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SCIENCE FICTION

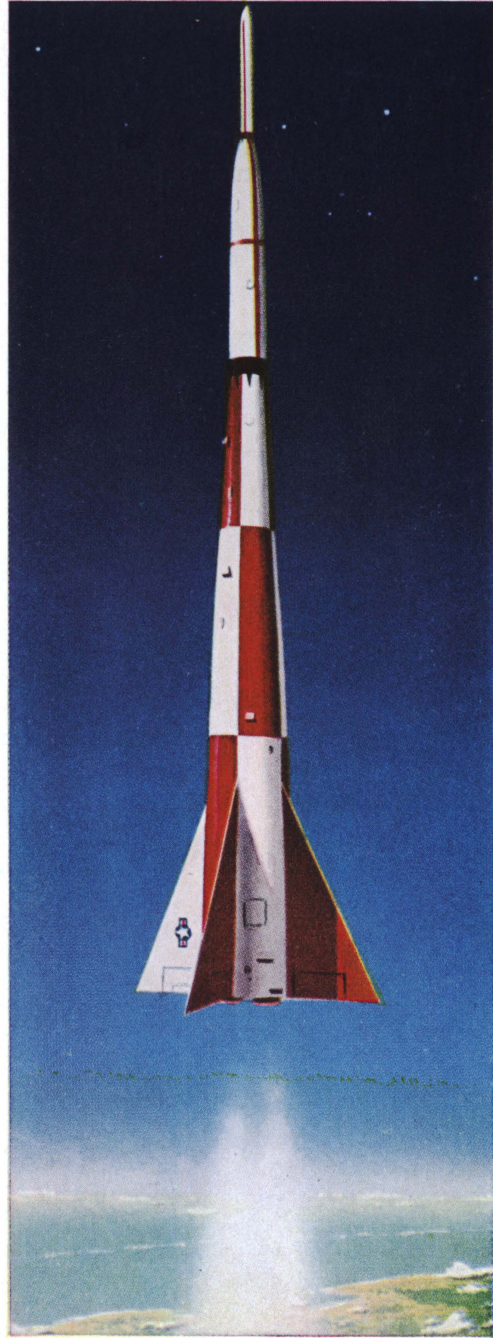
OCTOBER 35 CENTS

IN THIS ISSUE! A biting new satire about
the integrated Man of tomorrow

THE HAPPY HERD



ID



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SOME of the finest science fiction to be found anywhere in the world is now appearing regularly in IF. Also, you will find exclusive, factual, authoritative articles on the sciences of today and tomorrow—by eminent scientists. Here (this copy is a sample), in a beautifully printed and illustrated magazine, is the world of the future in both fact and fiction.

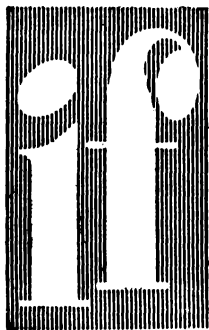
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IF Magazine

KINGSTON, NEW YORK



WORLDS of SCIENCE FICTION

OCTOBER 1956

All Stories New and Complete

Editor: JAMES L. QUINN

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"Gifts for the Natives" by Mel Hunter

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Next (December) issue on sale October 12th

Editor's REPORT

Let's look ahead a hundred years or so when we have a space station a thousand miles up and exploratory travel to the nearer planets. The question in the mind of everyone who considers such a possibility is: What kind of life will we find out there?

Conjectures as to the answer to that question are certainly many and varied and pro and con. But whatever the right answer eventually turns out to be, for the time being IF has just come up with another scoop! Not only for a science fiction publication but for any other publication as well. It isn't often that a magazine or newspaper can boast of an article by a scientist of the stature of Dr. Walther Riedel—and that's just what IF can do. In the next issue Dr. Riedel, world's ranking aerophysicist and propulsion expert, presents his views on the possibilities of finding intelligent life on other planets.

Dr. Riedel, as you doubtlessly already know, was director of Peene-

muende and head of the German Government's entire rocket program during the latter part of World War II—a time when they had out-distanced by far the entire world in rocket development. Coming to America after the war, he worked for Uncle Sam at the Aberdeen Proving Grounds, Fort Bliss and White Sands. Right now he is in Nuremburg, where he is carrying on his work in research and applied science. This is the first time Dr. Riedel has ever written for an American magazine and, to put it mildly, we think you'll be interested. Don't miss what he has to say in *This Lonely Earth* in the December IF!

When an editor suddenly starts getting deluged with manuscripts from an unknown writer and the manuscripts keep coming in, something in the mail every week, come rain, snow, or sleet or rejects, and finally he starts clicking—well you begin to wonder about the tenacity or stubbornness or something of the writer. Such was the case with Charles L. Fontenay, a newspaper man down in Tennessee, who has appeared in IF with *Disqualified*, *Escape Velocity*, *Blow the Man Down*, *The Patriot*, *Atom Drive*, *Z*, and *Communication* in this issue. He has another coming up in the December issue, a gem of a story about a "do gooder" whose intended victim is a man of a "super race". The title is *Family Tree*—and it's good reading!

Anyhow, when his story first appeared in IF and when we were getting curious about him, he

dropped into the office to say 'hello' and that was about all, for he was gone again before I could even take him to lunch. Since then, however, we've gotten a line on him—past, present, and prospective future.

"Thinking back", he wrote us recently, "I suppose I'm one of the real veteran science fiction fans. In the late '20s, *Boys' Life* ran a fourth dimension story and that got me into it . . . I started writing science fiction, for no good reason, in August, 1953, and sold my first to IF five months later."

Fontenay turns out a prodigious amount of copy (which we suspected), considering that his full-time job is that of rewrite man on *The Nashville Tennessean*, where he has been for nearly ten years. In addition to the scores of science fiction pieces he has written, he completed a biography of Estes Kefauver last year. Due to lack of time to whip it into final shape, he sold the manuscript to Jack Anderson and Fred Blumenthal of Washington, D. C., who are now editing it and rewriting it under their joint by-line. It is due for publication soon under the Dial imprint. But Fontenay is already at work on another novel, a historical one based on the life of Ptolemy I.

One of Fontenay's outstanding assignments as a newspaper man was back in 1948, when he covered the campaign of Senator Kefauver in which the Crump machine was overthrown. He has also covered several governor's races, five legislative sessions and a constitutional convention, all for Tennessee newspapers and when he was with the

Associated Press. The story he recalls most fondly, one that hit the nation's front pages, was the original story on the famous "yoo hoo" incident, just before the last war, when General Ben Lear made an entire regiment march from Memphis to Little Rock because they had shouted at a woman in shorts.

Charles Fontenay was born in Sao Paulo, Brazil, but raised by his uncle in Union City, Tennessee. Because his father was English and his mother American, he encountered certain complications when he applied for a commission in the intelligence corps in World War II. However, he made it, and came out a captain after 33 months in the South Pacific. Right now, to fill in all the spare time he has between his rewrite job, science fiction and other writing, he is something of a correspondence chess player (1950 Class C North American Champion), does oil and water color painting (two first and two second prizes at Tennessee State Fairs), landscape gardening, with roses a specialty, and Chinese cooking! "A native of Canton," he informs us, "just returned to New York from Formosa, has been my ritual blood brother since boyhood and he helps me get materials for paper-wrapped chicken and other Chinese dishes."

Asked if he was married, he replied that he was. "Thirteen years ago I married my girl from Nebraska", he said, and then added, "So far, the only patter of feet around the house is that of Maximilian von Fortlagehaus—our red dachshund."

(Continued on page 120)



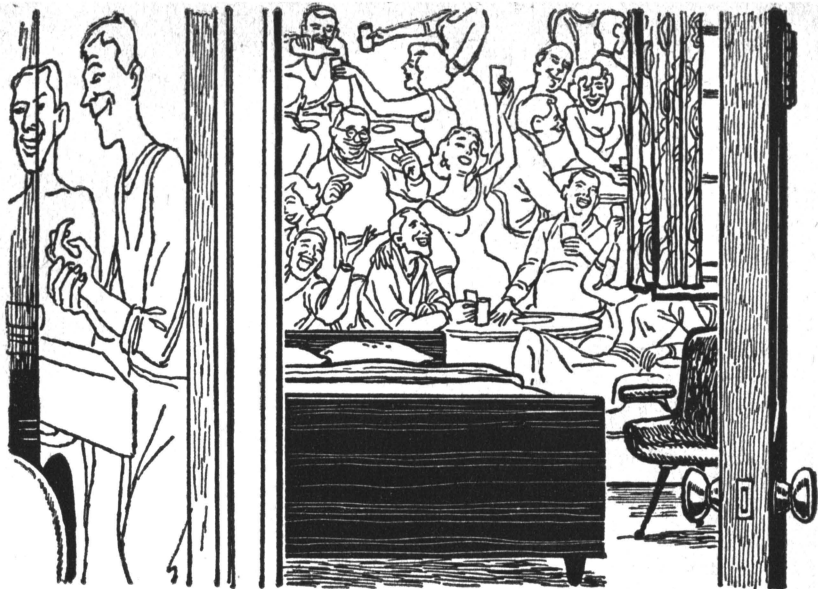
THE HAPPY HERD

Everyone was thoughtful, considerate, kind and very happy;

But where was the right of dignity or individuality?

It was like being dropped into the middle of a nightmare.

The kind that finds you running naked in a crowd.



Illustrated by Ed Emsch

THE CAPTAIN told Kane to take his cushion pills, that they were contacting the pits at La Guardia within half an hour.

"I still can't figure you," the Captain said. "Up there, just you and your wife for sixteen years. That's a hell of a long time."

Kane smiled. He had been almost completely out of touch with the world for sixteen years, and it surprised him a little that anyone thought it remarkable in any way. Particularly the Captain who spent most of his time, too, alone.

But the Captain was genuinely perturbed about it. The authorities had abandoned the space-station project. Abandoned the Martian project. They had taken away the other three ships from the Moon-run, and there was no explanation for it at all.

The rest of the Captain's crew, except an old atomics man, had drifted away and never come back, and the Captain had been unable to find out anything whatsoever about what had happened to them. He had never heard from them

BY BRYCE WALTON

again. They had never been replaced.

But the Captain couldn't seem to define what it was he was warning Kane to be wary of down there.

"I haven't left my ship for years, Professor Kane, and that's the truth. I take on supplies and see to the ore getting into the holds but when those machines up there that do the digging and loading wear out, they won't be replaced. Just no interest in space any more. I can tell.

"I stay on the ship, with my wife, see. And the few guys down there around the field at La Guardia I have to rub up against—why, sir, they treat me as if I had some kind of contagious disease!

"But they need this ore I'm bringing back here now, so they leave me alone."

"Who leaves you alone?"

"Whoever didn't leave the rest of my crew alone. Whoever sang 'em the old siren song, that's who. Once a spaceman, always a spaceman, sir. And not a one of those men pulled out because he wanted to do it! That's what I'm saying. And I'm telling you to watch out. I'm blasting off for the Moon again on the 25th. I hope you're aboard."

Kane shrugged as the Captain bowed out, making disgruntled noises in his throat. He was getting along in years, Kane reasoned, and was probably just expressing that fact, externalizing some way or another. Still, what he had said was odd—

The truth was, Kane had been inexcusably out of contact with the world.

The pills dulled his senses and he began to fall asleep on the pneumatic couch. He thought of the years of work on his theories concerning the unified fields in the formulation of spatial matter. He thought of Helen, the good years together before her sudden death, sharing love and work, how complete and full and good it had been. During all those sixteen years he couldn't recall a moment of real boredom.

He hadn't missed life on Earth. When a man has one full love and his work, he's isolated no matter where he is, even in the middle of New York City.

He had ten notebooks full of notes in his briefcase. It would open their eyes, a really basic new theory that would defy the pessimistic theory of entropy, and its assurance of an inevitable death of all things.

Finding another wife to replace Helen wouldn't be easy of course. A new relationship would be different, but it should be as good. It might require some difficulties which he had anticipated and was prepared for. He was only forty-six. He had a long time to look. He was in excellent physical condition and was not unattractive, though of course that wasn't the real issue either way.

He wanted love, a companion, someone who could truly share in his work. Who would love that observatory in Albetegnus crater as a home for the rest of her life.

He woke up, and prepared to leave the ship. He carried his briefcase with his notes in it. The rest of his luggage would follow later. According to Phil Nordsen, there was

a suite reserved for him at the Midtown Hotel at 50th and Madison Avenue.

He climbed down the ladder to the exit. The door was open and a heavy fog drifted past the opening, but a small dark car with two drivers waited outside.

As Kane stepped down the gangplank, one of the figures, a woman in a light blue uniform, jumped out and opened the door for him.

Interest and excitement rose in Kane as the car moved through the mist toward the terminal where he was to meet Phil. It would probably do him good, get away from his work, different surroundings, just rest up a little. Even live it up a little perhaps. There would be parties, and he wanted to see a little of the country. Maybe visit some of Helen's relatives in the Middle West, and he certainly wanted to have some long bull sessions with Professors Martinson and Legmann over at the University.

Then there was the question of meeting the right kind of woman. That was something only the fates could decide, Kane thought. He was no romantic, but that sort of thing wasn't something you could figure out in advance, plot out like an equation. It wasn't anything you could handle with personality charts, though they had been trying that when he'd left. The personality you could measure with gadgets was such a small part of it really . . .

But Phil would arrange for the social activities. As he recalled his old schoolmate, he remembered that Phil was a very social kind of fellow. Phil had thought it was absurd,

Kane's volunteering for that job in Albetagnius. Phil hadn't even gone on to post-graduate work in electronics, his chosen field. Phil had gone right out to accept a position with Isotopics Unlimited, somewhere in New Jersey.

They had corresponded for a while; and the cablegram from Phil had expressed Phil's delight at Kane's decision to return to Earth.

The car stopped before the well-lighted entrance to terminal building No. 214 and the woman hopped out, opened the door for Kane. He went inside the building, feeling the abnormally heavy pull of gravity. He had grown accustomed to the gravity on the Moon, and though his body was already starting to adapt itself, it would take time, and he was beginning to feel the drag.

Phil was there waiting. He hadn't mentioned anyone else being there, and Kane certainly didn't expect anyone else. He didn't know anyone really, no one other than Phil except Martin and Legmann. But there was Phil, and a number of people around him, and they were all rushing toward Kane, smiling, shouting, waving their arms. Phil looked much the same, tall and flashily dressed, thin and good looking as always, but with hair slightly greying.

The others, men, women, various ages and sizes, waving scarfs and circling eagerly around Kane, broke out in a happy chorus of mixed voices:

*Greetings! Welcome, Old Friend Kane!
Welcome home to Earth again.*

Kane felt a brief compulsion to retreat, but that was absurd.

"Good to see you, Prof!" Phil shouted.

"Hello, Phil." Someone grabbed his briefcase. Kane tried to get it back but it was gone among the frothing arms and milling bodies.

"We'll take care of it, Kane boy," Phil said. His arm was over Kane's shoulders. Several women were hanging onto Kane's arms. Healthy, tanned, lovely women.

"Sure glad to see you, Prof. Aren't we?"

A chorus enthusiastically shrieked, "Yes!"

Kane felt some embarrassment. He was being crowded out an exit toward a line of cabs. Several shiny ten-foot saucers with railings around them whirred past and disappeared in the fog. All of them had two or more people on them, and from the sound, there were quite a number of them up in the fog somewhere.

"We've all got a saucer now," Phil said. "Only we have to take cabs over to Lucie's house. This way we can all ride together. We can all get into two cabs, can't we, gang?"

"Yes!"

"Lucie?" Kane asked as they crowded around the two cabs. Who were these people? Friends of Phil's of course.

"We're Lucie," the woman said softly. Kane caught a glimpse of a mature face and a lovely figure. The face was odd, Kane thought, the maturity seeming to be disguised by an insincere smile. What a peculiar way of introducing oneself . . .

"We're having a little party at the house," Lucille said. "Aren't we?"

"Yes!"

"We've got lots of fun planned for us, Kane boy," Phil said.

Kane remembered a look of sardonic mockery in Lucille's eyes as her face disappeared and was replaced by several others.

Somehow, Kane couldn't figure out how, five of them were jammed into the back seat of one of the cabs and then they were moving away through the fog.

Someone who said "We're Laura," with a tight tanned body was wriggling on Kane's lap and her arm was around Kane's neck. She had bright teeth and she breathed scentedly into Kane's face.

"Nothing to worry about, Kane boy," he heard Phil say in a muffled joy. "We're the gang."

"It's always fair weather, the Sunhill Gang is always together," Laura was crooning. The red-faced fat man next to Kane laughed and then Kane saw that the red-faced man whose name seemed to be Ben and the woman on his lap whom he called Jenny, were kissing one another. There was something embarrassingly intimate about the way they did it. It was suddenly much more than a mere spontaneous show of affection.

Kane looked away. Beyond a certain point, he felt that love-making was something that should be reserved for privacy.

That sort of thing might be expected to change, of course. Customs changed, and as Kane recalled, one could say the trend had

been somewhat in that direction.

There were two drivers up front. That was a change too. Every cab had had two drivers, a man and a woman.

It was all a bit overdone, Kane thought. Still, they were friends of Phil's. A friend of yours is a friend of mine.

But it affected Kane adversely. He felt uneasy. He didn't really know them at all. In fact, he scarcely even knew Phil.

"We're so glad with you," the girl on Kane's lap said. She crushed her lips over his mouth and pressed her body against him. Kane couldn't say that was affecting him adversely. In fact, if there weren't all these other people around—

"We're nice together," Laura breathed against his lips.

Everyone was so damn glad to see him. All they needed were banners, little pins. Official Welcoming Party to Greet the Arrival of Professor Larry Kane.

Kane managed to look out the window as they crossed the Tri-Borough Bridge at 125th Street and started up the East River Drive.

"Things haven't changed much," Kane said. "Not nearly so much traffic though."

"The saucers," Phil said. "Most of the traffic's up in the air."

"We're looking at things," Laura said.

"Great old town," Ben said and laughed, on and on. Jenny laughed too, then said. "It looks just the same almost as when we left."

They're all speaking for me, Kane thought. Funny, a damned funny custom. It was a reflection of

something else. What did it really mean? His feeling of unease seemed exaggerated. But then their efforts to make him welcome seemed pretty exaggerated too . . .

"Everybody happy?" the fat man yelled.

"Yes!"

