the chance I won't." He stood there easily, mockingly.

Devoure flushed and lifted his blaster.

Bigman said, "Now don't hurt yourself with that blaster. You're holding it a little close to your body."

His right elbow was resting in the palm of his left hand. His right fist squeezed gently as he spoke, and from the muzzle of the needle gun just protruding from between second and third fingers, a jet of deuterium pulsed out under the guidance of a momentarily established magnetic field. It took skill of the highest order to adjust the squeeze and thumb position correctly, but Bigman had that. No man in the system had more.

The muzzle tip of Devoure's blaster was a tiny white spark, and Devoure yelled his surprise and dropped it.

Bigman said, "I don't know who you other two cobbars are, but if either of you makes a move that looks like a blaster is at the end of it, you'll never finish that move."

All froze. Yonge finally said carefully, "How do you come to be armed?"

"A robot," said Bigman, "is no smarter than the cobber who runs him. The robots who searched me on the ship and out here were instructed by someone who didn't know a Martian uses his boots for more than something to put his legs into."

"And how did you break away from the robots?"

Bigman said coolly, "I had to destroy one."

"*You destroyed a robot?*" A kind of electric horror stunned the three Sirians.

Bigman felt increasing tension. He did not concern himself with the robots standing about, but at any moment another human Sirian might appear and shoot him in the back from a safe distance.

The spot between his shoulders prickled as he waited for the shot. Well, it would be a flash. He would never feel it. And after that they would have lost their hold on Lucky and, dead or not, Bigman would be the winner.

Only, he wanted a chance at Devoure first, at that soft Sirian cobbler who had sat across the table from him and said things no man in the universe could say and be left standing.

Bigman said, "I could shoot you all. Shall we make an arrangement?"

"You won't shoot us," said Serviceman Yonge quietly. "A shooting would simply mean that an Earthman has opened hostilities on a Sirian planet. It could mean war."

"Besides," roared Devoure, "if you make any attack it will release the robots. They'll defend three humans rather than one. Throw down that needle gun and put yourself back in custody."

"All right, send the robots away, and I'll surrender to you."

"The robots will handle you," said Devoure. He made as though to turn nonchalantly toward the other Sirians. "My skin crawls at having to talk to this deformed humanoid."

Bigman's needle gun flashed at once, the small fire ball exploding a foot before Devoure's eyes. "Say something like that again and I'll blind you for good. If the robots make a move, all three of you get it before they reach us. It may mean war, but you three won't be here to see if it does. Order the robots away and I'll surrender to Devoure, if he can take me. I'll toss my needle gun to one of you other two and surrender."

Zayon said stiffly, "That sounds reasonable, Devoure."

Devoure was still rubbing his eyes. "Take his gun then. Go over there and take it."

"Wait," said Bigman, "don't move yet. I want your word of honor that I won't be shot down or given to the robots. Devoure has to take me."

"My word of honor to *you*?" exploded Devoure.

"To me. But not from you. The word of one of the other two. They're wearing the uniform of the Sirian Service and I'll take their word. If I give them the needle gun, will they stand by and let you, Devoure, come and take me with your bare hands?"

"You have my word," said Zayon.

"And mine," added Yonge.

Devoure said, "What is this? I have no intention of touching the creature."

"Afraid?" asked Bigman softly. "Am I too big for you, Devoure? You've called me names. Do you want to put your muscles where your cowardly mouth is? Here's my needle gun, Servicemen."

He tossed the gun suddenly in Zayon's direction. Zayon reached out a hand and caught it neatly.

Bigman waited. Now for death?

But Zayon put the needle gun in his pocket.

Devoure called out, "*Robots!*" and Zayon called out with equal vigor, "*Leave us, robots!*"

Zayon said to Devoure, "He has our word. You'll have to take him into custody yourself."

"Or do I come after you?" Bigman called out in shrill mockery.

Devoure snarled wordlessly and strode hastily toward Bigman. The small Martian waited, slightly crouched, then took a small side step to avoid the arm reaching out for him and uncoiled like a tightly wound spring.

His fist struck the other's face with the dull impact of a mallet hitting a head of cabbage, and Devoure staggered back, stumbling into a sitting position. He stared at Bigman in stunned amazement. His right cheek had reddened and a trickle of blood made its slow way out of the corner of his mouth. He put his finger to it, drew it away, and looked at the blood with an almost comical disbelief.

Yonge said, "The Earthman is taller than he looks."

Bigman said, "I'm not an Earthman, I'm a Martian. . . . Stand up, Devoure. Or are you too soft? Can't you do anything without robots to help you? Do they wipe your mouth when you're done eating?"

Devoure yelled hoarsely and jumped to his feet but did not rush Bigman. He circled him instead, breathing hard, watching out of inflamed eyes.

Bigman wheeled also, watching that panting body, soft with good living and robot help, watching the unskillful arms and clumsy legs. The Sirian, Bigman was sure, had never fought fist to fist before.

Bigman stepped in again, caught the other's arm with a sure and sudden motion, and twisted. With a howl Devoure flipped and fell prone.

Bigman stepped back. "What's the matter? I'm not a he; I'm just an it. What's your trouble?"

Devoure looked up at the two Servicemen with something deadly in his eyes. He rose to his knees and groaned as he put a hand to his side where it had hit the ground.

The two Sirians did not make any move to help him. They watched stolidly as Bigman cut him down again and then again.

Finally Zayon stepped forward. "Martian, you will hurt him seriously if you continue. Our agreement was to let Devoure take you with his bare hands, and actually I think you have what you really wanted when you made the agreement. That's all. Surrender quietly to me now or I'll have to use the needle gun."

But Devoure, panting noisily, gasped, "Get away. Get away, Zayon. It's too late for that. Step back, I say."

He called out in a high-pitched yell, "*Robots! Come here!*"

Zayon said, "He'll surrender to me."

"No surrender," said Devoure, his swollen face twitching with physical pain and intense fury. "No surrender. Too late for that. . . . You, robot, the closest one—I don't care what your serial number is—you. Take it—take that thing." His voice rose to a scream as he pointed to Bigman. "*Destroy it! Break it! Break each piece of it!*"

Yonge shouted, "Devoure! Are you mad? A robot can't do a thing like that."

The robot remained standing. It did not move.

Devoure said, "You can't harm a human being, robot. I'm not asking you to do so. But this is not a human being."

The robot turned to look at Bigman.

Bigman shouted, "It won't believe that. You may consider me non-human, but a robot knows better."

Devoure said, "Look at it, robot. It talks and has a human shape, but so do you and you're no human. I can prove it's not human. Did you ever see a full-grown human so small? That proves it's not human. It's an animal and it is—it is harming me. You must destroy it."

"Run to Mamma Robot," yelled Bigman mockingly.

But the robot took the first step toward Bigman.

Yonge stepped forward and moved between the robot and Bigman. "I can't allow this, Devoure. A robot must not do such a thing, even if for no other reason than that the stress of potential involved will ruin it."

But Devoure said in a hoarse whisper, "I'm your superior. If you make one move to stop me, I'll have you out of the Service by tomorrow."

The habit of obedience was strong. Yonge fell back, but there was a look of intense distress and horror on his face.

The robot moved more quickly, and now Bigman fell back a cautious step. "I'm a human being," he said.

“It is not human,” cried Devoure madly. “It is not human. Break every piece of it. Slowly.”

A chill fell over Bigman and left his mouth dry. He had not counted on this. A quick death, yes, but this. . . .

There was no room to retreat, and he was without the escape his needle gun afforded. There were other robots behind, and all were hearing the word that he was not human.



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## Surrender

There was a smile on Devoure's puffed and bruised face. It must have hurt him, for one lip was split and he dabbed absently at it with his handkerchief, but his eyes were fixed on the robot moving toward Bigman and he seemed aware of nothing else.

The small Martian had only another six feet in which to retreat, and Devoure made no effort to hasten the approaching robot or to move up those in the rear.

Yonge said, "Devoure, for Sirius's sake, man, there is no need of this."

"No comments, Yonge," said Devoure tensely. "That humanoid has destroyed a robot and probably damaged others. We'll need checkups on every robot who has been affected by the sight of his use of violence. He deserves death."

Zayon put out a restraining hand toward Yonge, but the latter slapped it impatiently away. Yonge said, "Death? All right. Then ship him back to Sirius and have him tried and executed according to the processes of law. Or set up a trial here at the base and have him decently blasted. But this is no execution. Simply because he beat——"

Devoure cried in sudden fury, "That's enough! You have interfered once too often. You're under arrest. Zayon, take his blaster and toss it over to me."