"We're happy aren't we, honey," Laura said.

"Sure," Kane said.

Why not?

Kane noticed the amazing dearth of traffic on Madison Avenue.

No traffic cops either. That had changed too. One thing you had always been sure of seeing and that was a cop in New York.

When Kane asked about it, the smiles almost fled from every face, and the moment of silence seemed like a form of shock. Kane realized then that there hadn't been even a second of silence before then.

"It's hard to realize we've been away so long," Phil finally said.

"I'm really tired," Kane said to Phil as they went on past the Midtown Hotel toward Lucille's apartment. "I was intending to go directly to the hotel and rest up a while—"

"We'll relax at Lucie's" Jenny said. "We got music, we got music, we got music, who could ask for anything more?"

"But—" Kane started to protest at least mildly, but the rest of the sentence was blotted out by a long kiss from Laura.

THEY HAD all crowded into an elevator, and then rushed into Lucille's apartment on a high level

of The Sunny Hill building near Washington Square. The apartment consisted of one huge room with a circular couch in the middle upon which everyone immediately sat.

Laura sat beside Kane who was getting more tired every minute. There was just enough room for the gang to squeeze up tight to one another in a circle around a table supporting some kind of machine with wires that were immediately run from it and attached to everyone's wrist, and to a narrow metal headband with which everyone's head was crowned.

Kane was listening to music. It was like being dropped unexpectedly into the middle of a large symphony orchestra. The sound seemed to pulse and vibrate gigantically all around him. It was more than merely listening. He was in it. He felt himself a part of it, swimming in it, and almost fighting to keep from being carried away by what seemed to be perfectly recorded music that was now being delivered by some final form of hi-fi.

The music itself was familiar enough. Instrumentalized operarias orchestrated on a fantastic scale. The quantity was so great that sensitivity as to quality was dulled. Kane, shocked by thunderous sweeps of sheer volume gave way before the sound. It wasn't sleep. He could hardly say he rested, but he was in a semi-stupor. When he glanced at his watch sometime later, two hours and some minutes had passed.

The wires were being removed from wrists, headbands from heads. Kane's head ached slightly. Every-

one was reaching as cards fell out of the machine in the middle.

Laura handed one to Kane. It was covered with symbols in the form of some kind of graph, but he couldn't decipher it.

There was a great deal of chatter, musical jargon, colloquial in both space and time, most of it eluding comprehension. Kane stood there holding his card as everyone milled around one another.

Phil said, "Let's see how we liked it, Prof?"

That seemed to have been the general idea—how much everyone liked the music. And each one looked at his card, and they were all comparing cards and exclaiming over them.

Phil was looking at Kane's card, comparing it with his own and with some other cards.

"Well, not bad," Phil was saying, "Is it, gang?"

"Not bad at all!" they chorused.

"What isn't bad?" Kane asked.

"Our taste, man," Laura said. "You'll fit so good."

The odd one, Lucille, raised an eyebrow, with some mockery in it still, at Kane.

"You'll sure belong, Professor. Don't worry," Lucille said. She held up her card. "We liked it."

"Of course it'll take a little time," Phil said as he threw his arm over Kane's shoulder. "A few sessions and you'll match up just right."

"I really don't believe I understand," Kane said vaguely.

"You will," Lucille said as she moved away from him. "You sure will, Professor." She was tall, and with long lithe legs. She was a

handsome woman, Kane thought.

As Phil explained casually on the way toward the Midtown Hotel, they had just had a music session. Everything was done in sessions, in groups that is. Everyone had his group, and his group did everything together.

Anyway, they had had a music session. The machine in the middle was a Reacto. The cards were Reacto Cards. It was really a kind of taste tester, and the point was that the Reacto tested everyone's reaction to the music.

The cards enabled everyone to check their reactions, check them against the reactions of all the others. It involved conformity ratings, and tendencies to stray from the group norm.

The important thing about the taste rate cards was that they enabled you to find out just how much group spirit you had. The closer your card resembled that of all the others in your group, the more GS you had.

"My GS rating's gone up," Laura kept burbling all the way to the Midtown Hotel. "It's gone up!"

The same process applied to reading, movies, television, eating, anything involving the elements of reacting. The important thing was not how you yourself felt, but how you felt in relation to the feelings of the group. The problem seemed to be that of reducing deviation tendencies to a minimum.

On the way to the Midtown Hotel, Jenny asked Phil how he liked the new best-seller, *Love Is Forever*, and Phil took a small card out of his wallet and they all com-

pared Reacto Cards in order to determine relative reactions to *Love Is Forever*.

Good God! *You had to look at a card to find out how you liked something!* It was frightening as hell.

Kane wondered how wide-spread how universal, it really was, this incredible conformity, this collective thinking.

This appalling sacrifice of individuality.

Kane was too tired to give much thought to it right then. He was anxious to get to the Hotel, and he was beginning to fantasize a bed, cool sheets, his body stretching and sinking down into blissful slumber.

But as appalling as the situation seemed at the time, Kane soon found that he had only circled on the fringes of it. This was only the beginning.

"Here we are, here were are, gang!" someone shouted as they piled out of the cabs and Kane was being hustled toward the suddenly formidable glint of a revolving door.

So here we are, Kane thought. It was nice being here all right. He was glad, very glad. But it sounded as though someone might swoon over the fact.

There was some difficulty with the revolving door. No one seemed able to move first, and there were spontaneous group lunges ending in jamming chaos in which someone hurt their arm. Kane thought it was the fat man, Ben.

"We're hurt!" Jenny screamed. "Oh—it's not bad," Ben said,

laughing all the time he was groaning. "Just bruised a little, gang. We're just bruised a little."

Kane grabbed his advantage and ventured alone through the revolving doors into the lobby. A pair of desk clerks nodded across the lobby. A group was emerging from behind drapes and beyond them Kane saw an ornate, subtly lighted, cocktail lounge.

Kane was heading for the elevator when the gang overtook him.

Laura had hold of one of his arms, and Phil the other.

"We're having cocktails," Laura said.

Phil repeated it, and Ben and Jenny joined in. The young man, Clarence, was singing as he herded the others toward the drapes of the cocktail lounge, and they were all whisking Kane away before he could voice any protest.

"What'll the gang have?" the waiter asked, smiling. Only he wasn't really smiling at any of them, Kane thought. He had picked out a center point of focus and was smiling at that so as not to appear to be smiling at any one, but at everyone.

"Martinis!" several voices said.

The waiter nodded, whirled away.

"Ah, waiter," Kane said. "I'll have a double shot of Scotch. No ice."

The waiter seemed shocked, unable to come to grips with Kane's seemingly simple order. "But—but I thought you said Martini."

The gang was still smiling, but faintly. The waiter was backing away.

"No," Kane insisted. "He said Martinis, and she said Martinis, and so did several others. But I didn't say Martinis. I said Scotch, no ice."

"But Martinis—"

Ben forced a pained laugh. "But we ordered Martinis."

"Martinis," Laura said.

"The ayes always have it," Kane heard Lucille whisper near him.

Phil said, with a kind of shaky joviality. "Martinis—"

"Gin makes me ill," Kane said.

"For me, it has to be Scotch."

Phil whispered. "Scotch."

"Scotch," the waiter said.

A jukebox in a far corner blasted out from a sea of bubbling, multi-colored light.

We're all pals togetherrrrrrrr.

The Gang knows no bad weatherrrrrrr.

*We're all for us all for us,
And we're rolling do-own life's
highway,*

On our crowded busssssss!

Laura whispered huskily in his ear. "Don't worry about any little old thing. We're one together, man."

GOD HE was tired. He was so tired he could hardly sit there. He felt numb, and there was desperation under the numbness. Kane wanted to get off somewhere by himself so he could rest, sleep, and think. He wanted to think . . .

Bits of information drifted haphazardly into Kane's consciousness from the conversation. He had

ordered another double Scotch and was almost through with it. He was passing out, but held to conscious awareness by the unceasing banter, laughter and the jukebox—like a marionette held up with wires.

If he suddenly found himself alone in silence, he knew he would collapse instantly.

It seemed that this was a group with a certain common Reacto level, and they all worked in the same place, and lived in the same section of a big housing project, a place called Sunny Hill.

Phil was their Integrator, and he was also an Official in the Isotopic Corporation where the Group worked. Phil was an Integrator for the Isotopic Corporation, a sort of personnel man whose main duty was the integration of the employees' private lives.

When Kane tried to find out about the work itself, no one seemed interested enough to respond. The work was relatively unimportant. The emphasis seemed to be centered almost completely on how people got along together. If your Reacto cards reported a general reaction that strayed too far from your Group norm, you were either sent to another group, or sent to a Staff.

A Staff was a rather vague term for specialists in Integration on a clinical level.

The job was always referred to as "our job", and the Gang seemed to do practically everything together.

Someone mentioned that a friend hadn't been competent in group relations at school and had been Processed. Kane didn't like the

words they were so casually throwing around. In fact Kane didn't like any of it, and he was liking it less all the time.

Another term that referred to some sort of adjustment process was the word homogenized. Someone had been "homogenized".

Once Kane tried to find out about his old friends, Professors Legmann, and Martin over at New York University. Phil avoided the question for a time, then finally admitted that Martin was still there in the archeology department, but that Legmann had quit the profession years ago. "He quit teaching and became a plumber."

"A plumber?" Kane whispered. "Legmann?"

"That's right," Phil grinned.

"We're all plumbing together," Laura lisped.

"But—that's preposterous!" Kane almost yelled. "Legmann—why he was the finest research chemist—"

"But he wasn't really happy in his profession," Phil said. "As I recall—he just wasn't well adjusted as a research chemist and teacher."

"Who said he wasn't?"

"Why the Staff?"

"What Staff—?"

"Anyway, he's a plumber now somewhere," Phil said. "He's happy now."

Kane felt a coldness on his neck. His stomach seemed to turn completely over. The devil with this, he thought. His eyeballs felt as though they were covered with sand, and his lids seemed leaded weights. He pushed back his chair.

"You'll excuse me," he said. "But

I'm really tired out. I'm going to get some rest—"

"But the night's young for us, man," Laura shrieked.

"We're having more Scotch," Lucille said, watching him carefully.

"Fun time's only starting for us," the young man protested, and the fat man and Jenny and all of them protested loudly together, laughing all the while.

Kane was backing away. The hell with them. He turned and ran for the elevator. Then he remembered that he didn't know what room he was supposed to be checked into. He didn't have a key either. He—

Two smiling men, were on either side of him. In a mirror he could see the half smiling, half concerned faces of Phil and Laura, and the slightly sardonic eyes of Lucille.

"Don't worry, Gang," he heard Phil say. "We're taking a Special room. We'll be together again soon."

"This way," the two young smiling men said. They wore uniforms and appeared to be bellhops. "We'll show you to our room."

The two bellhops started to back out of the room. "What's special about it," Kane asked. "Only thing I can see about it that could be considered special is that it's about big enough to be someone's closet! I reserved a suite. What kind of a run-around is this anyway?"

It was hardly bigger than a large closet. A white room, with only a single bed in it, and a bureau. Through a narrow, partly open

door, he could see a bathroom, and that was it.

"Well," the bellhop said, smiling. "It's our Single."

"You mean you call it special because it's a single," Kane asked.

The bellhops nodded.

"Why?" Kane insisted. "What's special about a single?"

"We only have one single here," the bellhops said. "We hope you are comfortable with us, Professor Kane."

"Look here! Why should you only have one single in this entire hotel? And what's so special about it?"

"This single is seldom demanded by guests," the bellhop said.

"I didn't demand it. I reserved a suite, or at least I understood that my friend, Phil Nordson, reserved a suite. I certainly didn't demand this!"

"But—but of course you did. We have to have a single when we're—not getting along well with ourselves."

Kane started for the door, but the two men backed out and shut it in his face. He tried the knob. The door was locked. He turned quickly and scanned the room, but there was no key visible. Then one of the curtains moved as he walked toward it, and he saw that the narrow window was barred.

As he swept the curtains aside to look out through the bars, and grabbed at the bars in a kind of instinctual gesture, a metal panel slid noiselessly across and shut out a flash of neon light.

He was alone, locked up like a dangerous madman!

BY THE head of the narrow bed that resembled something anti-septic in a barracks, Kane saw the black eye of a phone peeking out of a niche in the wall.

He pulled it out and jabbed at a button. His throat felt tight and he could feel the pounding of his heart as he leaned against the wall.

"This is Professor Kane, room 2004."

"Yes, we're here."

"And I'm here! In this ridiculous closet. I'm locked in. There must be some sort of mistake. The window—"

"We'll be all right. We'll be fine in a little while."

"Look here—connect me with the cocktail lounge. I want to speak with Phil Nordson. Yes, he's there—"

He heard nothing, absolutely nothing, except his own heart. No clock in the room either. The walls and ceiling had a peculiar grained look.

"Hello, Prof!"

"Phil! Phil, listen, what in the name of God goes on here? I'm locked in! You said you reserved a suite for me, and this room—"

"We aren't going to worry," Phil said. Kane heard laughter in the background and the high-pitched choral voices from the jukebox. "We'll be all right. We figured there would be a little trouble here and there, at first.

"I don't give a damn about a little trouble there! Phil, I'm talking about me, here! I'm locked in. And my luggage. Where is it? And—"

Kane's stomach jumped. A kind

of terror hit him like a cold breath. "Phil! My briefcase. Where's my briefcase?"

"We have it somewhere—" Phil was saying. "Just don't let us worry."

Kane heard a clicking sound somewhere and he yelled into the phone but nothing came back. He released the phone and it was sucked back into the wall.

He sank down on the bed and fumbled absently at his coat and then at his necktie. The walls had a blurred quality and he felt on the edge of passing out. He kept thinking of the briefcase, with years of work in it, the equations, more than could be preserved entirely in a man's head.

It was too sickening to think about, the possibility of them losing his briefcase. Phil didn't seem concerned. No one was concerned with his briefcase, that was obvious. The only thing they were concerned about was that he didn't get along with the Gang.

The hell with the Gang, every last one of the Gang. If he never heard of the Gang or saw the Gang again, he would consider himself extremely fortunate.

He felt numb, too tired to think about anything. He fumbled at one shoe, got it off, then worked vaguely at the other one. He would rest, sleep, sleep for a long time, then he would be able to think. He might find this all exaggerated, unreal, once he slept, rested, woke up again.

A man certainly had rights. There was some authority he could contact of course. He was just too upset to think about it anymore.

He had his shirt, his undershirt off. He had his shoes and socks off and he flexed his feet in ecstasy. He unzipped his fly and as he started to stand up to take his pants off, he groaned with fright and fell backward onto the bed.

A chair fused with the bed. Laura was there, sitting on the chair, but also practically sitting in Kane's lap.

He blinked rapidly and reached out, and his hand moved through the image of Laura, only Laura seemed solid, three-dimensional, very real indeed. Too real.

"Get out," he whispered. "What—"

Glass clinked loudly right in the room with him. The jukebox blared.

Kane couldn't move. He sat rigidly, and the table was there, and all the Gang around it, and Phil there smiling and they were all around Kane drinking Scotch, double shots of Scotch, no ice.

Lucille looked across the table and shook her lovely head slightly. There was concern, genuine concern, a kind of sadness, behind the false smile. The smile, he knew, was for the others. But the concern was for him.

Phil raised his glass. Nine glasses were in the air.

"Here's to us, happy Gang, Prof," Phil shouted.

"Here's to us! Here's to Sunny Hill!" they shouted.

Kane slowly moistened his lips. The three walls and the ceiling had come alive. They were actually huge TV screens, and the effect was startlingly three-dimensional. Only the absence of touch could

break the illusion. But the visual and the audial made up for the absence of touch. Kane didn't want to touch them anyway. He wanted them to go away, altogether.

His room was crammed with phantoms from the cocktail lounge. In fact, his room was fused with the cocktail lounge. It was all there somehow.

"Go to sleepy-bye," Laura whispered and made a very suggestive gesture. Her cheeks were flushed as she leaned into and through him.

"Take ourselves a good long snooze," Phil grinned. "Don't worry. The Gang's all here."

Lucille said, hardly smiling at all. "No, don't worry, Professor. We'll all sleep with you."

He zipped his pants back up and slid back through several phantom shapes and pressed against the wall.

"Phil," he finally said. "Phil!"

"Aren't you sleepy now?" Phil asked.

"He's sleepy," Laura said. "We're sleeping with you, Professor man."

"Yes, yes I am sleepy. Goodnight now," Kane said. "Goodnight."

He waited. They didn't take the hint. To them it was no hint at all. He knew they weren't going away. He knew that no matter what he said or did, they wouldn't go away. That was the thing he understood, incredible as it was, he knew now that no matter what he said or did, they wouldn't go away.

They only understood that he was somehow ill. He knew that too. They were right, so he was wrong. They thought they were doing what was best for him. That was obvious. It was all over their faces and

actions. If they had any idea how he felt, they still considered his feelings only symptoms of some kind, and they seemed confident that Kane would soon be all right.

But his being all right had nothing to do with their going away.

Kane decided not to give way, not to scream or anything absurd like that. It wouldn't do any good. Calm, be calm and—well maybe just try pretending they're not there at all.

Then he remembered the bathroom and ran through several chairs, a table, and three people, and into the bathroom. He slammed the door and leaned against it and let out a long relieved breath.

He was taking off his shorts when the bathroom walls and the ceiling came alive.

What had been labeled "Boy's Room" down in the cocktail lounge was being projected into the bathroom of room 2004.

It wasn't false modesty that prompted Kane's moan. It wasn't any form of prudishness that moved Kane to clutch his undershorts to his body and leap into the shower stall.

It was a panicky realization of the absolutely involuntary nature of the way things were. Strangers, with friendly smiles, everywhere around him all the time, and he, Larry Kane, had nothing—*absolutely nothing to say about it.*

The shower stall with the pulled curtain was no refuge either. There was a superimposed sink in there on the wall with a phantom shape using an electric razor.

Phil and Ben were leaning

through the shower curtain. They weren't there for anything specific. They were just there, chatting, smiling, bantering.

Others came in and out of the "Boy's Room" of the cocktail lounge. Everyone said hello, or directed some sort of friendly comment casually at Kane as though superimposed washrooms were the quintessence of social normalcy. And, Kane thought pushing hard at panic, they probably were.

Phil and Ben were there for no other reason than to keep Kane company. To help him. He could see that. No matter how tortured he seemed, their attitude remained that of beneficence. The trouble was all his, and they gave no indication of seeing his side of anything.

Evidently, to them, being alone was the worst thing that could happen to anybody. If he wanted to be alone then he was wrong, he was sick, he was put in a special room. A single. But they wouldn't go away.

He managed to turn on the shower, and he turned his face up to the icy water and closed his eyes and imagined he was back in blessed isolation in the study of the observatory on the Moon. But it was a long long way back to the Moon.

It worked both ways. He could see and hear them. They could hear and see him too, but he determined to do his best to ignore them. The idea of social amenities no longer bothered Kane. Being impolite was an absurdity. Social decency was a mutual thing, and these people weren't considering his rights at all.

He finished his shower and

draped the towel around his waist and went back out into the closet they had given him. He walked toward the bed, sidestepping people, chairs, tables still unable to realize fully that these things weren't really here.

The jukebox got louder. A couple danced through him. Suddenly, Kane stood shivering, a raw panic taking hold. Control fled before the rising jukebox clangor, the laughter, the waving and shouting and hideous unwelcome demons of camaraderie.

He felt himself wildly waving his arms about and shouting at the walls.

"Get out! For God's sake get out and let me sleep!"

Ben was staring at Kane from only a few inches away.

"You," Kane pointed a finger at the three dimensional ghost. "You—fade out, go away somewhere. No—no, Phil, not you. Get these other people out. I want to talk to you—Phil—"

"Easy now," Phil said soothingly. "We'll be all right. In a little while now—"

"I am all right, but I won't be if I can't sleep. Phil—can't all this just—just be tuned out or something?"

Kane tried to imagine none of the others were there. Just the small room, himself, and Phil. But the others were all looking at Kane, all of them looking, all of them smiling. Lucille was looking too, but somehow he was sure he could see a reflection of his own feelings in her eyes, hidden, but there.

"We'll be with you all the way,"

Phil said.

"But how can I sleep with a cocktail lounge full of people all over my bed? Tell me. I'm listening. Tell me how!"

Phil's smile disappeared completely for a brief second. He whispered, close to Kane's ear. "Try to do it, Larry. Please—*try!*"

Kane ran to the wall, clicked the light switch. He knew that the lights in his room went out, but the slightly dimmer lights projected from the cocktail lounge remained. Somehow, that was even worse. It seemed to resemble the implacable characters of a persisting nightmare. Subdued, with the coruscating bubbling play of multicolored light from the jukebox turning a rainbow over and over the ceiling and the bed, and the Gang, the Gang all there like ghosts with greenish faces smiling, sitting, whispering round the bed.

Kane threw himself on the bed and covered his eyes with his arms.

He was going mad with fatigue, and yet he knew he could never sleep, never rest, under these circumstances. It wasn't just the figures there, the lights, the laughter and whispering and the chorus breaking from the jukebox. It was what their being there really meant, the suggestion of the bigger cause behind what was happening to Kane.

A man who fears to sleep in the dark is not really afraid of the dark. But of what is hiding in it.

Shadows moved above his closed lids. Glass tinkled with ice cubes. Under his sweating forearm, his

eyes throbbed and his body felt as though the skin had been scraped all over until it was raw.

Kane propped himself on an elbow, and looked to one side at Phil. Phil grinned sympathetically. Laura was in the same cushioned chair, but she seemed to be sitting beside Kane on the bed. Lucille was avoiding looking at Kane.

"Phil."

"Well, Prof, we thought we were getting our sleep!"

"No," Kane whispered. "I can't sleep. I'm asking you, you Phil, and all the rest of you, to let me sleep. I'm asking you to help me in that way, just for a while. I'm imploring you really to just tune yourselves out for a while and let me sleep."

There was something blank, uncomprehending in the way they smiled at him. Kane knew then that they could never allow themselves to try to understand his situation, because then they might question their own. For example, if they've taken refuge in one another from a terrible fear of insecurity, anxiety, and aloneness, then Kane could only represent the threat of reawakened fear.

What was the use?

"We'll turn the lights down low, how would that be, Prof?" Phil asked.

"We'd like that," Laura whispered.

"Don't be afraid, we're with you," Ben said.

"We'll sing you into dreamland," Jenny said.

"Don't be afraid. We're all together and our Gang is with you," someone else said. It didn't matter

who really, Kane thought, because they all spoke not as individuals but as the Gang.

"Through sunshine and in shadow," Lucille said.

The lights dimmed slowly as Kane curled up on the bed and clenched his eyes shut. He pulled the sheet up over his face. He pressed his fingers into his ears. But it wouldn't work. Nothing like that would do any good. You couldn't shut off indignity such as this. You couldn't block out such an intrusion of spirit and human dignity by burying your head, or pressing your ears.

You could try, but not very long, not when you knew it wouldn't do any good.

He had no idea now what time it was, how long he had been here. He had tried to spot a wall clock somewhere in the cocktail lounge, but none was within view. That didn't help either, this timeless feeling. That only enhanced the similarity it all had to a persisting nightmare.

It was a gnawing murmur all around him. It was like a hollow tooth. The softened sounds of their voices going on and on was maddening because they were softened. Softened for him, yet they were still there. He felt like an irritated baby sleeping while adults talked, pretending to soften their voices.

His body was slimy with sweat, and his head pounded with a dull ache. He jumped out of bed and ran straight through Laura to the wall and jerked the phone from its slot.

He yelled into it.

"This is Professor Larry Kane. Room 2004. I'm checking out. Send someone up here with a key! I said send someone up here . . ."

"We understand, Professor Kane."

"Then you'll send someone up immediately with a key!"

"Please don't get upset. The Staff has been busy, but now the Staff will soon be with you."

The Staff . . .

"I just want a key, I want to get the hell out of here!"

Kane yelled several times into the phone after the click, but no voice came back. He had grabbed up the table, the metal table at the head of the bed, and flung it into the wall before he realized what he was doing.

The shadows moved toward him. Phil, Laura, Ben, Jenny, Lawrence, Lucille, all the others, nameless, what did it matter anyway, their names?

They were smiling, holding out their arms to him. Compassionate, sympathy, they had it all. All they wanted to do was help him.

He ran through them back toward the bathroom. It was still full of men from the downstairs john. "What time is it?" Kane yelled at someone with a paper towel pressed to his eyes.

"'Bout three I'd say, what a night!"

"Three—"

Three o'clock in the morning, but the fact was Kane wasn't sure about the day. He backed out of the bathroom, slammed the door.

"The Staff is ready, Prof," Phil said.

"We're all with you, aren't we?" Laura giggled.

The closet.

Kane ran into the closet and slammed the door. There was something immediately cozy in the narrow black confines of the closet. Either closet walls weren't TV screens, or they had decided to let him sleep at last. Probably the former. Better convert closets to Television. In case kiddies misbehave and get locked in the closet, they'll not be alone in there . . .

He curled up on the floor in the pitch blackness and almost immediately began to drift off into sleep. The narrow darkness tightened around him like a thick comforting blanket on a cold night . . .

Sometime later—he had no idea how much time had passed—a light was blinking at his lids. He opened them slowly and stared into a flickering yellow eye.

A doorhinge creaked. Up there somewhere a voice said pleasantly:

"Professor Kane, your Staff is here."

"Staff?" he whispered, trying to see above the blinking light.

"We're here."

THE TV walls were dead now, but that was hardly consoling. The overhead light was glaring with an intense whiteness. The three members of the Staff were busy, and Kane was being Tested.

Kane had emerged from the closet determined to remain as rational as possible, to control his emotions, and find out what he could about his human rights as an

individual.

That was easy to find out and only required a few questions honestly and frankly answered.

As a minority, Kane had no rights whatsoever.

He had one big right, the right to think as the majority did. But that didn't count for much yet because Kane was ill, maladjusted and had anti-group feeling.

The Staff was going to test him, find out what was wrong with Kane. And this of course implied that when they found out what was wrong, the difficulty would be taken care of.

The Staff was kind, considerate, almost excessively polite considering the circumstances. They were young efficient men with crewcuts, briefcases, and wearing tight conservative dark suits. Only slight differences in build distinguished them one from another, but this superficial outward difference only seemed to emphasize the Staff's basic unity, its Group Spirit, its Staff Consciousness.

Every public institution, every business establishment, every school, club, hotel, factory, office building—in short, everywhere that people congregated in official Groups, there was a regular Staff on duty twenty-four hours a day.

They were Integrators. Glorified personnel men.

Electrodes were clamped on Kane's head and wrists. Something was strapped around his chest. Wires ran into a miniature Reacto. A stylus began to make jagged lines on a strip of moving tape.

"We're getting a complete per-

sonality checkup," the Staff said.

It was indeed complete. It was as complete as a personality check-up could be short of an actual dissection.

Kane looked at countless ink-blots. He was shown a great many pictures and whether he answered verbally or not was of no concern of the Staff.

Whatever his reactions were, they were all analyzed by the machines. Words weren't necessary. The Staff had a shortcut to personality check-ups. From the mind right into the machine.

The Staff only interpreted the results, or maybe they didn't even do that. It was more likely that machines did that too.

Kane protested for a while, but he was too tired to protest very long. He asked them a great many questions, and they answered them willingly enough—up to a point. They were interested in his questions too. He was an interesting symptom, but actually he knew that they already had him pretty well tabbed.

They answered his questions the way big-hearted adults answered inquisitive children.

"We must," the Staff said, "determine why you don't fit in."

Kane talked about his work, his theories, his years of devotion to what he had always considered to be a contribution to society. They hardly seemed interested. What good was all that—astronomy and such—when a man was not happy with others?

"What about this aversion to people?" the Staff said, in a kindly

way. "This—well—clinically, this de-grouping syndrome. This antagonism to the group spirit."

"You mean my reaction to Phil and his friends?"

"Your friends. Your Group," The Staff said.

"But I don't dislike those people," Kane insisted. "Certainly, I have no aversion to them! Hell, I don't even *know* them."

"But they're people," the Staff said. "Part of the family of man."

"I know that. But I was tired and wanted to sleep!"

"You'll find the true group Spirit," the Staff said. "Let us ask you this, Professor Kane. If you really had no aversion to people generally, why would you object to them being with you? Why should the presence of people disturb your sleep? Wouldn't a healthy person enjoy sleeping with others merely because they were there? Doesn't one sleep best among friends, knowing he isn't alone, knowing even his sleep is shared—"

There was a great deal more, but it all boiled down to the same thing.

Kane was wrong.

And he didn't have the right to be wrong.

They, or rather it, the Staff, seemed to concentrate on the whole question of why Kane had ever volunteered for a job demanding extreme isolation in the first place. The point was that apparently Kane had been anti-social, a Group Spirit deviant from the beginning.

Kane tried to explain it, calmly at first, then more emotionally. Either way, he knew that whatever

he said was only additional grist to their syndrome recording mill. Being alone in order to do certain kinds of work demanding isolation seemed to be beside the point.

The point was that being on the Moon deprived a man of Groups. It was a kind of psychological suicide. Now that he was back home they would straighten him out. The question of returning to the Moon was ignored. To them, this was an absurdity. What did Kane want?

Kane was in no position to know what he really wanted—yet. They were going to help him decide what he really wanted. But they already knew that. It only remained for Kane to agree with them.

The majority was always right.

He explained his values to them. They listened. He told them that as far as he was concerned the social setup was now deadly, a kind of self-garrisoned mental concentration camp in which free thought was impossible. A stagnate, in fact a regressive state of affairs. Proficiency in skills would go, science would die. A herd state. Individuality lost. Depersonalized. Tyranny of the Majority. Integration mania. Collective thinking. Mass media. Lilliput against Leviathan . . .

But Kane wasn't happy, that was the important thing wasn't it?

Could a knowledge of how rapidly the Universe was expanding contribute to the happiness of a human being living on Madison Avenue in Manhattan?

Obviously the answer to that was no.

Kane was going to be happy. He wouldn't concern himself with the

stars any more. He wouldn't practice a self-imposed barren isolation of himself any more. Kane was going to be happy. He was going to be one of the Group.

Time went by. He was given sedatives. He slept at last. He awoke and was tested and went to sleep again, many times. He was fed too, given injections with needles of energy and vitamins and proteins and glucose and carbohydrates, because he refused to eat any other way.

Vaguely he remembered episodes of babbling under the influence of hypnotic drugs.

He kept remembering the briefcase. In a dream the Group had it, throwing it around among them like a basketball. The clasp broke. The papers, thousands of papers spilled out and drifted away over New York and Kane was running through a maze looking up at them and then he was lost.

Now he knew what had happened to the other Moon ships, and to the rest of the Captain's crew, where they had gone to and never come back from.

Space was lonely and dark. Space was empty. Space was frightening.

They had gone back to the closeness and warmth and security of their Group.

How many were there left such as the Captain, and Kane—Kane for a while yet perhaps? How many were there?

Could he escape?

At some unrelated point on the Testing chart, the Staff closed up their briefcases, politely said good-bye, and left.

The data would be run through more machines.

Kane would be happy.

All he had to do was wait.

KANE AWOKE with a galvanic start and stared at the prison of his room.

The walls began coming alive. Phil, Laura, Lucille, Herby, Clarence, Jenny, Ben, the happy happy Group, always there, always waiting, always reliable, sharing everything, pleasure and pain.

"How we feeling now, Prof," Phil yelled. He was stark naked.

"You look so cuddly," Laura giggled, and for an instant there, Kane could almost feel her snuggling in beside him.

Kane lay there in a dim superimposed puzzle of furniture, moving forms, corners of rooms jutting out of the wrong walls, bodies walking through beds and one another, and then a naked figure curving into the air, falling toward him in a graceful arc, down, getting larger and larger, plunging right for Kane's face.

Kane rolled frantically. And then somewhere under him he heard a splash and there was the vague ripple of unreal water as Phil swam away across his cool blue pool.

There—that was Laura, only in a boudoir, standing before a mirror wearing only a pair of very brief panties, and nothing else. Her reflection in the mirror smiled at Kane as she brushed her hair.

"Morning, Prof honey. How we feeling this morning?"

It was morning. Some morning on some day during some year.

There was Lucille on this morning lying in a sunchair, her black hair shining in the sunlight somewhere. Probably in the Group house at Sunny Hill. In a while now, Kane knew, the Group would all go away together to their office, and they would do their work, concentrating on getting along together until they could return to Sunny Hill together.

Lucille was reading a newspaper, and she glanced up at Kane. There was a pale line around her mouth and she pulled her eyes quickly away as though she didn't want to look at him. She wasn't like the others. She was different. Of course. It had to be a matter of degree. Nothing was black and white. There had to be differences of opinion, some degree of individuality—somehow. Somewhere. Perhaps Lucille—

"Good morning, good morning to all of us!" Kane shouted suddenly.

"Did we have a good rest, Prof?"

Phil was yelling from his pool. He seemed greatly pleased with Kane's enthusiastic social response. Not that Kane was really trying to fool anybody. He was pretty sure the Staff wouldn't be fooled. Somewhere the machines were scanning the data. Soon, the Staff would have a full analysis of Kane, what was wrong, and what would make it right. What he should have done, and what he should be.

Jenny and Ben were making love on a couch. Kane tried to keep on watching them as though he suffered no embarrassment, but it was impossible.

"I've a full schedule planned for today," Phil yelled up. "Soon we'll all be going to the Office. You'll be going with us soon too, Prof!"

He would belong to the happy Group. Sharing everything. But maybe it wouldn't be this happy Group. Maybe the machines would decide that he belonged in some other Group. Whatever Group it was it would be happy. That was a fact.

Could he escape? Could he, perhaps, get back to the La Guardia Pits, and the Captain of the Moon-ship?

The windows still barred, paneled in metal. The door locked. If he managed to get out of this Single, say, and out of the Midtown Hotel, and into the street, then what?

That didn't matter. If he could only get that far—

Laura was standing there naked, close to Kane. "We're having our wedding at five," she whispered.

"Who?" Kane said, startled.

"Ben and Jenny. They're right for all of us together."

From a number of rooms, people were watching Ben and Jenny being right for all of us together, but Kane couldn't look.

"See us all," Laura shouted and dived through the floor. A spray of water spilled up and fell unfelt through Kane's flinching torso. Ben and Jenny ran away.

Kane was practically alone with Lucille. It was the first time in he had no idea now how long that he had been this much alone with any one other person.

She glanced rather sadly at Kane

above the paper she was reading.

"You know how I feel, Lucie?"

She nodded, almost imperceptibly.

"How can you stand it, all the time this way?" he asked.

"Some of us learn to be in it, with a part of us out of it. A kind of self-hypnosis, a retreat of some kind. Into fantasy, that's what it really is. But—but I don't think any of us can keep on doing it forever. We will all give way completely—sooner or later."

"I've got to get out," Kane said. "Do you want to get out?"

"It's impossible to get out."

"I've got to try."

"What's the use of trying if you know you can't get away? Where can anyone go?"

"There must be people who break away," Kane said. "There have to be."

"There's supposed to be an underground, some secret group of some kind that helps people get out."

"Get out—where? Out of the country?"

"It's pretty much like this everywhere. But there are supposed to be areas where it isn't. Islands somewhere. Hidden places right here in the country. Supposed to be places in the Kentucky Mountains, and in New Mexico, places like that."

"The Moon," Kane said. "That's a place I know of. I've been there."

Her eyes were bright for a moment. "I know. It must have been wonderful. Why on Earth did you ever leave?"

"I didn't know what it was like here. And—my wife died. I wanted

and needed another wife. More than a wife really. Someone who could share that kind of a life with me, someone who would be interested in the work too."

She turned quickly back to the paper.

"You might be able to get out of the hotel," she said. "But you would be too conspicuous."

"Because I would be traveling alone?"

"Yes."

"If you came with me, there would be two of us. We wouldn't be conspicuous that way."

He saw the flush move up through her face. "Is that the only reason?"

"You know it isn't."

She knew it. They both knew it and had probably known it for a long time. They had a lot in common, a minority of two.

And then he remembered. She wasn't really there in the Midtown with him. She was in Sunny Hill, wherever that was. They couldn't leave inconspicuously together because they weren't together now, and they couldn't get together without the Gang being together too.

The rooms, furniture, sounds, everything began to fade.

"Goodbye," Lucille said.