He turned briefly, loath to take his eyes off Bigman for even a moment. "Do it, Zayon, or by all the devils of space I'll break you too."

With a bitter, wordless frown Zayon held out his hand to Yonge.

Yonge hesitated, and his fingers curled about the butt of his blaster, half drawing it in anger.

Zayon whispered urgently, "No, Yonge. Don't give him the excuse. He'll lift arrest when his madness is over. He'll have to."

Devoure called out, "I want that blaster."

Yonge ripped it out of its holster with a hand that trembled and thrust it butt-first at Zayon. The latter tossed it at Devoure's feet and Devoure picked it up.

Bigman, who had been maintaining an agonized silence as he watched futilely for a chance to dodge, to break away, now cried out, "Don't touch me, I'm a master," as the robot's monstrous hand closed over his wrist.

For a moment the robot hesitated, and then his grip tightened. The other hand reached for Bigman's elbow. Devoure laughed, a high-pitched titter.

Yonge turned on his heel and said in a suffocated tone, "At least I don't have to watch this cowardly crime." And as a result he did not observe what happened next.

With an effort Lucky remained calm when the three Sirians left. From a purely physical standpoint, he could not possibly beat down the robot with his bare hands. Somewhere in the building there might conceivably be a weapon he could use to destroy the robot; he could then get out and might even shoot down the three Sirians.

But he would not be able to leave Titan, nor win out against the entire base.

Worse still, if he were killed—and in the end he would be—his deeper purposes would be lost, and he could not risk those.

He said to the robot, "What happened to the master Bigman? State the essentials quickly."

The robot did, and Lucky listened with a tense and painful attention. He heard the robot's occasional slurring and lisp of words, the thickening of speech as it described Bigman's doubled forcing of the robots by pretending or threatening harm to a human.

Lucky groaned within. A robot dead. The force of Sirian law would be extended to the full against Bigman. Lucky knew enough about the Sirians' culture and their regard for their robots to know that there could be no extenuating circumstances against roboticide.

How to save the impulsive Bigman now?

Lucky remembered his own halfhearted attempt to keep Bigman on Mimas. He had not foreseen this exactly, but he had feared Bigman's temper in the delicate circumstances now surrounding them.

He should have insisted on Bigman's staying behind, but what was the use? Even as he thought this, he realized that he needed Bigman's company.

But then he had to save him. Somehow he had to save him.

He walked rapidly toward the opening of the building, and the robot stepped stolidly into his path. "Accor'ing to my instructions, the master's not to leave building under any thircumstances."

"I am not leaving the building," said Lucky sharply. "I am merely going to the door. You have no instructions to prevent that."

For a moment the robot was silent, then it said, "Accor'ing to my instructions, the master's not to leave building under any circum-thantheth."

Desperately Lucky tried to push it aside, was seized, held motionless, then pushed back.

Lucky bit his lip impatiently. A whole robot, he thought, would have interpreted its instructions broadly. This robot, however, had been damaged. It was reduced to the bare essence of robotic understanding.

But he had to see Bigman. He whirled toward the conference table. In its center there had been a trimensional image reproducer. Devoure had used it when the two Servicemen had called him.

"You. Robot!" called Lucky.

The robot lumbered to the table.

Lucky said, "How does the image reproducer work?"

The robot was slow. Its speech was continuing to thicken. It said, "The controlh are'n thith retheth."

"Which recess?"

The robot showed him, moving a panel aside clumsily.

"All right," said Lucky. "Can I focus on the area just outside this building? Show me. Do it."

He stepped aside. The robot worked, fumbling at the knobs. "It ith done, mathter."

"Let me see, then." The area outside was in small image above the table, the figures of men smaller still. The robot had moved away and stared dully elsewhere.

Lucky did not call him back. There was no sound, but as he groped for what must be the sound control, his attention was caught by the fight that was going on. Devoure was fighting Bigman. *Fighting Bigman!*

How had the small imp managed to persuade the two Servicemen to stand to one side and allow this to happen? For of course Bigman

was cutting his opponent to ribbons. Lucky could extract no joy from it.

This could end only in Bigman's death, and Lucky knew that Bigman realized that and didn't care. The Martian would court sure death, take any chance, to avenge an insult. . . . Ah, one of the Servicemen was stopping it now.

With that, Lucky found the sound control. Words shot out of the image reproducer: Devoure's frenzied call for robots and his shouted order that they break Bigman.

For a split second Lucky was not sure he had heard correctly, and then he beat both fists desperately against the table and whirled about in near despair.

He had to get out, but how?

There he was, alone with a robot containing only one instruction buzzing in what was left of its positronic brain paths: to keep Lucky immobilized at all costs.

Great Galaxy, was there nothing that would take precedence over that order? He lacked even a weapon with which to threaten suicide or kill the robot.

His eyes fell on the wall phone. He had last seen Zayon at it, something about emergency when the news about Bigman broke.

Lucky said, "Robot. Quickly. What has been done here?"

The robot approached, looked at the glowing combination of knobs in faint red, and said with tantalizing slowness, "A mathter hath indicated all robotth to prepare battle thathionth."

"How would I indicate that all robots are actually to proceed to battle stations at once? Superseding all current orders?"

The robot stared at him, and Lucky, in almost a frenzy, seized the robot's hand and pumped it. "Tell me. Tell me."

Could the thing understand him? Or did its ruined brain paths still have impressed upon them some remnant of instructions that prevented it from giving this information?

"Tell me! Or do it, do it."

The robot, not speaking, reached a finger toward the apparatus in an uneven movement and slowly depressed two buttons. Then its finger lifted an inch and stopped.

"Is that all? Are you done?" demanded Lucky desperately.

But the robot merely turned and with an uneven tread (one foot dragging perceptibly) walked to the door and marched out.

In space-devouring strides Lucky dashed after him, out of the building and across the hundred yards separating him from Bigman and the three Sirians.

Yonge, having turned in horror from what he expected would be the bloodcurdling destruction of a human being, did not hear the scream of agony he expected. Instead there was a startled grunt from Zayon and a wild cry from Devoure.

He turned back. The robot that had been holding Bigman was holding him no more. He was moving away in a heavy run. All the robots in sight were hastening away.

And the Earthman, Lucky Starr, was now at Bigman's side, somehow.

Lucky was bending over Bigman, and the small Martian, rubbing his left arm vigorously, was shaking his head. Yonge heard him say, "One minute later, Lucky; just one minute later and——"

Devoure was shouting hoarsely and uselessly at the robots, and then a loud-speaker arrangement suddenly filled the air with clamor:

COMMANDER DEVOURE, INSTRUCTIONS PLEASE. OUR INSTRUMENTS INDICATE NO SIGN OF ENEMY. EXPLAIN BATTLE STATIONS ORDER. COMMANDER DEVOURE . . .

"Battle stations," muttered Devoure, stunned. "No wonder the robots——" His eyes fell on Lucky. "*You* did that."

Lucky nodded. "Yes, sir."

Devoure's puffy lips set and he said hoarsely, "The clever, resourceful Councilman! You've saved your monkey for the moment." His blaster pointed firmly at Lucky's midriff. "Get into my offices. Every one of you. You too, Zayon. All of you."

The image receiver on his desk was buzzing madly. Obviously it was the failure to get Devoure at his office that had forced his distracted underlings to the loud-speakers.

Devoure flipped on the sound but left the image blind. He barked, "Cancel battle stations order. It was an error."

The man at the other end spluttered something, and Devoure said sharply, "There's nothing wrong with the image. Get on the ball. Everyone back on routine." But almost against his will his hand hovered between his face and the place where the image ought to be, as though he feared that somehow the other might penetrate to vision anyhow and see to what his face had been reduced—and wonder about it.

Yonge's nostrils flared as he watched, and he slowly rubbed his scarred forearm.

Devoure sat down. "The rest of you stand," he said, and stared sullenly from face to face. "This Martian will die, maybe not by robot or in a stripped space ship. I'll think of something; and if you think

you saved him, Earthman, be sure I'll think of something more amusing still. I have an excellent imagination."

Lucky said, "I demand that he be treated as a prisoner of war."

Devoure said, "There is no war. He is a spy. He deserves death. He is a roboticide. He deserves death twice." His voice trembled suddenly. "He lifted his hands against me. He deserves death a dozen times."

"I'll buy my friend," said Lucky in a whisper.

"He is not for sale."