"Get sick or something," Kane said quickly. "Don't go with the Group to work. Stay there, wherever you are! *Stay there—*"

Faintly, her voice came to him out of a kind of melting mask of a face. "I'll try—"

Kane was alone in the single room the door opened. The smiling Staff came in and shut the door.

The three of them stood there happily holding their briefcases.

"We're happy to report that we have completed your personality breakdown."

The word was a bit premature, Kane thought. "What is it?" he asked.

"Excellent," the Staff beamed. "You should never have been an astronomer. You took up that profession as a way of escaping from people. Actually, of course, you love people and hate your profession."

"Have you determined what I should be if not an astronomer?"

"Naturally, it's all in the breakdown."

"What is it?"

"Generally, you prefer physical work, not mental work. Mental work is a constant strain on your psychological balance. You have done it neurotically to reinforce your need to avoid people."

"Physical work? What kind?"

"Specifically, it seems that you are best suited for the profession of plumbing."

"Plumbing?" Kane said.

"Plumbing what?"

"Plumbing, the art of pipe-fitting, the study of water mains, sewage lines, and so forth."

"Plumbing." Kane said.

"Of course, you react antagonistically to it now. But that will be changed."

Kane had nothing against plumbers or plumbing. Once, as a kid, he remembered having a long interesting talk with a plumber who was unstopping the kitchen sink. He had fascinating tools, and at that

time, Kane had said he would be a plumber when he grew up. But he had also wanted to be any number of other things when he grew up, including an astronomer.

Now he had no desire whatsoever to be a plumber.

Kane drew the metal bedside table up hard and the edge of it caught number one of the Staff under the chin. Kane attacked, violently. He did it knowing that something more was at stake than his life—his identity.

Number one fell down on his knees and whimpered. He wasn't hit hard. But he squatted there blubbering as though he had suffered some horrible shock. Numbers two and three gaped as though equally shocked without ever having been hit at all.

That was Kane's initial advantage. The Staff seemed incapable of understanding that anyone would do what Kane was doing. Kane hit number two four times before number two covered up his face with his hands and started to cry. Kane ran him into the closet and locked the door.

Number three swung his briefcase at Kane's head, fluttering his other hand wildly. Kane was heavier than he should have been because he was accustomed to the Moon. But he was desperate and that was some compensation. He had some experience, a very little, as a boxer in college, but that had been years ago. But as little experience as he had at this sort of thing, he was way ahead of number three. Number three kept swinging his brief-

case, and Kane hit him on the chin and then in the stomach and then on the back of the neck. Number three lay unconscious on the floor.

Kane stared at his bleeding knuckles a moment, then dragged Number one up onto his feet.

"You're going to help me," Kane said. "We're getting a saucer and then we're going to Sunny Hill. You know where Sunny Hill is?"

Number one ran his hand nervously through his dark brushcut. He had a boyish face that seemed deeply insulted by what Kane had done. Insulted and shocked as though he had been a good boy all his life and then someone had slapped his hand—for no reason at all.

Kane doubled his fists. Number one winced and looked shocked again, and very frightened. A great deal more frightened than anyone would be who was afraid only of physical injury.

"Yes, that's part of a big Group Housing Project downtown."

"Where can we get a saucer?"

"The roof."

"Unlock the door," Kane said.

"And just pretend everything is happy and that we're relating beautifully to one another. Now listen—I'll kill you if you try anything else. I hope you believe it because I really will. What you fellows intend doing with me, as far as I'm concerned, is worse than murder."

They stepped onto one of several saucers decorating the roof of the Midtown Hotel. The rotary blades in the ten foot platform whirred under them, and Kane felt the saucer rise up to a thousand feet,

then dip downtown. The air was full of them and only some kind of sixth-sense seemed to keep them from jamming into one another.

There was never less than two on a saucer. And Kane noticed that most of the saucers were flying in Groups like aimless geese.

Kane jumped from the saucer and ran across the roof landing of the Sunny Hill project building. There were a number of them like huge blocks arranged in some incomprehensible plan.

Kane glanced back to see number one leaping from the saucer and running in the opposite direction. Kane ran on toward the elevator. He knew he didn't have much time, but what bothered him was the authority he was running against. Public opinion was a general attitude, not a cop car, or a squad of officers with guns. Getting out of line, Kane figured, was usually its own punishment—isolation, loneliness, social ostracism.

But what about the exception? The guy who fought conformity and the majority opinion.

Who would they put on Kane? Or what? It would help to know what he was running from. What concrete force or power would try to stop him.

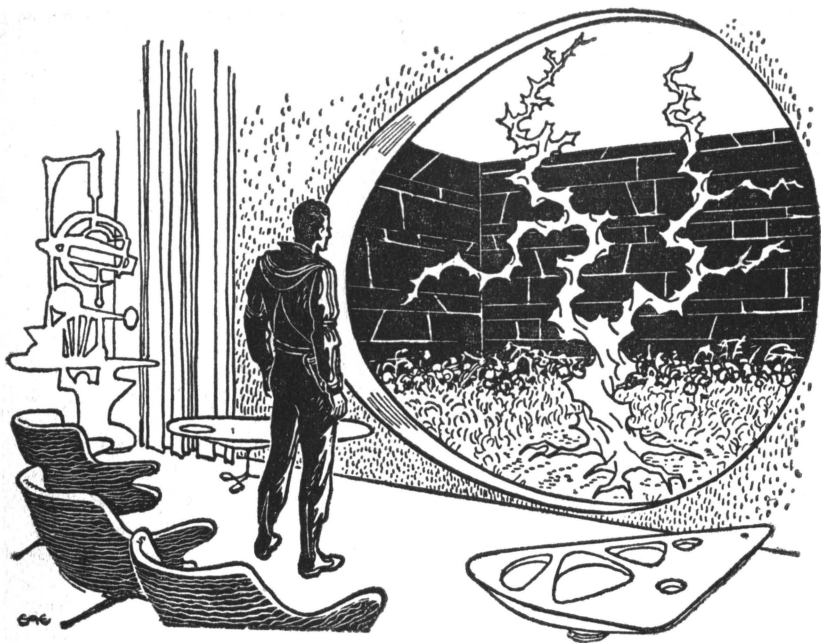
Then he saw her running toward him.

Her face was flushed and the wind blew her dress tightly against her slim body as she stopped and looked at him.

He took hold of her arm.

"We've got to hurry," she said. "The Group knows I've run away."

(Continued on page 112)



Illustrated by Ed Emsh

What had caused the people of the crystal city to perish?

And why had their remains disappeared so completely

that not even their bones were left?

ROOM WITH VIEW

BY ROBERT F. YOUNG

THE PLANET was a shining sphere of crystalline cause and effect. It was the sound of glass chimes in a summer wind captured and set to architecture. It was the only child of a lonely star, and it was moonless. It was also dead.

Donant didn't know how long he'd been walking. An hour, perhaps. Maybe longer. There was a timelessness about the eternal streets and the endless edifices, and he'd left his watch in the ship, remembering only his compass. But the compass was by far the more important item: with its needle never deviating from the magnetic lode in the ship's heart, he could never get lost—not even in a city that covered an entire planet.

Not even in a dead city.

Donant was a cartographer and much of his life had been spent in the unexplored sectors of the galaxy where civilizations were rare and cities even rarer. Nevertheless he was used to cities. He knew the Cities of the Plane intimately—the metropolises of Mars and Venus and the collective edifices of Earth. But he was used to cities with limited boundaries, not cities that covered whole land masses and linked crystalline arms across seas. Moreover he was used to cities with people in them.

He came presently to a structure more striking than the others. Like them it was constructed of a crystal-like material and seemed to have been cast from a single gigantic mold; but there was a quality about it that set it aside. Gazing up at the prismatic façade, Donant got the impression that the long dead archi-

tect had used an emotional rather than an architectural blueprint.

The façade transformed the afternoon sunlight into a trillion shifting rainbows. Poignant lines blended together to form a frozen waterfall of windows and balconies, cornices and ledges. The effect was dazzling. It was also tinselly. Donant wondered why.

Just before him was the entrance, a huge triangle cut into the base of the waterfall. There were no doors. Donant hesitated a moment, then climbed the crystalline stairs and entered the building.

The huge chamber into which he stepped should have awed him, but it didn't. The light of day seeping colorfully through the prismatic walls was abetted by a cluster of blazing lights suspended from the dome. In the center of the floor a lofty statue stood upon a square pedestal, and around the pedestal were circular rows of chairs. Beyond the chairs, balconies rose, tier on tier, to the point where the walls ended and the dome began. Everything—chairs, statue, walls, dome—was constructed of the same crystalline substance, everything was immaculate—and everything was dead.

A council room, Donant thought. Perhaps *the* council room.

He chose an aisle and walked down it to the pedestal. The chairs substantiated the evidence of the doors and windows of the other buildings he had passed: the race that had built the city had been humanoid and of approximately the same stature as Earthmen.

The pedestal turned out to be a

speaker's platform as well as the base for the statue; steps were cut into it for the convenience of the speaker. Donant did not climb the steps. There was nothing he had to say, and even if there had been, there was no one to whom he could have said it. Instead he stood at the end of the aisle, gazing up at the statue.

The statue represented a woman, a beautiful woman. Alien though her beauty was, Donant was impressed by it. Her body was thin, but unmistakably mammalian. Her features were small, almost tiny, yet exquisite in their flawless perfection. She was wearing a simple white tunic and the exposed areas of her flesh were tinted—no, permeated—with the pink-gold flush of living human tissue. For a moment Donant almost forgot he was looking at a statue.

Her pose intrigued him. Her right arm hung gracefully at her side, but her left arm was raised, and suspended from her fragile fingers at a level with her eyes was a horizontal bar. Suspended from the bar, in turn, were two shallow cups, one at each end. The bar was slightly canted, and one of the cups was lower than the other.

Scales, Donant thought. Primitive scales.

He craned his neck to see their contents, but he was too close to the pedestal. He walked back up the aisle to the entrance, turned and tried again. The angle was still wrong: all he could see was a sparkle in one scale and a flash of green in the other.

He found stairs that led to the

balconies, climbed them. He went as high as he could, to the beginning of the dome itself. Then he looked at the scales again. This time their contents were clearly visible.

In one of them, the lower, heavier one, was a dazzling crystalline cube. In the other, the one found wanting in the balance, was a green knife.

Curiosity had motivated Donant's landing. Extinct planetary cultures were none of his business. None of his official business, anyway. But he liked cultural problems, and he particularly liked this one. A dead city, a crystalline cube, and a green knife . . .

In the street again, walking, he attacked the problem. The planet was dead; therefore the inhabitants had either left it or perished on it. If the first alternative were the case, then they must have had space travel.

Donant shook his head. A race of people, in order to develop space travel, must have stepping stones. Its imagination has to mature gradually. Without the moon as the first stepping stone man might not have been able to reach Venus and Mars. Without Venus and Mars it was extremely doubtful if he could have reached Mercury and Pluto; and without the confidence that those first stepping stones gave him, the prospect of traveling over four light years to Alpha Centauri would have overawed him, crippled his as yet immature imagination, and he would have gone on living on Earth, crowding himself into ever expanding cities, turning the energy that would have gone into the

building of better and better spacecraft into the building of better and better buildings, into the creation of better and better building materials, till at last he found the ultimate material and with it, possibly, his justification for existence.

This planet had no moon. It was the only offspring of its sun, and the nearest star was forty-one light years away. No, Donant concluded, its inhabitants definitely had not had space travel.

That left alternative number two: the inhabitants had perished, every single one of them, and so completely that not even their bones remained.

Why?

Donant stared at the shining streets and the immaculate buildings. The gentle throb of entombed machines coursed rhythmically through the crystalline bricks beneath his feet. But the streets were as devoid of life as they were of dust, and the doors of the buildings were closed, the windows faceless.

Plague? *Weltschmerz*? Moral decay? Donant shook his head again.

His directionless walk had brought him to a different sector of the city. The buildings here were slightly more functional in appearance, but they were facsimiles of each other and they stood shoulder to shoulder like rows of pretty girls, each with the same make-up, the same girth of bust and buttock, and the same stereotyped smile. At the base of each, on a level with the street, was a little sunken doorway fringed with crystalline lattice.

Apartment houses, Donant thought. Or at least their equiva-

lent. Coincidentally with the thought came another thought: when a problem as a whole proves insoluble, concentrate on a single aspect of the problem. In this case, a single building.

He chose the building at random and stepped into its sunken entrance, intending to try the door. But before his fingers even touched the featureless surface, the door swung inward and concealed lights flicked on to reveal an empty foyer. Donant stepped across the threshold and the door closed behind him.

The furniture was simple and—inevitably—of the same material as everything else in the city, on the whole planet for that matter. Against one wall a blue table stood on legs as slender as flower stems. There were blue chairs to match, and a small blue cloud of a couch.

On the wall opposite the door was a vertical bank of buttons. Donant stepped forward and depressed the lowest one. The wall behaved as he had thought it would: it split vertically, and the two halves receded. But instead of the elevator he had expected, he saw a long corridor lined at regular intervals with doors.

He frowned. He was a logical man and he liked logical phenomena. So far nothing on the planet had made sense, and he knew he would never be able to leave till he forced it to make sense. As he stood there the two halves of the wall came back together in a seamless junction.

Annoyed, Donant depressed the second lowest button. This time there was a pause before the wall

enacted its alternative role as a door—a pause and a sense of increased weight. Donant smiled then. It was he who had been illogical, not the builders. What he had mistaken for a mere foyer was really a foyer-elevator.

The second floor corridor was identical in all outward respects to the first. But Donant was a systematic as well as a logical man, and a systematic investigation of the building virtually demanded that he begin on the ground floor. When the door became a wall again he depressed the lowest button and a moment later stepped out into the first floor corridor.

He stood immobile for a moment, listening. There was no sound except the almost inaudible purring of invisible machinery. Behind him the foyer-elevator door once more blended into a wall. He started walking down the corridor. Light emanated softly from an indeterminate source, seemed to be a part of the crystalline walls themselves.

He paused before the first door. It was featureless, just as the street door had been, hardly distinguishable from the wall itself. He stood before it confidently, waiting for it to open.

He stood there for some time, but nothing happened. Naturally not, Donant thought, irked with himself. The street door was indiscriminate, admitted anyone. This door was probably attuned to the ex-tenant's personality or emotional pattern. This door didn't know him from Adam.

Donant drew his incandescer,

dialled it to maximum intensity and began to burn out a section large enough to permit his passage. The crystalline material had an incredibly high melting point, but it cowered before the blue-white wrath of the incandescer beam. Blue smoke coiled up, and automatic suction fans hummed into action and whisked it away. When the section of the door broke free and fell to the floor, the corridor walls saturated it with an acrid-smelling fluid.

Donant edged through the opening into the room beyond. It was a large room, well ventilated and well furnished. Opposite the door a big oval window looked out into a courtyard. All of the chairs in the room were arranged so that they faced the window, but the chairs were empty, the room was empty, and the courtyard was empty.

He approached the window more closely and peered out. The courtyard was a small one, surrounded by high featureless walls. Donant started. The walls, unlike everything else he had seen in the city, were *not* made of the crystalline substance. They were made of metal, a dull, gray, familiar metal.

They were made of lead.

Presently Donant lowered his eyes. The grass of the courtyard was a sickly green. There was a flower garden to the left, and the alien flowers drooped tiredly in the bright sunlight. Directly opposite the window there was a tree.

Donant found himself staring at the tree. It was an alien tree, botanically remote from the elms and maples he had known on Earth,

but it wasn't the alien quality that gave him pause, that filled him with foreboding. It was something else.

The tree was dead.

The other two rooms of the apartment were small and windowless. They contained padded oval platforms and were obviously sleeping quarters. There wasn't a particle of dust in them—or a particle of life.

Donant returned to the corridor.

He experienced a sense of wrongness. After a moment he noticed that the section of the door he had burned out had disappeared, and then he noticed that the burned edges of the door itself, into which the section had fitted, had receded back to where the crystalline material was unaffected.

As he watched, the material closed back in upon itself as though the orifice were a wound and the wound were healing. In a little while the door was whole again and all evidence of his vandalism had vanished.

A self-healing building? A self-healing city? Then it must be a sentient city too. The crystalline material, despite its deceptive appearance, bore no relationship to crystal. It was a complex alloy that the extinct race had developed, an alloy that possessed therapeutic qualities and an awareness of decomposition.

And its awareness was not confined to its own decomposition. It included and acted upon everything detrimental to the cleanliness of the streets and structures which the metal comprised. For the first time

Donant understood why there was no dust or corrosion in a city that had probably been dead for years, if not centuries. And he guessed why there were no bodies, no bones.

A most meticulous metal. Not only did it clean up after itself, it cleaned up after its creators as well.

Donant burned a section out of the next door and stepped into the next apartment. It was a duplicate of the first—three rooms, the furniture in the largest room grouped with the oval window as the central motif, and the window framing a view of walls, grass, flowers, and tree—

Donant found himself staring at the tree again. It was unquestionably the same tree, its twisted trunk and leafless branches the same bone white in the glaring sunlight. And yet it stood just outside the window, exactly in front of the window, and that was manifestly impossible because it stood exactly in front of the window of the room he had just left.

After a moment he dropped his eyes to the lawn. It was a wretched lawn by any standards. In some places it had faded to a bleached yellow, in others it had died out altogether. Even in the few places where it still contained a semblance of life, it was singularly unimpressive. The individual blades of grass were asymmetrical, thick on one side, dwindling to a sharp edge on the other, tapering upward to a lopsided point—

Suddenly Donant found himself thinking of the statue he had seen in the council chamber—the statue

and the scales, and the objects the scales contained. A crystalline cube and a green knife—

Or a building brick and a blade of grass?

Abruptly another incongruity about the courtyard caught his eye. When he had entered the apartment building the sun had long since passed its meridian. That being so, part of the courtyard should have been in shadow, but the only shadows on the dying lawn were the shadows cast by the branches of the dead tree, and they lay directly beneath the branches themselves . . .

Donant left the room, walked down the corridor, took the foyer-elevator to the sixth floor and burned down the first door he came to. There was another living room and another oval window, and beyond the window, on the same level as the floor, were the tree, the lawn, and the flowers. Donant was not surprised. He walked over to the window and put his foot through it. The huge tube popped and showered in white dust to the floor, and the crystal-like alloy devoured the dust the way it devoured all dust, all dirt, all flesh that had ceased to live. The tree and the lawn and the flowers became a medley of wires and tubes and resistors, and Donant knew why the city was dead.

DONANT LIFTED the ship to ten thousand feet and threw it into glide. He turned up the scanner to a radius of five thousand miles and attuned it to the charac-

teristics of the place he wanted to find. Buildings and streets and streets and buildings flowed forever beneath him; oceans and causeways, and automatic factories that once had processed the food that had been drained from the seas. He flew west, keeping pace with the sun, and the fading afternoon traveled with him.

Two subjective hours passed before the scanner gave the sharp buzz he was waiting for. Darkness began to creep in from the twilight belt as he arrowed the ship down to the dot of greenness shining like a verdant star in the scintillating wastes of the city.

The ship was small, and he brought it down on the moribund lawn. He got out and walked over to the dead tree. The tree was a pitiful thing in the lengthening shadows—a desiccated corpse, an unburied cadaver. Donant stood beneath it, thinking of the race that had killed it—and thereby killed themselves.

They had had to make a decision, and the statue in the council chamber symbolized that decision. They had weighed nature against cities and they had found nature wanting in the balance; and their decision had been irrevocable because if the ultimate building material they had created destroyed all dirt, all decayed matter—it *destroyed topsoil too.*

Why, then, hadn't they chosen a different metal? Donant thought he knew the answer. Aside from the fact that the new alloy had promised them an architectural utopia, there had been another considera-

tion: over-population. No matter what building material they had chosen, the end result would have been the same: a planetary city. The only alternative would have been birth control, and birth control, Donant knew, was contrary to the survival urge of any race of people.

The dead race had overlooked the essential truth that, while machines could take over the function of physical photosynthesis, they could not take over the function of spiritual photosynthesis; that a man cannot live solely for the sake of his own creations, and that he had to have other creations to inspire him, to reanimate his will to go on living; natural creations above and beyond his ability to duplicate.

The beauty of the council building—and the beauty of the city as a whole—was tinselly because it was the product of creators without a criterion, creators who were creatively impotent. And, Donant knew, it was only a short step from creative impotence to sexual impotence.

Sunoikismos, he thought. Carried to extremes, it resulted in tragedy which the ancient Greeks had never dreamed of. For if it was true that man could not live entirely alone, neither could he live entirely with his fellow men.

He could usurp his green lands with his cities, and he could find sustenance for his belly in his seas.

He could create a complex society and learn to live in harmony with his neighbors. And as long as he did not completely lose contact with the death-to-life cycle of the earth he could find the strength and the inspiration to go on living, reproducing, laughing, loving, creating. But when he covered up and killed the last but one area of green land and in desperation televised that area to his tens of billions of sterile cubicles, he was very close to death.

Donant touched the trunk of the tree. His fingers sank deep into the dead tissue. The grass around his feet was gray and lifeless in the shadows.

He walked slowly towards the ship. A three dimension television camera stood on spidery legs on the fringe of the lawn. Its glass eye stared at him solemnly as he passed, its lens glinting forlornly in the last rays of the lonely sun. Beyond the high lead walls, that had failed to perform their function, the crystalline edifices stood, tall and mute and empty.

Donant lifted the ship. The dot of dying grass and dead tree faded into the building shadows. The buildings coalesced, became a meaningless mass. When he left the atmosphere Donant set his coordinates so that the ship would emerge amid green worlds. Then he hit the transphotic—

Hard.

• • •

WILL MAN find intelligent life on other planets? Read *This Lonely Earth* by Dr. Walther Riedel in the Dec. IF.

What could the Galactic coordinator do when politics forced him to find someone's favorite nephew a job? Earth, after all, was a small planet . . .

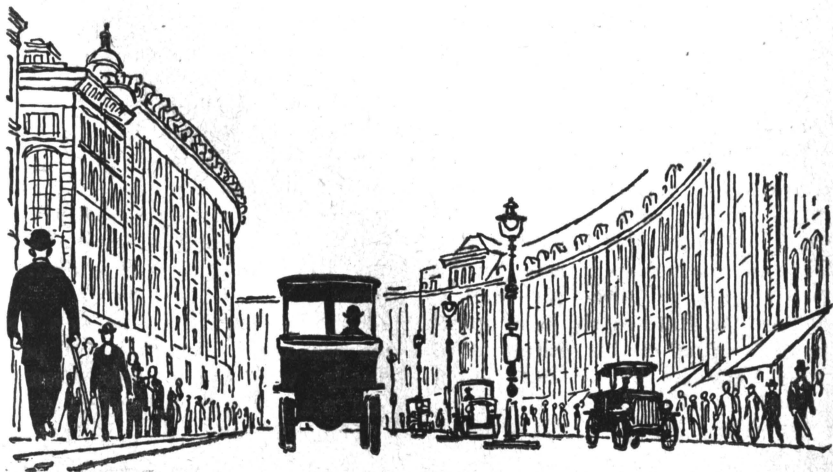


details

THE MOST austere egalitarian societies—and the League is a mature culture which has put such games behind it—soon learn they must cater to the whims of their leaders. This is true for the simple reason that a mind on whose decisions all fate may turn, has to function efficiently: which it can only do when the total personality is satisfied and unjarred. For Rasnagarth Kri the League had rebuilt a mile-high skyscraper. His office took up the whole roof, beneath a dome of clear plastic, so that from his post he could brood by day over the city towers and by

BY POUL ANDERSON

Illustrated by Ed Emsh



night under the cold radiance of the Sagittarian star-clouds. It was a very long walk from the grav-shaft door to the big bare desk.

Harban Randos made the walk quickly, almost jauntily. He was young, only a thousand years old, plumpish and sandy-haired, dressed in the latest mode of his people, the Shandakites of Garris. His tunic glittered with starry points of light and his cloak blew like a flame behind him.

He reached the desk and remained standing. Kri had not looked up. The harsh face was intent over a bit of paper. Around him the sky was sunny, aircraft flittered in dragonfly grace, the lesser spires glowed and burned as they clawed at heaven, the city pulsed. For the man in the plain gray robe, none of it existed, not while he was looking at that one sheet.

After all, its few lines of text and paramathematical symbology concerned eight billion human lives. In another lifetime or so—say 10,000 years—the consequences might well concern the entire League, with a population estimated at ten to the fifteenth power souls.

After an interminable minute, Kri scribbled his decision and dropped the report down the outgoing chute. Another popped automatically from the incoming slot. He half reached for it, saw Randos waiting, and withdrew his hand.

"Harban Randos, sir, by appointment," rattled off his visitor. "Proposed agent-in-chief for new planet in Section 239762—"

"I remember now. Sit down."

Kri nodded curtly. "Coordinator Zantell and Representative Chuing urged your qualifications. What are they?"

"Graduated in '75 from Nimë Psychotechnic Institute in the second rank. Apprenticeship under Vor Valdran on Polaris V, rated as satisfactory." Damn the old spider! What did he think the Service was . . . the Patrol?

"Polaris was a simple operation," said Kri. "It was only a matter of guiding them along the last step to full status. The planet for which you have been recommended is a barbarous one, therefore a more difficult and complex problem."

Kri sighed. "How much do you know of the situation on this one? —No, never mind answering, it would take you all day. Frankly, you're only getting the job for two reasons. One, you are physiologically identical with the race currently dominant on the planet in question. We have no other qualified man who could be surgically disguised. All those I would like to appoint are tied up elsewhere with more important tasks. Two, you have the strong recommendation of Zantell and Chuing.

"Very well, the post is yours. The courier boat will take you there, and supply you with hypnotic instruction as to the details en route. You already know the Service rules and the penalties for violating them.

"I only wanted to see you for one reason . . . to tell you personally what your job means. You're a young man, and think of it as a stepping stone to higher

things. That's an attitude which you'll have to rub off. It's an insignificant planet of an undistinguished star, out on the far end of the Galaxy, with a minimum thousand years of guidance ahead of it before it can even be considered for full status. I know all that. But I also know that it holds more than a billion human creatures, each one fully as valuable as you and I, each one the center of his own particular universe. If you forget that, may the Great Designer have mercy on them and on you.

"Dismissed."

Randos walked out, carefully energetic. He had been prepared for this, but it had still been pretty raw. Nobody had a right to speak to a free citizen of a full-status planet like that . . . like a not very trustworthy child. Damn it, he was a man, on the mightiest enterprise men had ever undertaken, and—

And someday *he* might sit behind that desk.

Kri resigned himself a full minute's reflection as Randos departed. It was so tinged with sadness that he wondered if he weren't getting too old, if he hadn't better resign for the good of the Service.

He sighed, and a weary smile tugged at his mouth. You didn't work many centuries in the Service without becoming an idealist and a cynic. An idealist who lived for the mission, and a cynic who knew when to compromise for the sake of that mission. Theoretically, Kri was above political pressures. In fact, when there was no obvious disqualification, he often had to give somebody's favorite nephew a

plum. After all, his funds and his lower echelons were politically controlled—

He started, realizing how much time had passed and how many decisions had yet to be made before he could quit for the day. He bent over the report and dismissed from his mind the planet called Earth.

THE DOORMAN was shocked. He was used to many people going in and out of the gray stone building, not only toffs and tradesmen but foreigners and Orientals and even plain tenant farmers. Benson & McMurtrie, Import Brokers, was a big firm and had to talk to all sorts. He'd served in India as a young fellow and considered himself broad-minded. But there are limits.

"'Ere, now! An' just where d'yer think you're going?"

The stocky, sunburned man with the tattered clothes and the small brass earrings paused. He had curly black hair and snapping blue eyes, and was fuming away on an old clay pipe. A common tinker, walking into Benson & McMurtrie cool as dammit! "In there, ould one, in there," he said with an Irish lilt. "Ye wouldn' be denyin' me sight of the most beautiful colleen in London, would ye?"

"That I would," said the doorman. A passing carriage stirred up enough breeze to flutter the tinker's rags, flamboyant against the grimed respectability of Regent Street. "On yer wye before I calls a bobbie."

"Sure an' it's no way to be ad-

dressin' a craftsman, me bhoys," said the tinker. "But since ye seem to be sharin' of this Sassenach mania for the written word, then feast your eyes on this." Out of his patched garments he produced a letter of admittance, dated two years ago and signed by McMurtrie himself.

The doorman scanned it carefully, the more so as McMurtrie was eight months dead, the nice white-haired old gentleman, struck down by one of these new-fangled autos as he crossed this very street. But it gave a clear description of Sean O'Meara, occupation tinker, and set no time limit.

He handed it back. "In yer goes, then," he conceded, "though why they—Nev' mind! Behyve yerself is all I got ter sye."

Sean O'Meara nodded gaily and disappeared into the building. The doorman scratched his head. You never knew, you didn't, and those Irish were an uppity lot, a bad lot. Here Mr. Asquith was trying to give them Home Rule and the Ulstermen were up in arms about it!

—Sabor Tombak had no trouble getting past the private secretary, who was a Galactic himself, but he sadly puzzled the lesser employees. Most of them concluded, after several days of speculation, that the tinker was a secret agent . . . it was well known that Benson & McMurtrie had enough financial power to be hand in glove with the Cabinet itself. They weren't so far off the mark at that.

The inner office was a ponderosity of furniture and sepia. Tom-

bak shuddered and knocked out his pipe. Usrek Arken, alias Sir John Benson—grandson of the founder, who had actually been himself—started. "Do you have to bring that foul thing in here?" he complained. "The London air is bad enough already without you polluting it."

"Anything would be welcome as a counter-irritant to this stuff," answered Tombak. His gesture included the entire office. "Why the Evil don't you guidance boys get on orbit and guide the English into decent taste? An Irish peasant without a farthing in his pocket has better-looking quarters than this kennel."

"Details, details." There was a sarcastic note in Arken's voice which did not escape Tombak. The word had somehow become a proverb in his absence.

"Better get hold of the boss and let me report," he said. "I've got an earful to give him."

"An eyeful," you mean," replied Arken. "Written up in proper form with all quantitative data tabulated, if you please."

"Oh, sure, sure. Gimme time. But this won't wait for—"

"Maybe you don't know we have a new boss," said Arken slowly.

"Huh? What happened to Kalmagens?"

"Killed. Run over by a bloody Designer-damned petroleum burner eight months ago."

Tombak sat down, heavily. He had had a great regard for Kalmagens, both professionally—the Franco-Prussian business had been handled with sheerly beautiful art-

istry—and as a friend. He dropped into fluent Gaelic for a while, cursing the luck.

Then he shook himself and asked: "What's the new man like?"

"Harban Randos of Garris. Young fellow, fresh out of his apprenticeship. A very good psychotechnician, but seems to think the psychotechnic laws will cover every situation." Arken scowled. "And the situation right now is nasty."

"It is that," agreed Tombak. "I haven't seen many newspapers where I've been, but it's past time Kaiser Wilhelm was put across somebody's knee." He jumped back to his feet with the restless energy of two years tramping the Irish roads. "Where's Randos now? Damn it, I want to see him."

Arken lifted his brows. "All right, old chap. If you really insist, I'll call him for you, and then I'll crawl under the desk and wait for the lightning to subside."

He buzzed for the secretary and told him in English: "Send Mr. Harrison to me, please." That was for the benefit of the non-Galactic employees. When the door had closed, he remarked to Tombak:

"You know how complicated the secrecy requirement can make things. Bad enough to always have to look your Earth-age, and officially die every fifty years or so, and provide a synthetic corpse, and assume a new face and a new personality. But when you're at the top, and all the leading autochthones know you as an important man—Chaos! We have to fob Randos off as a senior clerk, freshly hired for nepotistic reasons."

Tombak grinned and tamped his pipe. He himself was in the lowest echelon of the 5000 Galactics serving on Earth, and refused to study for promotion. He liked being soldier and sailor and cowboy and mechanic and tramp, all to gather knowledge of how the Plan was progressing on the level of common humanity.

A plump, undistinguished form, in somber clothes that looked highly uncomfortable, entered. "You sent for me, sir?" The door closed behind Harban Randos. "What's the meaning of this? I was engaged in an evaluation of the political dynamics, and you interrupted me just as I was getting the matrix set up. How many times do I have to tell you the situation is crucial? What the Chaos do you want now?"

"Sir Randos . . . Sabor Tombak, one of our field agents, just in from a survey of Ireland," murmured Arken. "He has important new information for you."

Randos did not bow, as urbanity demanded. He looked tired and harried. "Then file it and mark it urgent, for Designer's sake!"

"Trouble is," said Tombak imperturbably, "this is not stuff that can be fitted into a mass-action equation. This concerns individual people—angry people."

"Look here—" Randos drew a ragged breath. "I'll take time to explain to you." His tone grew elaborately satirical. "Forgive me if I repeat what you already know.

"This planet wasn't discovered till 1798, and it was three years before a mission could be sent. The

situation was plainly critical, so much so that our men couldn't take a century to establish themselves. They had to cut corners and work fast. By introducing technological innovations themselves, and serving with uncanny distinction in several countries' armed forces and governments, they barely managed to be influential at the Congress of Vienna. Not very influential, but just enough to get a stopgap balance-of-power system adopted. Not enough to prevent the wave of anti-democratic reaction and the subsequent revolutions . . . but they did stave off a major catastrophe, and settled down to building a decent set of governments. Now their whole work is in danger.

"Kalmagens' death threw everything into confusion," went on Randos. "I suppose you know that. You fellows carried on as best you could, but the mass is not identical with the sum of the individuals concerned. There are factors of tradition, inertia, the cumbersome social machinery . . . it takes a trained man to see the forest for the trees. Things have rapidly gone toward maximum entropy. An unstable system of checks and balances between rival imperialisms is breaking down. We have less than a year to avert a general war which will exacerbate nationalism to the point of insanity. I have to develop a program of action and get it into effect. I have *no* time to waste on details!"

"The Turkish-Italian war was a detail, of course," said Tombak blandly.

"Yes," snapped Randos. "Un-

fortunate, but unimportant. The Ottomans have had their day. Likewise this Balkan business."

"Saw a paper on the way here. Sun Yat-Sen's government is having its troubles. Are all those Chinese another detail?"

"No, of course not. But they can wait. The main line of development toward full status is here in Western Europe. It happened by chance, but the fact is there. It's European civilization which has got to be saved from itself. Do you realize that Earth is only a century or so from atomic energy?" Randos took an angry turn around the office. "All right. I'm trying to work out a new balance, an international power alignment which will hold German ambition in check until such time as their Social Democrats can win an unmistakable majority and oust the Prussian clique. After that we can start shoving all Europe toward limited federalism. That's the objective, sir, the absolute necessity, and your report had better have some relevance to it!"

Tombak nodded. "It does, chief, I assure you. I've talked with thousands of Irish, both in Ulster and the south. Those two sections hate each other's intestinal flora. The southerners want the present Home Rule bill and the Ulstermen don't. They're being whipped up by the Carson gang, ready to fight . . . and if they do, the Irish-Irish are going to revolt on their own account."

Randos' lunar face reddened. "And you called me in to tell me this?"

"I did. Is civil war a detail?"

"In this case, Sir Tombak, yes." Randos was holding back his temper with an effort that made him sweat. "A single English division could put it down in a month. But it would take all Britain's and France's manhood to stop Germany, and we'd have to drag in a dozen other countries to boot. The United States might get involved. And the USA is the main line after Europe, Sir Tombak . . . they have to be kept out of this mad-dog nationalism to lead the world toward reason when their day comes." He actually managed to show his teeth. "I'll forgive you this time on grounds of ignorance. But hereafter submit your reports in properly written form. The next time you disturb me with a piddling detail like Ireland, you'll go back to Sagittarius. Good day!"

He remembered to assume a meek look just as he was opening the door.

There was a silence.

"Whoof!" said Tombak.

"Second the motion," said Arken.

"But I warned you."

"I need a drink. Damn these masochistic British tavern hours!" Tombak prowled over to the window and looked gloomily down at the traffic. "Kalmagens was an artist," he said, "and artists don't worry about what is detail and what isn't. They just naturally see the whole picture. This chap is a cookbook psychotechnician."

"He's probably right, as far as he goes," said Arken.

Tombak shrugged, "Maybe. I dunno. I guess we'll just have to wait and see."

PETER MORTENSEN was born north of the Danevirke, but after 1864 his people were reckoned German, and he was called up in 1914 like anyone else. Men died so fast on the eastern front that promotion was rapid, and by 1917 he was a captain. This did not happen without some investigation of his background—many Schleswig Danes were not very glad of their new nationality—but Graf von Schlangengrab had checked personally on him and assured his superiors of his unquestionable loyalty. Indeed, the count took quite a fancy to this young man, got him transferred to Intelligence, and often used him on missions of the utmost importance.