"I can pay a high price."

"How?" Devoure grinned ferociously. "By bearing witness at the conference as you have been requested? It is too late for that. It is not enough."

"I couldn't do that in any case," said Lucky. "I will not lie against Earth, but there is a truth I can tell; a truth you do not know."

Bigman said sharply, "Don't bargain with him, Lucky."

"The monkey is right," Devoure said. "Don't bargain. Nothing you can tell me will buy him. I wouldn't sell him for all Earth in my hand."

Yonge interrupted sharply, "I would for much less. Listen to the Councilman. Their lives may be worth the information they have."

Devoure said, "Don't provoke me. You are under arrest."

But Yonge lifted a chair and let it drop with a crash. "I defy you to arrest me. I'm a Serviceman. You can't execute me out of hand. You dare not, no matter how I provoke you. You must reserve me for trial. And at any trial I have things to say."

"Such as?" demanded Devoure with contempt.

All the dislike of the aging Serviceman for the young aristocrat was suddenly out in the open. "Such as what happened today: how a five-foot Terrestrial tore you apart until you howled and Zayon had to step in to save your life. Zayon will bear witness. Every man jack at the base will remember that you dared not show your face for days after this date—or will you have the nerve to show that torn face before it heals?"

*"Be quiet!"*

"I can be quiet. I need say nothing—if you will stop subordinating the good of Sirius to your private hatreds. Listen to what the Councilman has to say." He turned to Lucky. "I guarantee you a fair deal."

Bigman piped up, "What fair deal? You and Zayon will wake up one morning and find yourselves dead by accident and Devoure will be so sorry and send you lots of flowers, only after that there'll be

no one to say how he needs robots to hide behind when a Martian is after his filthy skin. Then we'll go any way he likes. So why bargain?"

"There'll be nothing like that," said Yonge stiffly, "because I will give the complete story to one of the robots within an hour of my leaving here. He won't know which one, and he won't find out. If either Zayon or myself dies of anything but natural causes, the story will be relayed to the public sub-etherics in full; otherwise, not. I rather think Devoure will be anxious to see that nothing happens to Zayon or myself."

Zayon shook his head. "I don't like this, Yonge."

"You've got to like it, Zayon. You witnessed his beating. Do you think he wouldn't do his worst for you if you didn't take precautions? Come, I'm weary of sacrificing the honor of the Service to the nephew of the director."

Zayon said unhappily, "Well, what is your information, Councilman Starr?"

Lucky said in a low voice, "It's more than information. It's surrender. There is another Councilman on what you call Sirian territory. Agree to treat my friend as a prisoner of war and safeguard his life by forgetting the roboticide incident and I'll take you to this other Councilman."

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## Prelude to Vesta

Bigman, who, to the end, had been certain that Lucky had some stratagem on hand, was appalled. He called out in a heartbroken wail, "No, Lucky! No! I don't want to be pulled out that way."

Devoure was openly astonished. "Where? No ship could have penetrated our defenses. It's a lie."

"I'll take you to the man," said Lucky wearily, "if we come to an arrangement."

"Space!" growled Yonge. "It's an arrangement."

"Wait," said Devoure angrily. "I admit this could be of value to us, but is Starr suggesting that he will openly testify to the conference on Vesta that this other Councilman invaded our territory and that Starr voluntarily revealed his hiding place?"

"It's the truth," said Lucky. "I will so testify."

"The word of honor of a Councilman?" sneered Devoure.

"I have said I will testify."

"Well, then," said Devoure, "since our Servicemen *will* have it so, you may have your lives in exchange." His eyes suddenly sparked fury. "On Mimas. Is that it, Councilman? Mimas?"

"That is correct."

"By Sirius!" Devoure rose to his feet in agitation. "We almost missed it. Nor did this occur to the Service."

Zayon said with thought, "Mimas?"

"The Service still doesn't get it," said Devoure with a malignant scowl. "Three men were on *The Shooting Starr*, obviously. Three entered Mimas; two left; one stayed behind. It was your report, Yonge, I believe, which stressed the fact that Starr always worked with his companion in a party of two."



"He always had," said Yonge.

"And was there no flexibility left in you to consider the possibility of a third? Shall we go then to Mimas?" Devoure seemed to have lost his mad passion for revenge in the stress of this new development, almost to have regained the mocking irony he had displayed when the two Terrestrials had first landed on Titan. "And you will give us the pleasure of your company, Councilman?"

"Certainly, Mr. Devoure," said Lucky.

Bigman moved away, face averted. He felt worse now, he thought, than even in that last moment of robotic advance when the metal limbs were on his arm, ready to smash.

*The Shooting Starr* was in space again, but not as an independent ship. It was caught in firm magnetic grapple and moved according to the impulses of the engines of the accompanying Sirian ship.

The trip from Titan to Mimas took the better part of two days, and it was a hard time for Lucky, a bitter, suspenseful time.

He missed Bigman, who had been taken from him and placed on the Sirian ship. (The two on separate ships, Devoure had pointed out, were hostages for each other's good behavior.)

It was the Sirian Serviceman, Harrig Zayon, who made the second on the ship. There was a stiffness about him. He made no effort to repeat his original attempt to convert Lucky Starr to Sirian views, and Lucky could not resist taking the offensive in the matter. He asked if Devoure were an example, in Zayon's eyes, of the superior race of human beings that inhabited the Sirian planets.

Zayon said reluctantly, "Devoure has not had the benefit of Service training and Service discipline. He is emotional."

"Your colleague, Yonge, seems to consider it more than that. He makes no secret of his low opinion of Devoure."

"Yonge is—is a representative of an extreme view among the Servicemen. That scar on his arm was received during some internal troubles that attended the rise of the present director of the Central Body to power."

"Devoure's uncle?"

"Yes. The Service was on the side of the previous director, and Yonge followed orders with Serviceman's honor. As a result he was passed over for promotion under the new regime. Oh, they send him out here and appoint him to the committee which will represent Sirius at Vesta, but in actual fact he is under Devoure."

"The director's nephew."

"Yes. And Yonge resents it. Yonge cannot bring himself to un-

derstand that the Service is an organ of the state and does not question its policies or have anything to do with the question of which individual or group is to govern it. He is an excellent Serviceman, otherwise."

"But you have not answered the question as to whether you found Devoure a satisfactory representative of the Sirian elite."

Zayon said angrily, "What about your Earth? Have you never had unsatisfactory rulers? Or even vicious ones?"

"Any number," admitted Lucky, "but we are a miscellaneous lot on Earth; we vary. No ruler can stay in power very long if he doesn't represent a compromise among us. Compromising rulers may not be dynamic, but neither are they tyrannical. On Sirius you have developed a sameness among yourselves, and a ruler can go to extremes along the lines of that sameness. For that reason autocracy and force in politics are not the exceptional interlude that they are on Earth, but are the rule with you."

Zayon sighed, but it was long hours before he spoke to Lucky again. It was not until Mimas was large in the visiplat and they were decelerating to land.

Zayon said, "Tell me, Councilman. I ask you on your honor. Is this a trick of some sort?"

Lucky's stomach tightened, but he said calmly, "What do you mean by a trick?"

"Is there really a Councilman on Mimas?"

"Yes, there is. What do you expect? That I have a force knot concealed on Mimas designed to blow us all to nothingness?"

"Perhaps something like that."

"And what would I gain? The destruction of one Sirian ship and a dozen Sirians?"

"You would gain your honor."

Lucky shrugged. "I have made a bargain. We have a Councilman down there. I will go and get him and there will be no resistance."

Zayon nodded. "Very well. I suppose you would not make a Sirian after all. You had better stay an Earthman."

Lucky smiled bitterly. That, then, was the source of Zayon's ill humor. His stiff Serviceman's sense of honor objected to Lucky's behavior even when he believed Sirius to be benefiting by it.

Back at Port Center, International City, Earth, Chief Councilman Hector Conway waited to leave for Vesta. He had not heard directly from Lucky since *The Shooting Starr* had moved into the shadow of Hidalgo.

The capsule brought in by Captain Bernold had been specific

enough in its curt way and had been marked by Lucky's usual hard common sense. A call for a conference *had* been the only way out. The President had seen that at once, and though some members of the cabinet were bellicose about matters, they had been overruled.

Even Sirius (quite as Lucky had predicted) had adopted the notion eagerly. It was, obviously, exactly what the Sirian government wanted, a conference that was sure to fail, followed by a war on their own terms. To all outward appearances, they had all the cards.

It was that very fact that had made it so necessary to keep as much as possible from the public. If all details were put on the sub-ether without careful preparation, an indignant public might howl Earth's government irresistibly into war against all the Galaxy. The call for a conference would only make matters worse, since it would be interpreted as a cowardly sell-out to the Sirians.

And yet complete secrecy was impossible, too, and the press was angry and rebellious at being fed diluted government reports. Things were worsening daily.

The President would have to hold out somehow until the conference could take place. And yet, if the conference failed, the present situation would be honey-sweet compared to that which would come.

In the general indignation that would follow, there would be not only war, but the Council of Science would be completely discredited and destroyed, and the Terrestrial Federation would lose its most powerful weapon just when it needed it most.

It had been weeks since Hector Conway had slept without pills, and for the first time in his career he thought earnestly that he should be retiring.

He rose heavily and made his way forward to the ship now being readied for the launching. In a week he would be on Vesta for preliminary discussions with Doremo. That old pink-eyed statesman would be holding the balance of power. There was no doubting that. The very weakness of his small world was what made him powerful. He was the nearest thing to an honest and disinterested neutral in the Galaxy, and even the Sirians would listen to him.

If Conway could get his ear to begin with . . .

He was scarcely aware of the man approaching to stop him until there was a near collision.

"Eh? What is this?" demanded Conway in annoyance.

The man touched the brim of his hat. "Jan Dieppe of Trans-sub-etheric, Chief. I wonder if you would answer a few questions?"

"No, no. I'm ready to board ship."

"I realize that, sir. It's the very reason I'm stopping you. I won't get another chance. You're heading out for Vesta, of course."

"Yes, of course."

"To see about the outrage on Saturn."

"Well?"

"What do you expect the conference to do, Chief? Do you suppose Sirius will listen to resolutions and votes?"

"Yes, I think Sirius will."

"Do you think the votes will go against her?"

"I'm sure they will. Now may I pass?"

"I'm sorry, sir, but there's something very important just now that Earth's people must know about."

"Please. Don't tell me what you think they must know. I assure you that the good of Earth's people is close to my heart."

"And is that why the Council of Science is willing to allow foreign governments to vote on whether or not the Terrestrial Federation's territory has been invaded? A question that should be reserved to our own decision alone?"

Conway could not fail to note the undercurrent of threat in the other's outwardly polite but persistent questioning. He looked over the reporter's shoulder and could see the Secretary of State talking to a group of other newsmen at a point closer to the ship.

He said, "What are you getting at?"

"The public is questioning the good faith of the Council, I'm afraid, Chief. And in that connection, Trans-sub-ether has picked up a Sirian news broadcast that it has not yet made public. We need your comments on it."

"No comments. A Sirian news broadcast designed for home consumption is not worth comment."

"This report was quite circumstantial. For instance, where is Councilman David Starr, the legendary Lucky, himself? Where is he?"

"What?"

"Come on now, Chief. I know the Council's agents dislike publicity, but has Councilman Starr been sent to Saturn on a secret mission?"

"Now if that were so, young man, would you expect me to talk about it?"

"Yes, if Sirius were already talking about it. It's no secret to them. They say Lucky Starr invaded the Saturnian system and was captured. Is that true?"

Conway said stiffly, "I do not know the present whereabouts of Councilman David Starr."

"Does that mean he *might* be in the Saturnian system?"

"It means that I do not know his whereabouts."

The reporter's nose wrinkled. "All right. If you think it sounds better to have the Chief of the Council of Science deny that he knows the whereabouts of one of his important agents, that's your business. But the general mood of the public is increasingly anti-Council. There is considerable talk of the Council's inefficiency in letting Sirius get to Saturn in the first place and its interest in whitewashing the whole affair for the sake of their political skins."

"You are being insulting. Good day, sir."

"The Sirians are quite definite that Lucky Starr has been captured in the Saturnian system. Any comment on that?"

"No. Let me pass."

"The Sirians say that Lucky Starr will be at the conference."

"Oh?" For a moment Conway could not conceal a spasm of interest.

"That seems to get you, Chief. The only catch is that the Sirians say he'll be testifying for *them*."

Conway said with difficulty, "That remains to be seen."

"Do you admit he'll be at the conference?"

"I know nothing about that."

The reporter stepped aside. "All right, Chief. It's just that the Sirians say that Starr has already given them valuable information and that the Sirians will be able to convict us of aggression on the basis of it. I mean, what's the Council doing? Fighting with us or against us?"

Conway, feeling unbearably harried, muttered, "No comment," and started to pass by.

The reporter called after him. "Starr is your adopted son, isn't he, Chief?"

For a moment Conway turned back. Then, without a word, he hastened on to the ship.

What was there to say? What *could* he say except that ahead of him lay an interstellar conference more crucial for Earth than any meeting of any sort in its history? That this conference was weighted heavily on the side of Sirius. That chances were almost intolerably great that peace, the Council of Science, the Terrestrial Federation would all be destroyed.

And that only the thin shield of Lucky's efforts protected them. Somehow, what depressed Conway more than anything else—

more, even, than a lost war—was the thought that if the Sirian news report were true and if the conference nevertheless failed despite Lucky's original intentions, Lucky would go down in history as Earth's arch-traitor! And only a few would ever know better.

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## On Vesta

The Secretary of State, Lamont Finney, was a career politician who had served some fifteen years in the legislature and whose relations with the Council of Science had never been overwhelmingly friendly. He was aging now, not in the best of health, and inclined to be querulous. Officially he headed the Terrestrial delegation to Vesta. In actuality, though, Conway understood quite well that he, himself, as head of the Council, must be prepared to take full responsibility for failure—if there was failure.

Finney made that clear even before the ship, one of Earth's largest space liners, took off.

He said, "The press is almost uncontrollable. You're in a bad spot, Conway."

"All Earth is."

"*You*, Conway."

Conway said gloomily, "Well, I am under no illusions that if things go badly the Council can expect support from the government."

"I'm afraid not." The Secretary of State was strapping himself in with meticulous care against the rigors of take-off and making certain that his bottle of anti-space-sickness pills was handy. "Government support for you would only mean the downfall of the government, and there will be enough troubles with a war emergency. We can't afford political instability."

Conway thought: He has no confidence in the outcome of the conference at all. He expects the war.

He said, "Listen, Finney, if the worst does come to the worst, I

will need voices on my side to help prevent Councilman Starr's reputation from——"

Finney lifted his gray head momentarily from the hydraulic cushion and stared at the other out of fading, troubled eyes. "Impossible. Your Councilman went into Saturn on his own, asked no permission, received no orders. He was willing to take the risks. If things turn out badly, he is done. What else can we do?"

"You *know* he——"

"I *don't* know," said the politician violently. "I know nothing officially. You've been in public life long enough to know that under certain conditions the people need a scapegoat and insist on one. Councilman Starr will be the scapegoat."

He leaned back again, closed his eyes, and Conway leaned back beside him. Elsewhere in the ship others were in their places, and the far thunder of the engines started up and rose in pitch as the ship raised itself slowly from the launching pad and lifted toward the sky.

*The Shooting Starr* hovered a thousand miles above Vesta, caught in its feeble gravity and circling it slowly with engines blocked. Grappled to it was a small lifeboat from the Sirian mother ship.

Serviceman Zayon had left *The Shooting Starr* to join the Sirian delegation on Vesta, and a robot remained behind in his place. In the lifeboat was Bigman, and with him Serviceman Yonge.

Lucky had been surprised when Yonge's face first stared out at him in the receiver. He said, "What are you doing out in space? Is Bigman with you?"

"He is. I'm his guard. I suppose you expected a robot."

"Yes, I did. Or won't they trust Bigman with a robot after last time?"

"No, this is just Devoure's little way of seeing to it that I don't attend the conference. It's a slap at the Service."

Lucky said, "Serviceman Zayon will be there."

"Zayon," Yonge sniffed. "He is an adequate man, but he's a follower. He can't realize that there's more to the Service than blindly obeying orders from above; that we owe it to Sirius to see to it that she is ruled according to the inflexible principles of honor that guide the Service itself."

Lucky said, "How is Bigman?"

"Well enough. He seems unhappy. It's strange that such an odd-looking person should have a sterner sense of duty and honor than a person like yourself."

Lucky clamped his lips together. There was little time left, and



it worried him whenever either Serviceman began speculating about Lucky's loss of honor. From that it was a step to wondering if Lucky might by some chance have retained his honor, and then they might wonder what his intentions really were, and after that——

Yonge shrugged. "Well, I called only to make sure all was well. I am responsible for your welfare until, in good time, we get you down before the conference."