Thus the official record, and in the 20th century Anno Domini the record was more than the man—it was the man. To Galactics such as Vyndhom Vargess and Sabor Tombak, it was convenient: records are more easily altered than memories, if you have the right gadgets. So Vargess was now von Schlangengrab and Tombak called himself Peter Mortensen.

Tombak, née Mortensen, sat with a dozen men in a leading car of the sealed train. It was damp and chilly, they all huddled around a small stove. Beneath them, the wheels clicked on rain-slippery rails. Now and again the train whistled, shrill and lonesome noise across the graves of a thousand years of war. They held blue hands toward the stove, rolled cigarets, and talked among themselves. "Cold, it's been a long time cold, and not enough fuel any more.

Sometimes I wonder what it ever felt like to be warm and dry."

"Be colder than this in Russia, lad. I've been there, I know."

"But no fighting this time, thank God. Just taking that funny little man toward St. Petersburg . . . why the devil's he so important, anyway? Hauled him clear from Switzerland in his own special train, on orders of General Ludendorff, none less, one small Russian crank."

"What say, Captain?" asked someone. "Are you allowed, now, to tell us why?"

Tombak shrugged, and the faces of peasants and laborers and students turned to him, lost between military caps and shoddy uniforms but briefly human again with simple curiosity. "Why is it, sir? Is he a secret agent of ours?"

"No," I'd not say that." Tombak rolled himself a cigaret, and a corporal struck a match for him. "But it's very simple. Kerensky has overthrown the Czar, you see, but wants to keep on fighting. This Ulyanov fellow has a good deal of influence, in spite of having been an exile for so long. Maybe he can come to power. If he does, he'll make peace on any terms . . . which is to say, on German terms. Then we'll no longer have an eastern front to worry about." Tombak's leathery face crinkled. "It seems worth trying, anyhow."

"I see, I see . . . Thank you, Captain . . . Very clever—"

What Tombak did not add was that von Schlangengrab had been given the idea and told to execute it by a senior clerk in an English brokerage house, over an undetect-

able sub-radio hookup. This clerk, Mr. Harrison, had checked Galactic records on Ulyanov—whom Kalmagens had once met and investigated in London—and run a psychotechnic evaluation which gave the little revolutionary a surprising probability of success.

"Maybe then we can finish the war," muttered a sergeant. "Dear God, it's like it's gone on forever, not so?"

"I can't even remember very well what began it," confessed a private.

"Well, boys—" Tombak inhaled the harsh wartime tobacco and leaned back in a confidential mood. "I'll tell you my theory. It was the Irish who began it."

"Ach, you joke, Captain," said the sergeant.

"Not at all. I have studied these things. In 1914 there was a great deal of international tension, if you remember. That same year the Home Rule bill was so badly handled that it alienated the Ulstermen, who were egged on by a group anxious to seize power. This caused the Catholic Irish to prepare for revolt. Fighting broke out in Dublin in July, and it seemed as if the British Isles were on the verge of civil war. Therefore our General Staff decided they need not be reckoned with for a while, and—"

—And the Sarajevo affair touched off the powder. Germany moved in accordance with long-laid plans because she did not expect Britain to be able to fulfill her treaty obligations to Belgium. But Britain wangled a temporary Irish settlement and declared war. If the

English had looked more formidable that year, the Germans would have been more conciliatory, and war could have been postponed and the Galactic plans for establishing a firm peace could have gone on toward their fruition.

"Captain!" The sergeant was shocked.

Tombak laughed. "I didn't mean it subversively. Of course we had to fight against the Iron Ring. And we will conquer."

Like Chaos we will. The war was dragging into a stalemate, neither side could break the other, not when Russia had gone under.

If Russia did make peace, Randos had calculated, then the stalemate would be complete. Peace could be negotiated on a basis of exhaustion in another year, and America kept out of the mess.

Privately, Tombak doubted it. On paper, it looked fine: the quantities representing political tensions balanced out nicely. But he had lived in America some twenty years ago, and knew her for a country which would always follow an evangelist. Like Wilson—whose election had hinged on one obscure county in California. Randos assured him that the personality of the leader meant little . . . it was a detail . . . but—

At any rate, the main thing right now was to get Russia out of the war, so that she might evolve a reasonably civilized government for herself. Exactly how the surrender was to be achieved, was another detail, not important. This queer, bearded Ulyanov with the bookish diction and the Tartar face was the

handiest tool for the job, a tool which could later be discarded in favor of the democrats.

The train hooted, clicking eastward with Ulyanov aboard.

His Party name was Lenin.

TOMBAK had not been in New York for three decades. It had changed a lot, everywhere he saw the signs of a feverish prosperity.

On other planets, in other centuries, he had watched the flowering and decay of a mercantile system, big business replacing free enterprise. For certain civilizations it was a necessary step in development, but he always thought of it as a retrogression, enthroned vulgarity grinding out the remnants of genuine culture, the Folk become the People.

It was a brisk fall day, and he stepped merrily along through the crowds, a short sunburned broad-shouldered young man, outwardly distinguished only by a cheerfully serene air. Nor was he essentially different inside: he was a full human creature with human genes, who simply happened to have been born on another planet. His environment had affected him, balancing anabolism and catabolism so well that he had already lived 2000 years, training mind and body . . . but that didn't show.

He turned off onto Wall Street and found the skyscraper he was looking for and went up to the sacrosanct top floor. The receptionist was female this time, a very pretty one: woman suffrage had eased the team's problems by allow-

ing them to use their wives and girl friends more openly. For a moment he didn't recognize her, the face had been changed. Then he nodded. "Hello, Varra. Haven't seen you since . . . good Designer, since the Paris Exposition!"

"We had fun then," she smiled dreamily. "Care to try it again?"

"Hmmm . . . yes, if you'll get rid of that godawful bobbed hair and cylindrical silhouette."

"Isn't it terrible? Usrek ran a computation for me, and the Americans aren't going to return to a female who looks like a female for years."

"I'll get myself assigned back to Asia, then. Bali, for choice." Tombak sighed reminiscently. "Just worked my way back from there—deckhand on a tramp steamer to San Francisco, then followed a harvesting crew across the plains, then did a hitch in a garage. Lots and lots of data, but I hope the boss doesn't want it tabulated."

"He will. Want to talk to him? He's in the office now."

"Might as well get it over with."

Tombak went through the door into the office of the president. It was Usrek Arken again, alias the financier Wolfe . . . a name chosen with malice aforethought, for wolf he was on Wall Street. But what chance did brokers and corporations, operating mostly by God and by guess, have against a million-year-old science of economics? Once Randos had decided England was declining as a world power, Wolfe's dazzling rise was a matter of a few years' routine.

Arken was in conference with

Randos, but both rose and bowed. The chief showed strain, his plumpness was being whittled away and even the best total-organismic training could not suppress an occasional nervous jerk. But today he seemed genial. "Ah, Sir Tombak! I'm glad to see you back. I was afraid you'd run afoul of some Chinese war lord."

"Damn near did. If it hadn't been for our Mongoloid agent in Sinkiang—well, that's all past." Tombak got out his pipe. "Had a most enjoyable trip but of course I've been out of touch with all the big events. What's been happening?"

"Business boom here in the States. That's the main thing, so I'm concentrating on it. Tricky."

Tombak frowned. "Pardon me, but why should the exact condition of business in one country be crucial?"

"Too many factors to explain in words," said Randos. "I'd need psychodynamic tensors to convince you. But look at it this way—

"Let's admit we bungled badly in '14 and again in '17. We let the war break out, we let America get into it, and we underestimated Lenin. Instead of a republic, Russia now has a dictatorship as ruthless as any in history, and paranoid to boot; nor can we change that fact, even if the rules allowed us to assassinate Stalin. We hoped to salvage a kind of world order out of the mess: once American intervention was plainly unavoidable, we started the 'War to end war' slogan and the League of Nations idea. Somehow, though, the USA was

kept out of the League, which means it's a farce unless we can get her into it."

Thanks for the "we," thought Tombak grimly. With the benefit of hindsight, he knew as well as Randos why the Russian Revolution and the Versailles peace had gone awry. Lenin and Senator Lodge had been more capable than they had any right to be, and Wilson less so . . . the poor man had been no match for practical politicians, and had compounded the folly with his anachronistic dream of "self-determination." (Clemenceau had passed the rational judgment on that idea: "*Mon Dieu!* Must every little language have a country of its own?") But individual personalities had been brushed aside by Randos as "fluctuations, details, meaningless eddies on the current of great historical trends."

"We still have an excellent chance, though," went on Randos. "I don't quite like the methods we must use, but they're the only available ones. Wall Street is rapidly becoming the financial capital of Earth, a trend which I have been strengthening. If finance can be maintained as the decisive power, within twenty years America will be the leader of the world . . . no one else will be able to move without her okay. Then the time will be psychologically ripe for Americans to get the idea of a new League, one with armed force to maintain the peace. The Soviets won't stand a chance."

Tombak scowled more deeply. "I can't argue with your math, Sir Randos," he answered slowly, "but

I got a hunch—"

"Yes? Go on. You were sent around the world precisely so you could gather facts. If those facts contradict my theories, then of course I'm wrong and we'll have to look for a new approach." Randos spoke magnanimously.

"Okay, buster, you asked for it," said Tombak in English. He returned to Galactic: "The trouble is, these aren't facts you can fit into mass-action equations. They're a matter of, well, *feel*."

"Nationalism's rising in Asia. I talked with a Japanese officer in Shanghai . . . we'd gotten drunk together, and he was a very fine fellow, and we loved each other like brothers, but he actually cried at the thought someday he'd have to take potshots at me."

"The Japanese have talked about war with the United States for fifty years," snorted Randos. "They can't win one."

"But do *they* know that? To continue, though—People, Western people, don't like the present form of society either. They can't always say why, but you can tell they feel uprooted, uneasy . . . there's nothing about an interlocking directorate to inspire loyalty, you know. The trade unions are growing. If capitalism goes bust, they're going to grow almighty fast."

"Of course," nodded Randos, unperturbed. "A very healthy development, in the right time and place. But I'm here to see that capitalism does not, ah, go bust. Mass unemployment—You know yourself how unstable the Weimar Republic is. If depression is added

to all its other troubles, dictatorship will come to Germany within five years."

"If you ask me," exploded Tombak, "there's too bloody damn much confidence around. Too many people are playing the stock market. It has a hectic feel, somehow. They'd do better to save their money for an emergency."

Randos smiled. "To be sure. I'll admit the market is at a dangerous peak. In this month, it's already shown some bad fluctuations. That's why Wolfe is selling right now, heavily, to bring it down."

Usrek Arken stirred. "And I still think, Sir Randos," he muttered, "that it'll cause a panic."

"No, it won't. I have proved, with the help of games theory, that—"

"Games theory presupposes that all players are quite rational," murmured Tombak. "I have a nasty suspicion that nobody is."

"Come, now," chided Randos. "Of course there are non-rational elements. But this civilization is in a highly cerebral stage."

"What you ought to do," snapped Tombak, "is get away from that computer of yours and go out and meet some Earthfolk."

Frost congealed on Randos' words: "That is your task, Sir Tombak. Please report your findings and stand by for further assignment. Now, if you'll pardon me, I'm busy."

Tombak swapped a glance with Arken and went out. He chatted for a while with Varra and made a date for the next evening: Thursday, October 24, 1929.

The flames jumped up, lighting their faces: grimy, unshaven, gaunted by wind and hunger, but American faces. Tombak thought he had fallen in love with America. A Galactic had no business playing favorites, and it was perfectly obvious that in another hundred years Earth's power center would have shifted to Asia, but something in this country suited him. It still had elbow room, for both body and soul.

Far off (but coming along the rails near the hobo jungle, a train whistled. Tombak wondered how many times, how many places, he had heard that noise, and always it meant more lonesomeness.

"I looked at the schedule in the station." A thin man with glasses jerked his thumb at the town, a mile away. "Be a freight stopping at midnight, we can hop that one."

"If the dick don't see us," mumbled Robinson. "They got a mean dick in this place."

"I'll handle him, if it comes to that." Tombak flexed stumpy strong fingers. Maybe a Galactic shouldn't take sides, but there were some people whose faces he enjoyed altering . . .

"Be careful, Jim," murmured Rose McGraw. She leaned against Tombak with a pathetic possessiveness.

In a better age, he thought, she would have been somebody's contented housewife, minding the kids in suburbia, not tramping over a continent in a ragged print dress, rain in her hair, looking for work . . . any kind of work. Too late now, of course, at least till the war with

Japan made jobs. But Randos had predicted Japan would not attack till early 1942, give or take six months, and he was usually right about such things. Almost six years to go. Of course, initially he had thought the Japanese would never fight, but contrary evidence piled up—

“Don’t worry about me,” said Tombak gruffly. He felt again the tugging sadness of the quasi-immortal. How many years on Earth, how many women, and with none of them could he stay more than a few months. Rose McGraw had to become a fading memory fast bound in misery and iron for the sake of her descendants a thousand years hence.

“Think Roosevelt’s gonna win?” asked Robinson. He mispronounced the name.

“Sure, Landon hasn’t got a prayer” The man with glasses spoke dogmatically; he had had some education, a long time ago.

“I dunno, now. Old man Roosevelt, he’s for us, but how many of us stay in one place long enough to vote?”

“Enough,” said Tombak. He had no doubt of the election’s outcome. The New Deal under one name or another was foregone, once the Depression struck. Hoover himself had proposed much the same reforms. Randos had not even had to juggle the country—through propaganda, through carefully planted trains of events—to get FDR elected the first time. Tombak would be able to return from this trip and report that the changes were popular and that there was no

immediate danger of American fascism or communism.

The main line of history, always the main line. Since the Rhineland debacle this year, war in Europe was not to be avoided, nor was war in the Pacific . . . Japanese pride and hunger had not been so small a factor after all. Tombak’s mind slipped to the Washington office where Randos was manipulating Senators and Brain Trusters.

“The important thing will be to keep the two wars separate. Russia will be neutral, because she has Japan to worry about, and Germany alone cannot conquer Britain. The United States can defeat Japan in about five years while the European stalemate is established. Then and only then must Germany and Russia be goaded into war with each other . . . two totalitarianisms in a death struggle, weakening as they fight, with America armed from the Japanese war and ready to step in and break both of them. After that we can finally start building an Earth fit to live on.”

An Earth which had so far gone from bad to worse, reflected Tombak. He didn’t deny the bitter logic of Randos’ equations; but he wondered if it was going to develop that way in practice. Roosevelt, who would surely run for a third term, had strong emotional ties—he *could* not see England fight alone, and he could make the country agree with him. And Hitler, now . . . Tombak had seen Hitler speak, and met enough Nazis. There was a streak of nihilistic lunacy in that bunch. Against all sound military principles, they

were entirely capable of attacking Russia . . . which would mean the emergence of the Soviet Union, necessarily aided by America, as a victorious world power.

Well—

“Wonder if we’re ever gonna find a steady job,” said someone in the night.

“Ought to have a guy like Hitler,” said another man. “No nonsense about him. He’d arrange things.”

“Arrange ’em with a firing squad,” said Tombak sharply. “Drive men like Einstein out of the country. At that,” he added thoughtfully, “Hitler and his brown-shirted, brown-nosed bastards are doing us a favor. If this goes on, we’ll have more talent in this country than anybody ever had before.”

And if somebody had the idea of gathering it into one place, what would all that embittered genius do to Randos’ plans?

Bob Robinson shrugged, indifference clothed in faded denim. “To hell with it. I think the stew’s about done.”

HARBAN RANDOS’ eyes looked ready to leap out of their sockets. “No!” he whispered.

“Yes.” Usrek Arken slapped the papers down on the desk with a cannon-crack noise. “Winnis knows his physics, and Tombak and the others have gathered enough facts for him to work on. They’re making an atomic bomb!”

Randos turned blindly away. Outside, Washington shimmered in

the heat of midsummer, 1943. It was hard to believe that a war was being fought . . . the wrong war, with the issues irretrievably messed up, the Soviets fighting as allies of the democracies, Japan half shunted aside to make way for a Nazi defeat that would plant Russian troops in the middle of Europe . . . and meanwhile gnawing away Nationalist China, weakening the nation for communists who had only made a truce and weren’t even respecting it.

“They’re able to,” said Randos huskily.

Tombak nodded. “They’re going to,” he said.

“But they don’t *need*—”

“What has that got to do with it? And after the uranium bomb comes the thermonuclear bomb and— Write your own ticket.” Tombak spoke flatly, for he had come to like the people of Earth.

Randos passed a shaking hand over his face. “All right, all right. Any chance of sabotaging the project?”

“Not without tipping our hand. We could blow up the works, of course . . . fake a German operation . . . but after the war, when they go through German records —”

“Vargess can handle the records.”

“He can’t handle the memories. Not the memories of thousands of people, intrinsically just as smart as you and I.” Tombak bit his pipe-stem and heard it crack. “Okay, Randos, you’re the boss. What do we do next?”

The chief sat down. For a mo-

ment he shuddered with the effort of self-control, then his body was again disciplined.

"It will be necessary to deal firmly with the Russians, force them to agree to a stronger United Nations Organization," he said. "Churchill already understands that, and Roosevelt can be persuaded. Between them, they can prepare their countries so that it'll be politically feasible. The West is going to have a monopoly of nuclear weapons at the war's end, which will be helpful . . . yes—"

"Roosevelt is not a well man," declared Tombak, "and I was in England only a month ago and can tell you the people aren't satisfied. They admire Churchill, love him, but they're going to want to experiment with another party—"

"Calculated risk, of course," said Randos. His confidence was returning. "Not too great."

"Nevertheless," said Tombak, "you'd better start right away to handpick those men's successors and see they get exposed to the facts of life."

"For Designer's sake, leave me alone!" yelled Randos. "I can't handle all those miserable little details!"

RASNAGARTH KRI did not want to spend time interviewing a failure.

Nevertheless, a favorite nephew is a favorite nephew.

He hooded his eyes, and it was a glittering blankness which looked across the desk at Harban Randos and wretchedness.

"It is fortunate," he said, "that an experienced man of your race was available to take charge. For a while I even considered breaking all the rules and letting Earth know the facts immediately—but at this stage of their society, it would only be a slower damnation for them, extinction is more merciful. Whether or not the new man can rescue the planet remains to be seen. If he fails, then of course the whole world is lost. At best, it has been retarded two centuries, and several million people are needlessly dead."

Randos stiffened his lips, which had been vibrating, and answered:

"Sir, you were getting my annual reports. If I was unsatisfactory, you should have recalled me years ago."

"Every agent is allowed some mistakes," Kri told him. "Psychodynamics is not an exact science. Furthermore, your reports, while quantitatively accurate, were qualitatively—lifeless. They conveyed nothing of the feel. Until the fact leaped out that nationalism and atomic energy had become contemporaneous, how could I judge?"

Feel! Randos thought of Sabor Tombak . . . the smug, pipe-sucking pig! He hoped Tombak would be killed; plenty of chance for that, in the next fifty or a hundred years of Earth's troubles.

"I used the standard methods, sir," he protested. "You have seen all my computations. What else could I do?"

"Well—" Kri looked down at his desk. "It's hard to answer that. Let me just say that human nature is

(Continued on page 116)

Dearest Enemy

*Well trained actors are taught
the old tradition that the
show must go on. But what's
the point of it all when your
audience is very, very dead?*

BY FOX HOLDEN

FROM SOMEWHERE there was a buzzing sound. It kept repeating. The gentle throb of it vibrated his eardrums; the vibrations registered somewhere at the bottom edges of his brain. Buzzzz. Insistently, like a wasp. Like a trapped wasp . . . But there were no wasps in the streamlined metal shell of Vanguard-I.

Better answer another part of his brain whispered. *Better answer . . . they want to tell you what to do . . .*

God!

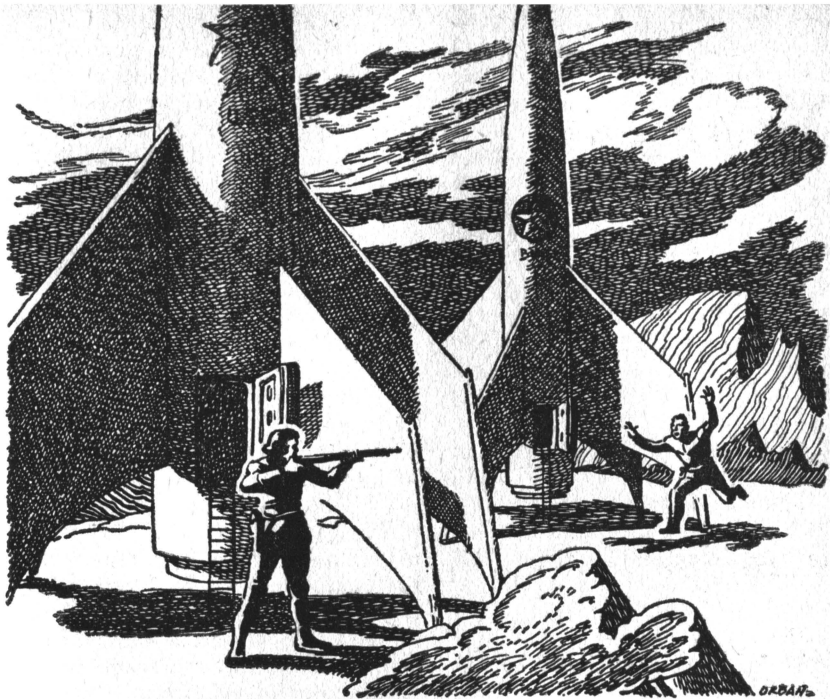
Some sweat oozed from the dark bunches of his eyebrows, fogged the binocular eye-piece of the orbit-synchronized refractor, but he kept watching, he could not stop watching. *Buzzz! Buzzzz!*

Red goutts of flame, as big as a pin-head, as big as a shirt-button, as big as—damn the fogging-up! No, no it was the mushrooms, not the fogging; you could count them, like puffs of gunsmoke along a firing-line stippling the Atlantic seaboard, now branching, riddling westward—others drifting eastward from the Pacific as though groping toward a pre-planned rendezvous.

Buzzzz! Buzzzz!

He would answer. There would be the sound of another man's voice and that would make it all real. If he silenced the buzzer and listened to the voice it would be real and not a final training-film; the films would be over, the lectures over, the flight-tests over, the eliminations over and he and Streeter chosen and Streeter dead and buried at Space and now he was alone up in Vanguard-I . . .

Vanguard-I was "up" and Earth



Illustrated by Paul Orban

was “down” and both were real. Beyond the buzzing, both would be real.

The strong young voice was an old voice as it answered the buzzing, as it gave sound to words for the UHF’s panel-mike.

“Home Plate, Home Plate, this is Mrs. Grundy, over . . .”

“Mrs. Grundy this is Home Plate. Are you reading? Are you ready for a circus or is all your money gone? Over . . .”

“Ready for a circus. Regret delay in acknowledging. I—was in Observation, over.”

“Mrs. Grundy, your Daddy-o

wants to talk to you so bye bye baby . . .”

General Knight himself. Knight himself to talk to him . . . so it was that bad

Of course it was that bad!

“Mrs. Grundy can you read, over . . .” Knight’s voice. It sounded calm. It sounded unruffled. You had to know Knight, you had to have heard him often to know that it was not calm, that it was not at all unruffled . . .

“Even the small print Daddy-o, over . . .”

“No words twice so baby make marks—” Thorn’s hand flashed to

the card-punch and magnetic-tape unit switches, flicked them to ON-RECORD. "—been surprised, but not taken completely off balance; retaliation now in progress as you have probably already observed or will observe in course of orbital passage. Plan Able Zebra effective immediately . . ." The words were coming so fast they were slurred, and Knight was exaggerating his own Alabama accent. "Expect report once each turn . . ."

He would not have needed the recording or even words twice. Each of Knight's directions was graven into him as it was spoken.

To cease all scientific observation and recording at once; to begin military observation of the Enemy and his puppet-states, and all possibly-discernible activities, immediately. To remember that as the coast of California appeared on his horizon he was to begin transmitting in code, and that he would finish transmitting before the Atlantic coast disappeared over the horizon behind him. To remember that his stores of fuel were for orbit-correction only, to be used for effecting an Earthside landing only upon explicit and properly-coded order, or upon threat of otherwise unavoidable destruction. To calculate present stores of food concentrate and air to the hour if possible, not forgetting that with Streeter gone the time-lapse between rendezvous with the supply rocket should be at least doubled. To remember a thousand things; things he already knew by rote . . . but the tape and card-punch units clicked softly away, recording, re-

ording . . .

" . . . and Mrs. Grundy here's a morsel for you—you may have a new neighbor in your block but not like you at all—there's probably a world between you—don't take any wooden nickels baby. Say good-bye to Daddy-o baby, over . . ."

"Home Plate this is Mrs. Grundy sees all and heard everything, out."

The whole transmission had taken less than two minutes. Now the UHF was off and there was one break, anyway. If, somehow, the Enemy had succeeded in getting up a satellite of his own, he had at least—according to Knight—sacrificed the ability to directly monitor Thorn's radio for invisibility. Vanguard-I was aloft for geophysical purposes only, according to the propaganda-pitch back home. But as far as Big Red knew, it was loaded to the locks with as much armament as a thing of its comparatively tiny size could carry.

And as far as Thorn himself knew, nobody making geophysical observations had ever needed to do it through the tubes of missile-launchers like the ones that were cuddled snugly in Vanguard-I's blunt forehull . . .

Such little thoughts whipped quickly through his mind as he tried to make it regain balance for the immediate tasks besetting him, because they were little and simple and easy to grasp and discard. They could keep him from going crazy. It was the bigger thoughts—the bigger ones that might come later—they were the kind he had to keep out of his head.

Major Joshua Thorn began his

work with the equipment, to modify it for use as Daddy-o had told him.

He could do it automatically, do it in his sleep, do it blind. Couldn't watch and do it, though. Watch later. Think of the little things now that were easy while the equipment got automatically modified. Little things to keep the big ones like what was happening down there from tipping him over into the whirlpool of madness that was trying so hard to pull at him.

Little things . . .

"PLEASE BE seated, Major Thorn."

"Yes sir."

"This will be your Final Security interrogation. To be followed, upon its favorable completion, by Final Briefing. Before we begin, do you have any questions, Major?"

The thick lenses of the glasses reflected the interrogation cubicle's harsh lighting and would not let him see accurately into the pale eyes that blinked behind them. But it was almost as though he and Brigadier Robert McQuine, USAF, Intelligence, were old friends. And the sweating faces of the three G-2 psychiatrists that gleamed at McQuine's left on the opposite end of the big oval-shaped conference-table—they were more than familiar. They had never thought he, Thorn, was really sane. What really sane man who had flown twice too many missions in one war would volunteer to fly in the next that followed? What sane man would go begging for military flight-test as-

signments in weird ships that had never been flown anywhere but in a wind-tunnel and on computer-tapes. And what sane man—God help him—what man in his senses would ask to be fired a thousand miles off the Earth with only the knowledge that a thing the size of a basketball had circled the planet successfully for almost a year before it fell back and burned up?

Had the Major ever had thoughts of—well, of doing away with himself? Had the Major hated his father when he was young? Been afraid of girls? (Oh, is that a fact, Major? Well! Well, now . . .)

Only the faces of the three Senate Committee members were different. But they usually were.

"Yes sir, one question. It was my understanding—and Captain Streeter's, I'm sure—that Final Security and Briefing had been scheduled for about nine weeks from now. There has been no acceleration in the final phases of our program, so—"

"I, ah—" McQuine interrupted smoothly "think that question might best be answered by your Final Briefing officers, Major. Now, any other questions?"

"No sir." So that was it, all right. The rumors, as usual, had a germ of truth in them. All rumors did. And these had been more persistent than most. *Cold war not so cold anymore. General Adams transferring. That last note from Big Red—didn't all get to the papers! Cold war not so cold anymore . . .*

"Now, Major, when you were a sophomore in high-school—the

book entitled *A World United* was not on your required English or Political Science reading lists, was it?"

"No sir, not as I recall, but—"

"Then why did you read it? You have admitted before that you *did* read it—"

Pause. All up to him. Every single word, every single inflection, up to him . . .

"I took quite an interest in my studies, both in high-school and in college, sir, as I believe my records will show you. They'll show that I also read books relating to other courses that weren't a regular part of the curriculum . . ."

Nodding. But looking him squarely in the face, hesitating just the right length of time. Then suddenly "Major Thorn do you swear here and now in the presence of witnesses that your allegiance to your country comes first above all with the sole possible exception of Almighty God?"

"I do so swear . . ."

And on and on . . .

". . . why did you major in the Fine Arts in high-school, switch to Engineering in college, then switch again to take your degrees in World History and Political Science . . . were you ever heard to say, or reported to have said, or did you in fact say . . . Major, I have here the records of . . ."

The Senators had their questions. The psychiatrists had theirs.

". . . hesitation, Major, in firing upon an Enemy aircraft, even though disabled . . . guilt-feeling at destroying a city containing almost one million people . . . Major

you told us that . . . training for five years, now, and you realize . . ."

More and more and more, but it was not so difficult to keep his nerves straightened out as it had been the first time or the next time after that. He had told the absolute truth as far as he could possibly know it. So it was just a matter of giving the same answers he had always given. Let 'em make what they could of the truth . . .

"Yes, Senator, I readily admit having written my senior essay on the basis of the book *A World United*. Yes sir, I studied philosophy and some foreign languages in college . . . No sir—no sir, nothing like that. No. Never . . ."

And then hardly an hour after it was all over, less than an hour to relax for Streeter and himself, cooped up in a single room with cigarettes and magazines and nothing else and nobody else to talk to, hardly an hour, and then Final Briefing was underway.

General Groton: Typical Orders of Procedure.

General Simms: Technical Details.

General Orton: Estimate of the Present Situation. *Rumors, hell . . .*

And then the Secretary of Defense himself.

"Major Thorn, Captain Street-er . . . There is probably little I can add to all that has been so thoroughly ingrained in you in your five years of training for this experiment, or learned by both of you, the hard way, in war. But there are certain points I feel I ought to emphasize personally . . . even though I know you've heard

them many, many times before.

"First, this is your country. In the adventure—in the duty, that you are about to undertake, there must be no mistake that your nation comes above *all* other considerations! Now, I don't question your devotion, I merely re-impress . . ."

Pause. The man was good, all right.

"Second, despite what you may have heard from—from any of various sources in recent months, our cold-war Enemy is hard-pressed; he is desperate, and he is likewise determined. Determined as even you may not guess. Our Intelligence has learned that he has trained women to bear arms as well as children for his armies. He has trained them to march, to bivouac, to fly intercontinental bombers, to fly rocket interceptors, to go to the attack with men—and on an equal basis, and in almost equal numbers. A point to remember, even from where you shall soon sit! Don't forget it.

"Last, if—and we all pray that it won't happen in this or any other generation—but, *if* war should come—if some unsuspecting midnight it should suddenly erupt (and such eruption would be on both our shores, smashing all of our greatest cities even as we retaliated) if this happens, gentlemen, you must not forget one thing. You must not forget for an instant that in such a war, *all* the Enemy must die.

"If I sound melodramatic forgive me, and bear with me. You both realize, I'm certain, that any Next War would be a war to the

death. After which—" the skillfully-modulated voice lowered, softened, paused, softened again . . . "After which, there will be only one of us left. *Because there will be no time for armistice, for truce. . .* It will be Our Side, or Theirs. Gentlemen, it *must be Ours!* So if there is war, I repeat, all the Enemy must die!

"That's all I have, except to say good luck and God-speed."

Very firm hand-shake for each of them, and Final Briefing was over.

Even yet Joshua Thorn could remember that first emotion shared by himself and Streeter after the effects of the four-G blast-off had worn away, after the tension of establishing orbit was eased, the first report made to Home Plate, and they were at last granted a moment's rest, a moment's respite to look back, to realize . . .

Done it. Done it . . . They had done it!

They could almost see themselves, the National Emblem emblazoned brilliantly on their chalk-white metal skin, riding in dignified, silent triumph over all of the Earth. Now let anybody—anybody, anybody anywhere (for weren't they above all of anywhere?) shake a fist, rattle a sabre!

First Men in Space. Like God, somehow . . .

They thudded each other on the back, they yelled things they could not remember, they let the tears flood down their cheeks without noticing, and they laughed; they laughed long and loudly with words

and wordlessly, and then they watched again, watched mighty Earth below them turning by some power that was not theirs to see on an invisible spit over Infinity.

It was at the end of the fourth month that Streeter died.

"Josh? Josh what's our trouble?" Young, earnest. Wiry and pink-cheeked and an eternal glint of excitement in his light blue eyes.

Thorn kept studying the instruments as he answered, slowly, and without alarm in his voice. It wasn't much, but the bunching of his thick eyebrows had given him away. It always did.

"Port reflector's all, I guess, Johnny. Been watching it; a hair off, so we're down just enough BTU's to make a dent in power supply. Must have come out a little cockeyed when we popped it. Want to watch the panel a few minutes while I—"

"Second-guessed you, Skipper—" Johnny Streeter was already halfway into a pressure-suit. "Just zip me up the back and check my petticoat . . ."

Josh Thorn grinned, closed Johnny's suit, secured his soap-bubble helmet. They'd both been Out before so it wasn't as if this was the first time. It was just that this was the first time it *had* to be done.

"Suit-check, Johnny . . ."

"I read you—" crackled the bulkhead audio.

"Air?"

"Fourteen point seven psi, oxygen 26 per cent, nitrogen . . ."

They finished the check; all the complex machinery of Baggy-Drawers was functioning perfectly.

Then Instrument Check—Methodically, Johnny's gauntleted mitts touched each magnetic hook on the wide girdle, named each implement suspended from it, replaced it.

"Can I go out and play now?"

"Be a good boy, Johnny."

The lock hissed, cycled down, and then Thorn was hearing the metallic noises of Johnny's feet striding ponderously like some story-book Colossus along the "upper" hull, sternward, and then to port.

"Be a cinch, Josh," the audio crackled. "If they're all this easy I'll feel like a draft-dodger! Maybe if I swab the deck while I'm ou—" A sound that wasn't Johnny but it was.

"Johnny? Johnny, do you read me?" Josh Thorn could feel sweat dripping on his stomach. "Johnny—"

He left the mike, made his way aft in clumsy haste, the simulated gravity confusing long-conditioned reflexes. And he listened beneath the hull section over which Johnny would be. Listened for a thump, a scrape of metal on metal, a vibration of life . . .

Nothing.

His own Baggy-Drawers seemed built for a midget with one leg as he struggled into it. cursory check—enough, she worked, she'd have to . . .

Out. Aft. Port. Johnny . . .

Johnny Streeter was still standing, but it was an odd kind of stance; the stance of a marionette on slack strings. Motionless. Standing by the reflector mast, some of his magnetized instruments cling-

ing to it.

And then he saw Johnny Street-er's helmet, and saw that it was no longer transparent. Josh tasted vomit on his lips.

A chance in how many million, how many billion? What was it the statisticians had said? About the same chance as a fatal auto accident, having a meteor hit you . . .

EQUIPMENT CONVERTED, recalibrated for Earthside observation. Equipment checked. Emergency reflectors out (power drain still damned heavy) and radar full out; close-down scanners on, recording equipment humming, ready . . . Coast coming up in—oh-nine minutes, three-seven seconds. Tapes ready at play-back, UHF set.

Now wait.

You can watch while you wait . . .

His eyes hurt, their sockets hurt as he pressed them too hard into the binocular eye-piece.

Damn the fogging! Damn the blue fogging—*blue?*

No

It filled the object-lens; it swirled, it calmed, it coalesced, it thinned, and there was a second's sight through it, and then Josh Thorn was swinging the refractor in near-abandon on its panhead . . . there! Clear! Clear, you could see—at the edges! Coming in again, drifting, drifting slowly, drifting . . . blind.

His fingertips slipped, grabbed again, swung the telescope too violently, steadied.

Blue fog, moving slowly, deliberately, and yet so fast, so unbeliev-

ably fast, why, they said it if it ever happened it would take weeks, months, maybe years, but they could've been wrong, so many things they couldn't have known . . .

Blue.

Cobalt blue.