"Wait, Serviceman. You performed a service for me back on Titan——"

"I did nothing for you. I followed the dictates of duty."

"Nevertheless, you saved Bigman's life and mine, too, perhaps. It may so happen that when the conference is over you may consider your life in danger."

"My life?"

Lucky said carefully, "Once I have given evidence, Devoure may for one reason or another decide to get rid of you despite the risk of having Sirians find out about his fight with Bigman."

Yonge laughed bitterly. "He wasn't seen once on the trip out here. He was waiting in his cabin for his face to heal. I'm safe enough."

"Just the same, if you consider yourself in danger, approach Hector Conway, Chief Councilman of Science. My word on it that he will accept you as a political exile."

"I suppose you mean that kindly," said Yonge, "but I think that after the conference it will be Conway who will have to seek political asylum." Yonge broke connections.

And Lucky was left to look down at gleaming Vesta and to think sadly that, after all, the chances were heavily in favor of Yonge's being right.

Vesta was one of the largest of the asteroids. It was not the size of Ceres, which was more than five hundred miles in diameter and a giant among asteroids, but its 215-mile span put it into the second class, where only two other asteroids, Pallas and Juno, competed with it.

As seen from Earth, Vesta was the brightest of the asteroids because of the chance that had composed its outermost shell so largely of calcium carbonate rather than the darker silicates and metallic oxides that made up the other asteroids.

Scientists speculated on this odd divergence in chemical constitution (which had not been suspected until an actual landing was made upon it; before that the ancient astronomers had wondered if

Vesta lay under a coat of ice or frozen carbon dioxide) but had come to no conclusion. And the feature writers took to calling it the "world of marble."

The "world of marble" had been converted into a naval base in the first days of the fight with the space pirates of the asteroid belt. The natural caverns under its surface had been enlarged and made airtight, and there had been room to store a fleet and house two years of provisions for it.

Now the naval base was more or less obsolete, but with small changes the caverns could be (and had been) made a most suitable meeting ground for delegates from all over the Galaxy.

Food and water supplies had been laid down, and luxuries which naval men had not required were added. As one passed the marble surface and entered the interior, there was little to distinguish Vesta from an Earthside hotel.

The Terrestrial delegation as the hosts (Vesta was Terrestrial territory; not even the Sirians could dispute that) assigned the quarters and saw to it that the delegates were comfortable. This meant the adjustment of the various quarters to the slight difference in gravity and atmospheric conditions to which the delegates might be accustomed. Those from Warren, for instance, had the quarters air-conditioned to a moderate chill to allow for the frigid climate of their home planet.

It was not an accident that greatest pains were taken for the delegation from Elam. It was a small world circling a red dwarf star. Its environment was such that one would not have supposed human beings could flourish there. Yet the very deficiencies were turned into account by the restless ingenuity of the human species.

There was not enough light to allow Earth-type plants to grow properly, so artificial lights were used and special breeds were cultivated, until Elamite grains and agricultural products generally were not merely adequate but of superior quality that could not be duplicated elsewhere in the Galaxy. Elamite prosperity rested on her agricultural exports in a way that other worlds more favored by nature could not match.

Probably as a result of the poor light of Elam's sun, there was no biological favoring of skin pigmentation. The inhabitants were fair-skinned almost to extremes.

The head of the Elamite delegation, for instance, was almost an albino. He was Agas Doremo, for more than thirty years the recognized leader of the neutralist forces in the Galaxy. In every question that arose between Earth and Sirius (which, of course, represented

the extreme anti-Terrestrial forces of the Galaxy) he held the balance even.

Conway counted on him to do so in this case too. He entered the quarters assigned to the Elamite with an air of friendship. He took care to keep from being overeffusive and shook hands warmly. He blinked in the low-pitched, red-tinged light and accepted a glass of native Elamite brew.

Doremo said, "Your hair has grown white since last I saw you, Conway—as white as mine."

"It has been many years since we last met, Doremo."

"Then it hasn't grown white just these last few months?"

Conway smiled ruefully. "It would have, I think, if it had been dark to begin with."

Doremo nodded and sipped his drink. He said, "Earth has let itself be placed in a most uncomfortable position."

"So it has, and yet by all the rules of logic, Earth is in the right."

"Yes?" Doremo was noncommittal.

"I don't know how much thought you've given this matter——"

"Considerable."

"Or how willing you are to discuss the matter in advance——"

"Why not? The Sirians have been at me."

"Ah. Already?"

"I stopped off at Titan on the way in." Doremo shook his head. "They've got a beautiful base there, as I could see once they supplied me with dark glasses—it's the horrible blue light of Sirius that spoils things, of course. You have to give them credit, Conway; they do things with a splash."

"Have you decided that they have a right to colonize Saturn?"

Doremo said, "My dear Conway, I have decided only that I want peace. A war will do no one any good. The situation, however, is this: The Sirians are in the Saturnian system. How can they be forced out of it without war?"

"There is one way," said Conway. "If the other outer worlds were to make it clear that they considered Sirius to be an invader, Sirius could not face the enmity of all the Galaxy."

"Ah, but how are the outer worlds to be persuaded to vote against Sirius?" Doremo said. "Most of them, if you'll forgive me, have a traditional suspicion of Earth, and they will tell themselves that the Saturnian system was, after all, uninhabited."

"But it has been a settled assumption since Earth first granted independence to the outer worlds, as a result of the Hegellian Doc-

trine, that no smaller unit than a stellar system is to be considered capable of independence. An unoccupied planetary system means nothing unless the stellar system of which it is a part is unoccupied as a whole."

"I agree with you. I admit that this has been the assumption. However, the assumption has never been put to the test. Now it will be."

"Do you think," said Conway softly, "that it would be wise to destroy the assumption, to accept a new principle that would allow any stranger to enter a system and colonize such unpopulated planets or planetoids as he may come across?"

"No," said Doremo emphatically, "I do *not* think so. I think it to the best interests of all of us that stellar systems continue to be considered as indivisible, but——"

"But?"

"There will be passions aroused at this conference that will make it difficult for delegates to approach matters logically. If I may presume to advise Earth——"

"Go ahead. This is unofficial and off the record."

"I would say, count on no support at this conference. Allow Sirius to remain on Saturn for the present. She will overplay her hand eventually and then you can call a second conference with higher hopes."

Conway shook his head. "Impossible. If we fail here, there will be passions aroused on our side; they are aroused already."

Doremo shrugged. "Passions everywhere. I am very pessimistic about this."

Conway said persuasively, "But if you yourself believe that Sirius ought not to be on Saturn, could you not make an effort to persuade others of this? You are a person of influence who commands the respect of the Galaxy. I don't ask you to do anything but stick by your own belief. It may make all the difference between war and peace."

Doremo put his glass aside and dabbed at his lip with a napkin. "It is what I would very much like to do, Conway, but I don't even dare to try at this conference. Sirius has matters so entirely its own way that it might be dangerous for Elam to stand against them. We are a small world. . . . After all, Conway, if you called this conference in order to reach a peaceful solution, why did you simultaneously send war vessels into the Saturnian system?"

"Is that what the Sirians told you, Doremo?"

"Yes. They showed me some of the evidence they had. I was

even shown a captured Earth ship in flight to Vesta under the magnetic grapple of a Sirian vessel. I was told that no less a person than Lucky Starr, of whom even we on Elam have heard somewhat, was on board. I understand Starr is circling off Vesta now, waiting to testify."

Slowly Conway nodded.

Doremo said, "Now if Starr admits to warlike actions against the Sirians—and he will, otherwise it is inconceivable the Sirians will allow him to testify—then it will be all the conference needs. No arguments will stand against it. Starr, I believe, is an adopted son of yours."

"In a way, yes," muttered Conway.

"That makes it worse, you see. And if you say that he acted without Earth's sanction, as I suppose you must——"

"It's true that he did," said Conway, "but I am not prepared to say what we will claim."

"If you disown him, no one will believe you. Your own son, you see. The outer-world delegates will set up the cry of 'perfidious Terrestria,' of Earth's supposed hypocrisy. Sirius will make the most of it, and I'll be able to do nothing. I will not even be able to cast my personal vote in favor of Earth. . . . Earth had better give in now."

Conway shook his head. "Earth cannot."

"Then," said Doremo with infinite sadness, "it will mean war, with all of us against Earth, Conway."

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## The Conference

Conway had finished his drink. Now he rose to go, shaking hands with a look of settled melancholy on his face.

He said, almost as an afterthought, "But you know, we haven't heard Lucky's testimony yet. If the effects aren't as bad as you think, if his testimony should even prove harmless, would you work then on behalf of peace?"

Doremo shrugged. "You are grasping at straws. Yes, yes, in the unlikely case that the conference is not stampeded past recall by your foster son's words, I will do my bit. As I told you, I am really on your side."

"I thank you, sir." They shook hands again.

Doremo stared after the departing Chief Councilman with a sad little shake of his head. Outside the door, however, Conway paused to catch his breath. It was really quite as much as he had expected. Now if only the Sirians *would* present Lucky.

The conference opened on the stiff and formal note to be expected. Everyone was painfully correct, and when Earth's delegation entered to take their posts in the front and at the extreme right of the hall, all the delegates already seated, even the Sirians in the front and extreme left, rose.

When the Secretary of State, representing the host power, rose to make a welcoming speech, he spoke in generalities about peace and the door it opened to the continuing expansion of mankind through the Galaxy, of the common ancestry and brotherhood of all men, of the grievous disaster war would be. He carefully made no

mention of the specific points of issue, did not refer to Sirius by name, and, above all, made no threats.

He was graciously applauded. Then the conference voted Agas Doremo into the chair to preside (he was the only man on whom both sides could agree), and the chief business of the conference began.

The conference was not open to the public, but there were special booths for reporters from the various worlds represented. They were not to interview individual delegates but were allowed to listen and send out uncensored reports.

The proceedings, as was customary in such interstellar gatherings, were carried on in Interlingua, the language amalgam that served throughout the Galaxy.

After a short speech by Doremo extolling the virtues of compromise and begging no one to be so stubborn as to risk war where a slight yielding might insure peace, he recognized Earth's Secretary of State once more.

This time the Secretary was a partisan, presenting his side of the dispute forcefully and well.

There was, however, no mistaking the hostile attitude of the other delegates. It hung like a fog over the assembly hall.

Conway sat next to the orating Secretary, with his chin digging into his chest. Ordinarily it would be a mistake for Earth to present its major speech at the very start. It would be a case of shooting off the best ammunition before the nature of the target was known. It would give Sirius the opportunity for a crushing rebuttal.

But in this case, however, this was exactly what Conway wanted.

He whipped out a handkerchief, passed it over his forehead, then put it hastily back and hoped he had not been noticed. He did not want to seem worried.

Sirius reserved its rebuttal and, undoubtedly by arrangement, representatives of three of the outer worlds, three that were notoriously under Sirian influence, rose to speak briefly. Each avoided the direct problem but commented forcefully on the aggressive intentions of Earth and on its ambitions to reimpose a galactic government under its own rule. They set the stage for the eventual Sirian display and, having done so, there was a lunch recess.

Finally, six hours after the conference had been called to order, Sten Devoure of Sirius was recognized and rose slowly to his feet. He stepped forward with quiet deliberation to the rostrum and stood there, looking down upon the delegates with an expression of proud

confidence on his olive-skinned face. (There was no sign of his misadventure with Bigman.)

There was a stir among the delegates that quieted only after a number of minutes during which Devoure made no effort to begin speaking.

Conway was certain that every delegate knew that Lucky Starr would be testifying soon. They were waiting for this complete humiliation of Earth with excitement and anticipation.

Devoure began his speech at last, very quietly. His introduction was historical. Going back to the days when Sirius was a Terrestrial colony, he rehearsed once again the grievances of that day. He brushed over the Hegellian Doctrine, which had established the independence of Sirius as well as that of the other colonies, as insincere, and one by one cited the supposed efforts of Earth to re-establish domination.

Coming down to the present, he said, "We are now accused of having colonized an unoccupied world. We plead guilty to that. We are accused of having taken an empty world and made it a beautiful habitation for human beings. We plead guilty to that. We are accused of extending the range of the human race to a world suitable for it that had been neglected by others. We plead guilty to that.

"We have not been accused of offering violence to anyone in the process. We have not been accused of making war, of killing and wounding, in the course of our occupation. We are accused of no crime at all. Instead, it is merely stated that not quite a billion miles away from the world we now so peacefully occupy there is another occupied world named Earth.

"We are not aware that this has anything to do with our world, Saturn. We offer no violence to Earth, and they accuse us of none. We ask only the privilege of being left to ourselves, and in return for that we are glad to offer to leave them to themselves.

"They say Saturn is theirs. Why? Have they occupied its satellites at any time? No. Have they shown interest in it? No. For the thousands of years during which it was theirs for the taking, did they want it? No. It was only after we landed on it that they suddenly discovered their interest in it.

"They say Saturn circles about the same Sun that Earth does. We admit that, but we also point out that the fact is irrelevant. An empty world is an empty world, regardless of the particular route it travels through space. We colonized it first and it is ours.

"Now I have said that Sirius occupied the Saturnian system without force of any kind and without the threat of force; that we are



actuated in all we do by a desire for peace. We do not speak much of peace, as Earth does, but we at least practice it. When Earth called for a conference, we accepted at once, for the sake of peace, even though there is no shadow of any sort on our title to the Saturnian system.

"But what of Earth? How does it back *its* views? They are very fluent in their talks on peace, but their actions match their words very poorly. They called for peace and practiced war. They demanded a conference and at the same time outfitted a war expedition. In short, while Sirius risked its interests for the sake of peace, Earth, in return, made unprovoked war upon us. I can prove this from the mouth of a member of Earth's own Council of Science."

He raised his hand as he spoke the last sentence, his first gesture of any sort, and pointed dramatically to a doorway upon which a spot of light had been allowed to fall. Lucky Starr was standing there, tall and defiantly straight. A robot flanked him on either side.

Lucky, on being brought down to Vesta, finally saw Bigman again. The little Martian ran to him, while Yonge looked on with dour amusement from a distance.

"Lucky," pleaded Bigman. "Sands of Mars, Lucky, don't go through with it. They can't make you say a word if you don't want to, and it doesn't really matter what happens to me."

Slowly Lucky shook his head. "Wait, Bigman. Wait one more day."

Yonge came up and took Bigman by the elbow. "Sorry, Starr, but we need him till you're through. Devoure has a great sense of hostage, and at this point I rather think he's right. You're going to have to face your own people, and dishonor will be difficult."

Lucky nerved himself for just that when he finally stood in the doorway and felt the eyes upon him, the silence, the caught breaths. In the spotlight himself, Lucky saw the delegates to the conference as nothing but a giant black mass. It was only after the robots led him into the witness box that faces swam out of the crowd at him, and he could see Hector Conway in the front row.

For a moment Conway smiled at him with weary affection, but Lucky dared not smile back. This was the crisis and he must do nothing that, even at this late moment, might warn the Sirians.

Devoure stared at the Earthman hungrily, savoring his coming triumph. He said, "Gentlemen. I wish temporarily to convert this conference into something approaching a court of law. I have a witness here whom I wish all the delegates to hear. I will rest my case

on what he says—he, an Earthman and an important agent of the Council of Science.”

He then said to Lucky with sudden sharpness, “Your name, citizenship, and position, please.”

Lucky said, “I am David Starr, native of Earth, and member of the Council of Science.”

“Have you been subjected to drugs, to psychic probing, or to mental violence of any sort to induce you to testify here?”

“No, sir.”

“You speak voluntarily and will tell the truth?”

“I speak voluntarily and will tell the truth.”

Devoure turned to the delegates. “It may occur to some of you that Councilman Starr has indeed been handled mentally without his knowledge or that he may be denying mental harm as the very result of that mental harm. If so, he may be examined by any member of this conference with medical qualification—I know there are a number of such—if anyone demands such examination.”

No one made the demand, and Devoure went on, addressing Lucky, “When did you first become aware of the Sirian base within the Saturnian system?”

Curtly, unemotionally, eyes staring stonily forward, Lucky told of the first entry into the Saturnian system and the warning to leave.

Conway nodded slightly at Lucky’s complete omission of the capsule or of Agent X’s spying activities. Agent X might have been merely a Terrestrial criminal. Obviously Sirius wanted no mention of its own spying at this time and, as obviously, Lucky was satisfied to go along with them in this.

“And did you leave after being warned?”

“I did, sir.”

“Permanently?”

“No, sir.”

“What did you do next?”

Lucky described the ruse with Hidalgo, the approach to Saturn’s south pole, the flight through the gap in the rings to Mimas.

Devoure interrupted, “Did we at any time offer violence to your ship?”

“No, sir.”

Devoure turned to the delegates again. “There is no need to rely only upon the word of the Councilman. I have here telephotos of the pursuit of the Councilman’s ship to Mimas.”

While Lucky remained in the spotlight the rest of the chamber was darkened, and in the three-dimensional imagery the delegates

watched scenes of *The Shooting Starr* speeding toward the rings and disappearing into a gap which, at the angle of photography, could not be seen.

It was next shown racing headlong into Mimas and disappearing in a flash of ruddy light and vapor.

At this time Devoure must have felt the growth of a furtive admiration for the daring of the Earthman, for he said with a touch of annoyed haste, "Our inability to overtake the Councilman was the result of his ship's equipment with Agrav motors. Maneuvers in the neighborhood of Saturn were more difficult for us than for him. For that reason we ourselves had not previously approached Mimas and were not psychologically ready for his doing so."

If Conway had dared he would have shouted aloud at that. The fool! Devoure would pay for that moment of jealousy. Of course by mentioning Agrav he was trying to stir up the outer worlds' fears of Earth's scientific advances, and that might be a mistake too. The fears might grow too strong.

Devoure said to Lucky, "Now then, what happened once you left Mimas?"

Lucky described his capture, and Devoure, having hinted at Sirius's possession of advanced mass-detection devices, said, "And then, once on Titan, did you give us further information concerning your activities on Mimas?"

"Yes, sir. I told you that another Councilman was still on Mimas, and then I accompanied you back to Mimas."

This the delegates had apparently not known. There was a furor, which Devoure shouted down. He cried, "I have a complete telephoto of the removal of the Councilman from Mimas, where he was sent to establish a secret war base against us at the very time that Earth called this conference, allegedly for peace."

Again the darkening and again the three-dimensional image. In full detail the conference watched the landing on Mimas, saw the surface melted down, watched Lucky disappear into the tunnel formed and Councilman Ben Wessilewsky brought up and on board ship. The last scenes were those taken within Wess's temporary quarters under the surface of Mimas.

"A fully equipped base, as you see," said Devoure. Then, turning to Lucky, he said, "May your actions throughout all this be considered to have the official approval of Earth?"

It was a leading question and there was no doubt as to the answer that was desired and expected, but here Lucky hesitated, while the audience waited breathlessly and a frown gathered on Devoure's face.

Finally Lucky said, "I will tell the precise truth. I did not receive direct permission to re-enter Saturn a second time, but I know that in everything I did I would have met with the full approval of the Council of Science."

And at that admission there was wild commotion among the reporters and a hubbub on the floor. The conference delegates were rising in their seats, and cries of "Vote! Vote!" could be made out.

To all appearances the conference had ended and Earth had lost.

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## Biter Bit

Agas Doremo was on his feet, banging the traditional gavel for silence with complete ineffectuality. Conway plowed forward through a host of threatening gestures and catcalls and pulled the circuit breaker, thus sounding the old pirate warning. A shrill rising-falling rasp of sound squealed above the disorder and beat the delegates into surprised silence.

Conway shut it off, and in the sudden quiet Doremo said quickly, "I have agreed to recognize Chief Councilman Hector Conway of the Terrestrial Federation that he might cross-examine Councilman Starr."

There were shouts of "No, no," but Doremo continued obdurately, "I ask the conference to play fair in this respect. The Chief Councilman assures me his cross-examination will be brief."

Amid rustling and a tide of whispering, Conway approached Lucky.

He smiled but spoke with an air of formality, saying, "Councilman Starr, Mr. Devoure did not question you as to your intentions in all this. Tell me, why did you enter the Saturnian system?"

"In order to colonize Mimas, Chief."

"Did you feel you had the right to do so?"

"It was an empty world, Chief."

Conway turned so as to face a suddenly puzzled and quiet group of delegates. "Would you repeat that, Councilman Starr?"

"I wished to establish human beings on Mimas, an empty world that belongs to the Terrestrial Federation, Chief."

Devoure was on his feet, calling out furiously, "Mimas is part of the Saturnian system."

"Exactly," said Lucky, "as Saturn is part of Earth's Solar System. But by *your* interpretation Mimas is merely an empty world. A while ago you admitted that Sirian ships had never approached Mimas before my ship landed on it."

Conway smiled. Lucky had caught that error on Devoure's part too.

Conway said, "Councilman Starr was not here, Mr. Devoure, when you made your introductory speech. Let me quote a passage from it, word for word: 'An empty world is an empty world, regardless of the particular route it travels through space. We colonized it first and it is ours.'"

The Chief Councilman turned toward the delegates and said with great deliberation, "If the viewpoint of the Terrestrial Federation is correct, then Mimas is Earth's, because it circles a planet that circles our Sun. If the viewpoint of Sirius is correct, then Mimas is still Earth's, because it was empty and we colonized it first. By Sirius's own line of reasoning, the fact that another satellite of Saturn was colonized by Sirius had nothing to do with the case.

"In either event, by invading a world belonging to the Terrestrial Federation and removing therefrom our colonist, Sirius has committed an act of war and has shown its true hypocrisy, since it refused to allow others the rights it claimed for itself."

And now again there was a confused milling about, and it was Doremo who spoke next. "Gentlemen, I have something to say. The facts, as stated by Councilmen Starr and Conway, are irrefutable. This demonstrates the complete anarchy into which the Galaxy would be thrown if the Sirian view were to prevail. Every uninhabited rock would be a source of contention, every asteroid a threat to peace. The Sirians, by their own action, have shown themselves insincere——"

It was a complete and sudden change-about.

Had time been allowed, Sirius might yet have rallied its forces, but Doremo, an experienced and skilled parliamentarian, maneuvered the conference into a vote while the pro-Sirians were still completely demoralized and before they had a chance to consider whether they dared go against the plain facts as suddenly revealed.

Three worlds voted on the side of Sirius. They were Penthesileia, Duvarn, and Mullen, all small and all known to be under Sirius's political influence. The rest of the Council, better than fifty votes, was on the side of Earth. Sirius was ordered to release the Earthmen it had taken prisoner. It was ordered to dismantle its base and leave the Solar System within a month.

The orders could not be enforced except by war, of course, but Earth was ready for war and Sirius would have to face it now without the help of the outer worlds. There wasn't a man on Vesta who expected her to fight under those conditions.

Devoure, panting and his face contorted, saw Lucky once more. "It was a foul trick," he said. "It was a device to force us into——"

"You forced *me*," said Lucky quietly, "by the threat to Bigman's life. Do you remember? Or would you like the details of that published?"

"We still have your monkey friend," began Devoure malignantly, "and conference vote or not——"

Chief Councilman Conway, also present, smiled. "If you're referring to Bigman, Mr. Devoure, you don't have him. He is in our hands, together with a Serviceman named Yonge, who told me that Councilman Starr had assured him safe-conduct in case of need. He apparently feels that in your present mood it would be unsafe for himself to accompany you back to Titan. May I suggest that you consider whether it might be unsafe for you to go back to Sirius? If you wish to apply for asylum——"

But Devoure, speechless, turned his back and left.

Doremo was all a-grin as he bade farewell to Conway and Lucky.

"You'll be glad to see Earth again, I dare say, young man."

Lucky nodded his agreement. "I'm going home by liner within the hour, sir, with the poor old *Shooter* being towed along behind, and frankly, there's nothing that could please me more just now."

"Good! And congratulations on a magnificent piece of work. When Chief Conway asked me to allow him time for cross-examination at the beginning of the session, I agreed, but thought he must be mad. When you were done testifying and he signaled for recognition, I was *sure* he was mad. But obviously all this was planned in advance."

Conway said, "Lucky had sent me a message outlining what he hoped to do. Of course it wasn't till the last hour or two that we were sure it had worked out."

"I think you had faith in the Councilman," said Doremo. "Why, in your first conversation with me, you asked if I would come out on your side if Lucky's evidence failed of effect. I didn't see what you could mean then, of course, but I understood when the time came."

"I thank you for throwing your weight to our side."

"I threw it on the side of what had obviously been demonstrated

to be justice. . . . You're a subtle opponent, young man," he said to Lucky.

Lucky smiled. "I merely counted on Sirius's lack of sincerity. If they had really believed in what they claimed was their point of view, my Councilman colleague would have been left on Mimas and all we would have had for our pains was a small satellite of ice and a difficult war to fight."

"Quite. Well, no doubt there'll be second thoughts when the delegates get back home, and some will become angry with Earth and with me and even with themselves, I suppose, for having let themselves be stampeded. In cold blood, though, they'll realize that they have established a principle here, the indivisibility of stellar systems, and I think they'll also realize that the good of this principle will outweigh any hurt to their pride or their prejudices. I really think this conference will be looked back on by historians as something important and as something that contributed a great deal to the peace and welfare of the Galaxy. I'm quite pleased."

And he shook hands with both, most vigorously.

Lucky and Bigman were together again, and though the ship was large and the passenger complement numerous, they kept to themselves. Mars was behind them (Bigman spending the better part of an hour observing it with great satisfaction) and Earth not very far ahead.

Bigman finally managed to voice his embarrassment. "Space, Lucky," he said, "I never saw what you were doing, not once. I thought— Well, I don't want to say what I thought. Only, Sands of Mars, I wish you had warned me."

"Bigman, I couldn't. That was the one thing I couldn't do. Don't you see? I had to maneuver the Sirians into hijacking Wess off Mimas without letting them see the implications. I couldn't show them I *wanted* them to do it or they'd have seen the trap at once. I had to work it so that it would seem I was being forced into it bitterly against my will. At the start, I assure you, I didn't know exactly how I was going to do it, but I did know one thing—if *you* knew about the plan, Bigman, you'd have given the show away."

Bigman was outraged. "I'd give it away? Why, you Earthslug, a blaster couldn't have forced it out of me."

"I know. No torture could have forced it out of you, Bigman. You'd just give it away, free. You're a miserable actor and you know it. Once you got mad, it would come spilling out, one way or another. That's why I half wanted you to stay on Mimas, remember? I knew



I couldn't tell you the planned course of action and I knew you'd misunderstand what I was doing and be miserable about it. As it was, though, you turned out a godsend."

"I did? For beating up that clobber?"

"Indirectly, yes. It gave me the opportunity to make it look as though I were sincerely swapping Wess's freedom for your life. It took less acting to do that than to give Wess away under any conditions I could have dreamed up in your absence. In fact, as it was, I didn't have to act at all. It was a good swap."

"Aw, Lucky."

"Aw, yourself. Besides, you were so heartbroken about it that they never suspected a trick. Anyone watching you would have been convinced I was really betraying Earth."

"Sands of Mars, Lucky," said Bigman, stricken, "I should have known you wouldn't do anything like that. I was a nitwit."

"I'm glad you were," said Lucky fervently, and he ruffled the little fellow's hair affectionately.

When Conway and Wess joined them at dinner, Wess said, "This isn't going to be the kind of homecoming that fellow Devoure can expect. Ship's sub-ether is full of the stuff they're printing on Earth about us; about you especially, of course."

Lucky frowned. "That's nothing to be thankful about. It just makes our job harder in the future. Publicity! Stop and think what they would be saying if the Sirians had been just one inch smarter and hadn't fallen for the bait or had pulled out of the conference at the last minute."

Conway shuddered visibly. "I'd rather not. But whatever it would be, that's what Devoure is getting."

Lucky said, "I guess he'll survive. His uncle will pull him through."

"Anyway," said Bigman, "we're through with him."

"Are we?" said Lucky somberly. "I wonder."

And they ate in silence for a few moments.

Conway, in an obvious attempt to alter the suddenly darkened atmosphere, said, "Of course, in a sense the Sirians could not afford to leave Wess on Mimas, so we didn't really give them a fair chance. After all, they were looking for the capsule in the rings, and for all they know, Wess, only thirty thousand miles outside the rings, might——"

Bigman dropped his fork, and his eyes were like saucers. "*Blasting rockets!*"

"What's the matter, Bigman?" asked Wess kindly. "Did you accidentally think of something and sprain your brain?"

"Shut up, leather-head," said Bigman. "Listen, Lucky, in all this mess we forgot about Agent X's capsule. It's still out there in the rings unless the Sirians have found it already; and if they haven't, they still have a couple of weeks to do it in."

Conway said at once, "I've thought of that, Bigman. But frankly, I consider it lost for good. You can't find anything in the rings."

"But, Chief, hasn't Lucky told you about the special X-ray mass detectors they have and——"

By then, though, all were staring at Lucky. He had a queer look on his face, as though he couldn't make up his mind whether to laugh or to swear. "Great Galaxy," he cried. "I forgot about it completely."

"The capsule?" said Bigman. "You forgot it?"

"Yes. I forgot I had it. Here it is." And Lucky brought something metallic and about an inch in diameter out of his pocket and put it on the table.

Bigman's nimble fingers were on it first, turning it over and over, then the others snatched at it too, and took their turns.

Bigman said, "Is that the capsule? Are you sure?"

"I'm reasonably sure. We'll open it, of course, and make certain."

"But, when, how, where——" They were all about him, demanding.

He fended them off. "I'm sorry. I really am. . . . Look, do you remember the few words we picked up from Agent X just before his ship blew up? Remember the syllables 'normal orb,' which we decided meant 'normal orbit'? Well, the Sirians made the natural assumption that 'normal' meant 'usual,' that the capsule would be put into the kind of orbit usual for ring particles, and looked in the rings for it.

"However, 'normal' also means perpendicular. The rings of Saturn move directly west to east, so the capsule in a normal orbit to the rings would move directly north to south, or south to north. This made sense, because then the capsule would not be lost in the rings.

"Now any orbit about Saturn moving directly north and south must pass over the north and south poles, no matter how else that orbit varies. We approached Saturn's south pole and I watched the mass detector for anything that seemed to be in the proper type of orbit. In polar space there were hardly any particles, so I felt I ought to be able to spot it if it were there. I didn't like to say anything about it, though, because the chances were small, I thought, and I hated to rouse false hopes.

"But something registered on the mass detectors, and I took the chance. I matched velocities and then left the ship. As you guessed later, Bigman, I seized the opportunity to gimmick the Agrav attachment at that time in preparation for the later surrender, but I also picked up the capsule.

"When we landed in Mimas I left it among the air-conditioning coils in Wess's quarters. Then, when we came back to get him and surrender him to Devoure, I picked up the capsule and put it in my pocket. I was routinely searched for weapons when I embarked on the ship, I recall, but the robot searcher did not interpret an inch sphere as a weapon. . . . There are serious drawbacks to using robots. Anyway, that's the whole story."

"But why didn't you tell us?" howled Bigman.

Lucky looked confused. "I meant to. Honestly. But after I first picked up the capsule and got back to the ship, we had already been spotted by the Sirians, remember, and it was a question of getting away. After that, in fact, if you'll think back, there was never one moment when something wasn't popping. I just—somehow—never got around to remembering to tell anyone."

"What a brain," said Bigman contemptuously. "No wonder you don't like to go anywhere without me."

Conway laughed and slapped the small Martian on the back. "That's it, Bigman, take care of the big lug and make sure he knows which way is up."

"Once," said Wess, "you get someone to tell *you* which way is up, of course."

And the ship swirled down through Earth's atmosphere toward landing.

## ABOUT THE AUTHOR

Isaac Asimov was born in the Soviet Union to his great surprise. He moved quickly to correct the situation. When his parents emigrated to the United States, Isaac (three years old at the time) stowed away in their baggage. He has been an American citizen since the age of eight.

Brought up in Brooklyn, and educated in its public schools, he eventually found his way to Columbia University and, over the protests of the school administration, managed to annex a series of degrees in chemistry, up to and including a Ph.D. He then infiltrated Boston University and climbed the academic ladder, ignoring all cries of outrage, until he found himself Professor of Biochemistry.

Meanwhile, at the age of nine, he found the love of his life (in the inanimate sense) when he discovered his first science-fiction magazine. By the time he was eleven, he began to write stories, and at eighteen, he actually worked up the nerve to submit one. It was rejected. After four long months of tribulation and suffering, he sold his first story and, thereafter, he never looked back.

In 1941, when he was twenty-one years old, he wrote the classic short story "Nightfall" and his future was assured. Shortly before that he had begun writing his robot stories, and shortly after that he had begun his Foundation series.

What was left except quantity? At the present time, he has published over 260 books, distributed through every major division of the Dewey system of library classification, and shows no signs of slowing up. He remains as youthful, as lively, and as lovable as ever, and grows more handsome with each year. You can be sure that this is so since he has written this little essay himself and his devotion to absolute objectivity is notorious.

He is married to Janet Jeppson, psychiatrist and writer, has two children by a previous marriage, and lives in New York City.

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