With some force of sheer power of reason, Joshua Thorn forced himself from the refractor; forced himself past the blue-faced scanners (maybe it was only an Enemy trick; an Enemy screen, the biggest blue smoke-screen ever made!) to the UHF. Maybe. Sure. He was overdue. Minutes overdue; they were waiting for him down there, waiting for his call, wondering if perhaps the screen had really fooled him, or if it were really effective in blocking his sight, or if . . .

They were right down there, right underneath him, waiting under the blue smoke-screen.

"Home Plate Home Plate this is Mrs. Grundy over . . ."

Crackling.

"Home Plate Home Plate this is Mrs. Grundy. Home Plate Home Plate what's the matter can't you read? Home Plate Home Plate this is Mrs. Grundy, over . . . *Over!*"

Crackling.

The meters . . . All right—on the nose, right. What were they, asleep down there? Maybe the smoke-screen reflected even UHF. He could try a bounce and see. Narrow beam. Tight. Watch the screen . . .

Pip. Pip. Pip.

Getting through. Lousy smoke, just couldn't see through it . . .

"Home Plate Home Plate Home Plate—"

He had been around fifty times; he had counted. It had taken one hundred hours; he had counted. He had transmitted steadily since the twentieth time, in the few languages he knew beside his own, for sixty hours; he had counted.

He had only a whisper for a voice now, and only aching places where his ears were.

But it didn't matter. It didn't matter.

"Home Plate, this is Mrs. Grundy—

"Can anyone read me? Does anyone read me down there?"

"Kann jedermann mich hören? Antworten-Sie, bitte . . ."

"Repondez, repondez si vous m'entendrez . . ."

"Damn you can't you hear me CAN'T YOU HEAR ME?"

He'd tried to keep track of the time.

He thought it had been a month; maybe more, but a month anyway.

And now the blue was solid over Earth, over all of it. There were still little swirls, little eddies of it here and there, but most of it—already, most of it had settled like a fixed shell, like the quiescent surface of a stagnant pool.

And somehow he'd accepted it.

They were all dead down there.

Cobalt blue had killed them all, killed them all . . .

Funny. It had a rhythm to it. Cobalt blue had killed them all, killed them all, Cobalt bombs had killed them all—

STOP IT!

But if they were all dead . . .

And if he were not dead . . .

Then he was the last human being left alive.

That was crazy.

Nobody could be—nobody could be the last—

But there was nobody.

Except him. So, it followed: therefore—ergo: logically, if there was nobody, and if . . .

God it was dark.

God, it was quiet.

And if . . .

If you laugh you'll go crazy.

If you don't laugh, if you don't laugh, if you—hell, only one dose of barbiturate left in the First Aid stores . . . big thing, hard to swallow . . . and if there's nobody left, then . . .

Sleep.

He hadn't touched the UHF in three months, but he'd left it on regardless of the power drain just in case.

He had divided the hours off into sleeping and eating periods, and he had just slept, and just eaten, and he'd shaved, and put on a fresh uniform. He had knotted the tie perfectly; his collar insignia were shined and pinned in place without a single wrinkle.

He had it figured out.

He could die of oxygen, if not food, starvation in five more months, three and one-half more days. And that would be the end of it.

The hell it would! Who the hell did they think they were to do this to him . . .

But he had his computers. He had his reference-tapes. He had his refractor and his scanners, and

his star-charts, and his store of fuel for orbital correction (ninety per cent of which remained, because it had been an almost perfect shot) and he had his brains.

If you threw a stone off the rear of a moving train at a speed *less* than the train's speed forward, the stone would of course leave the train, but in relation to the ground would still be travelling in the train's direction.

If you threw a satellite away from its path around Earth and directly into Earth's wake, but at a speed less than Earth's forward speed in its orbit, the satellite would break free, but would continue in Earth's orbital direction. And then with a brief side-blast, you could warp into an orbit around the Sun all your own, or—into that of the planet Venus, if you chose . . .

And beneath that eternal shell of cloud—who knew?

He had his computers. He had his reference-tapes. He had his refractor and his scanners, and his star-charts and his precious store of fuel. (Three-score years and ten, the Good Book said. Better than five months. Better than sitting and waiting. So he would fail—no worse than what was Below.) And he had his brains.

He worked methodically. He drew schedules: four hours of work, one for eating and relaxation; five hours more of work, and another for food and rest; six hours more of work, then seven for sleep, and then the cycle began again. By making a rhythm of it, he thought, rather than a program of perfectly

equal work-periods, he would avoid monotony. With monotony would come despair, and with despair . . . Despair of course would kill him.

And there was the thing in him that would not be killed; a thing that had been rooted as deep within his kind as Life itself, since the first Man had shambled erect on the face of the still-steaming Earth. He would survive.

As Joshua Thorn, and as Man. He would not let Man die yet. Not out here. Not in the cold dark, alone. Somehow, Thorn thought, Man had earned a better way, a better place to die . . .

But of course it was silly to think that Man should ever die, that he *could* ever die . . .

Ridiculous.

Baloney. Oh, you could kill a lot of people, certainly. Sure. But the whole race of Man—nuts to the philosophers! The only thing they knew how to do was think!

He worked methodically, ascertaining first that at the present point in her orbital swing, Venus, approaching as she was from aphelion, would be in close enough proximity as she passed by to be met within the time limit set by his remaining store of food and oxygen. And he ascertained secondly that he had sufficient "emergency" fuel (and this, he assumed, might be classified as an emergency of sorts?) to blast him out of orbit and into Earth's wake with barely sufficient speed to assure him of not falling back. If the computers weren't lying, there'd even be enough after that to warp him into the gradual, drifting arc that would intercept

Venus in her path around the Sun, and then—perhaps enough to effect landing. Barely, if at all. His taut mouth twitched in a humorless little smile. What an irony to actually succeed—to make it all the way, across the millions of miles of Space, first human in history to accomplish it—and then, maybe one or two hundred feet above surface, to have the final drop of fuel run out . . .

So . . . what was there to lose but the race of Man . . . And that anyway, eventually. Thirty-five more years (if he were lucky; he smiled again) appended to—how many? Half a million?

But half a million years was only a nervous twitch on the skin of Time. A spark in an eternal, all-consuming fire; a spark that died even as it flared its little second and then crumbled into ashes.

HE SMILED a grim little smile, and made a note of the date; it was 1800 hours, October 21. He did not even glance at the pale-blue thing that rolled and shimmered grotesquely a scant thousand miles on his left. Be damned to you! But you are damned already. So good-bye.

His fingers finished the business of tightening the heavy buckle of his seat-belt, and then he punched the red firing-studs, and Vanguard-I broke her bondage.

The ferroelectric brains of the computers considered silently; acted.

The organic brain of the man hazed red, hazed darkly, and trusted, for it was powerless to do

more save fight a primal struggle for consciousness. It could not regard the situation. It could not think: I am the first human being to fly Space. It could not think, of all the things that all the humans in all of history have ever done, I alone have done this.

Roll the drums for Agamemnon,
Roll the drums for Hercules!

Roll the drums for Caesar, Alexander, for Amenhotep, Rameses . . . drum the drums for Khan, for Suleiman, for Plato, Aristides—drum your drums for York and Tudor, Bacon, Michelangelo . . . For Austerlitz. For Yorktown. Chickamauga, Ypres, and Anzio . . .

Roll the drums. Roll the drums for me . . .

Motors off.

Click-hum, computers . . .

Silently.

Wheel your eternal wheeling,
stars.

Darkly.

Cold.

The screens showed white, thick white, and the fuel-pumps disgorged the remainder of Vanguard I's life-blood into the roaring combustion chambers. The muted complaining of heavy atmosphere keened up the scale to a banshee's lament and sweat poured from Josh Thorn's half-nude body as his tiny metal cell grew stifling.

Power—how much power to keep from becoming a vagrant meteorite in Venus' milky skies? From flaring, white-hot, and falling . . . a cinder from nowhere, with nowhere to go, the last of Earth's ashes . . .

One hundred miles.

Fifty. Thirty. Twelve . . .

Cooler, now. He shivered in 105 degrees Fahrenheit, shivered in 99, in 87 . . . His sweat was cold.

Ten thousand feet! Slowing, slowing, a century of time to drop to nine thousand, ease off the power, eight thousand, steady; fuel, barely, six thousand, steady,

. . . Steady

Watch your screens! Green. Brown, yellow, blue-veined green; low-rolling magenta mountains westward, cloud-shadows rippling, mingling with tenuous wisps of steam . . . steam from the jungles of tall forest . . .

One thousand feet. No sign of mobile life on this planet, in this valley into which Vanguard-I lowered. But all sign—all sign, indeed, of the rich lushness that would support it, embrace it, hold it close like a long-denied lover . . .

Thorn sweated again—hot sweat, now—at his scanners, his control panel. Temperature again hovering past 100, but there was no time to notice or to feel. One hundred feet . . . gently . . .

And then Vanguard-I was down, and at rest.

Josh Thorn hesitated. Baggy-Drawers? Or not? Beneath the white, tenuous outer atmospheric shell of methane and ammonia, what? Air he could breathe? Or poison that would strangle him—

He swung the inner air-lock open.

If poison, then death would be but a matter of days; the bubble of Made-in-U.S.A. atmosphere that he'd brought thirty million miles

across Space had supplied him for the nearly four months the Journey had taken. It had done its job, he could demand no more than that. Two weeks more, at best, and it would be spent forever.

Two weeks, thirty-five years, five thousand centuries—

He swung the outer air-lock open.

And breathed. And breathed. And breathed deeply again.

Joshua Thorn wanted to cry. There was a hurt in his throat, and he wanted to yell, and he wanted to laugh great peals of laughter even as the unchecked salt tears streamed across the deep valleys of his cheeks.

He walked, he ran. He stopped, he turned his face to the sky, he spread his arms wide and let the great bellows of laughter roll from his lips in the lusty prayer of thanks that only the living who are full with life and amid the teeming fullness of life can know.

Thank you, God. Thank you God. Thank you . . .

(For this little while more, for this little while more for the race of Man; I am the last of Man, You know—)

He prayed thank you, but he did not pray for more, because this was already more than he deserved; the Almighty had been merciful, compassionate and merciful, and he could not ask for more, in no way dared ask—

The thunder seemed straight above him.

The sound of his own laughter had drowned it out at first, and then the two had mingled, and then as he stood gasping for new breath,

as his hoarse voice rested, he heard it—welling as if from a great heavy throat, and now rising to a baleful cry, then falling—falling gently, and now a new thunder to drown it, a mightier thunder than the first.

Joshua Thorn stood transfixed as he watched the gleaming bullet-shape descend its pillar of fire. It could have been twin to Vanguard-I. It was descending—it was—*maneuvering* to be near him!

From somewhere far back in his brain the words formed again, *and Mrs. Grundy here's dirt for you—you may have a new neighbor in your block but not like you at all—probably a world between you—don't take any wooden nickels . . .*

But Daddy-o could never know, would never comprehend—

He was running, stumbling, falling, running again toward the spot where the red-starred satellite of the Enemy (Enemy, what a madman's word now!) would land.

Running like a child, running like an idiot, arms waving, mouth laughing, throat shouting—

Thank you, oh *Thank* you God . . .

He was within twenty yards of the craft when its outer lock opened. Fifteen when the uniformed figure who stepped out caught sight and sound of him, ten when the rifle was aimed at him, five before he could comprehend the mindless meaning of it—

But we are the only two human beings left! his brain whimpered . . .

All of the Enemy must die! a remembering part of his mind intoned . . . But someone had trained the Enemy, too.

The scarlet insigne emblazoned on the streamlined metal shell seemed on fire in the filtered Venusian sunlight.

Thorn's plunging hands grabbed the muzzle of the weapon even as it fired, wrenched it aside without feeling the hurt where his left ear-lobe had been.

"Great God, you *imbecile*—"

Twisting the weapon, struggling, trigger-finger constricting to fire again, a final, sudden twist, the finger wrenched against the trigger even as the butt was swinging upward, the muzzle swinging down . . .

The muffled explosion.

The gaping, oozing hole in the Enemy's breast.

Joshua Thorn looked down at the crumpled figure, watched as the slow-moving shadow of a cloud eddied across it.

He tried to sob, for he could not pray again.

He turned. Back toward Vanguard-I. If only he could cry.

Behind him, the Enemy lay dead. All, now, all of the Enemy . . . was dead.

Her body would soon be turning cold. ● ● ●

THE FIRST WORLD OF IF—the outstanding stories that have appeared in IF during its first five years! A festive book for a festive occasion! Watch for it!

THE first terrestrial expedition to Mars didn't find any Martians. Neither did the second. Since there are so few Martians left, those facts are less surprising than that the third did.

*Everyone knows that Earth's
the third planet from the sun.*

For many years before space flight was accomplished, there had been discussions and theories about how to communicate with Martians, if any existed. But, of course, nobody was ready when the time came.

They fell back on that antiquated gimmick.

*But how about looking at it
from an alien point of view?*

Von Frisch, Riley and Smith watched the half dozen Martians approach, and their watching was not without some trepidation. Except that they were about twenty miles away from their G-boat—the planetary landing craft—they probably would have fled. Except that

they had their orders, they probably would have shot first and asked questions later.

"Sir, this is Von Frisch," said the engineer into the microphone of his helmet. He was a little breathless about it. "We're being approached by Martians!"

"How do they act?" asked Captains Powers back at the G-boat, immediately.

"They don't act hostile, sir."

"Stand by, then, but don't take any chances. What do they look like?"

"They're quite a bit taller than

communication

BY CHARLES FONTENAY

we are, but their bodies are round and not much bigger than a child's. They've got real long legs and arms, and big heads with big eyes and ears."

"Are they intelligent? Are they civilized? How do they breathe?"

"Wait a minute, Captain," protested Von Frisch. "You're going a little too fast, sir. They've just come up to us. I don't know whether that's fur on them or whether they're wearing clothes."

"Well, try to communicate with them, man!" exclaimed Powers excitedly.

Von Frisch did his best. The Martians appeared friendly enough, and interested. Von Frisch tried to communicate in the only method he had heard about.

While his companions watched curiously, he shut his ears to the running fire of questions from Powers, squatted and drew a right angled triangle in the red desert sand. By one of the sides he drew three marks, by another four.

Then he stepped back and looked questioningly at the Martians.

One of the Martians squatted in a tangle of pipestem arms and legs, and with a long finger drew five lines beside the triangle's hypotenuse.

"They understand the Pythagorean theorem, sir!" exclaimed Von Frisch.

"Good! They undoubtedly know some astronomy, then. Go on."

Von Frisch hesitated a moment, then erased the triangle. He drew a small circle with rays from it, for the sun. He drew four larger concentric circles around it, with small

circles for planets on the rim of each one.

He pointed to the third planet, then at himself, then at his companions, one by one. Then he pointed at the fourth planet and at the Martians, one by one. To complete the matter, he pointed at the sky.

"We are Earthmen," he said. "You are Martians."

The trouble was that the Earthmen didn't realize the things the Martians had were weapons until they used them. They didn't realize it then, as a matter of fact, because the Earthmen were dead, all three of them.

The Martian hunting party came back from the desert with word of the strange creatures who came, apparently, from another world.

"Whether they have weapons, we do not know," said the leader of the hunting party. "But they wished to harm our people, so we killed them all."

"That is desperate action," said the patriarch of the village. "In what way were they dangerous to us?"

"Foolishly they disclosed their intention to us," replied the leader of the hunting party. "They informed us they planned to take over our world and to drive our people farther from the sun, to the great planet Jupiter."

"Then you did right," said the patriarch, blinking his big eyes.

Biggs and Golden were working near the G-boat. Their helmet radios were set to a different channel from that used by the exploring

(Continued on page 116)

What Is Your Science I. Q. ?

HOW SCIENCE-WISE are you? Score 5 points for each correct answer; 75 is good, 80 very good, over 85 makes you a whizz. Answers are on page 77.

1. The sidereal year is about _____ longer than the solar year.
2. How many degrees must be added to the centigrade scale to change it to the Kelvin scale?
3. The boiling point of a substance is that point at which its vapor pressure is equal to _____.
4. What do we call atoms which have lost or gained an electron?
5. An hour of our time represents an arc of _____ degrees in the apparent rotation of the celestial sphere.
6. Light must pass from one medium to another at an _____ angle before refraction can occur.
7. Hypersonic speeds are speeds over _____ miles per hour.
8. Which radioactive rays have the greatest penetrative power?
9. The unit of measurement of the quantity of electrical flow is called a _____.
10. According to the theory of relativity, mass depends on _____.
11. The ratio of atomic weight to specific gravity determines the _____ of an element.
12. Avogadro's Law is the basis for determining the molecular weight of _____.
13. Which proton is believed to be the fundamental positive charged unit of the atom?
14. Meteors composed entirely of stone are called _____.
15. The zigzag movement of microscopic particles suspended in a fluid is called _____.
16. The straight line which joins the center of an attracting body with that of the body describing an orbit around it is called _____.
17. How many miles per second would be the necessary escape velocity from the moon?
18. Short waves have frequencies over _____ kilocycles.
19. A fourth dimensional geometric super solid is called a _____.
20. There are _____ prime numbers in the first one hundred.



Illustrated by Paul Orban

YOUR SERVANT, SIR

We all know that every android has its little idiosyncrasies.

But what can a civilized human being do about it

when his perfect servant drives him crazy?

THE CHUBBY woman glared at the android and dropped her suitcase on the floor. She turned to her husband and said in an angry, unsteady voice, "I'm leaving." Her double chin trembled. "I can't stand the sight of that thing another second."

Raymond Golden gripped his empty glass with both hands, leaned forward tensely in the chair, and tried to find the right words.

"Paula," he began helplessly. "Please wait. I'll get it fixed, or sell it, or trade it in. I'll do something."

Mrs. Golden pointed a shaky, pudgy finger. "I'll never come back as long as *that* is here."

She bent to pick up her suitcase. The android approached silently and stared at her posterior.

"Madam," the android said, "you are getting quite fat."

Paula's back snapped upward. Her face was red and there were dark shadows under her eyes. "I can't stand it!" she shrieked. "I can't! I can't!"

BY SOL BOREN

The words pierced Raymond's skull, exploded and splattered within. He winced under the barrage. Paula ignored the automatic door button, and flung the plastic slab open with her hand.

The android followed her with its cold stare and spoke in its per-

fect voice. "Madam, that dress is atrocious. I would suggest that you change at once to your gray, princess silk, which will, at least, create the impression of slenderness."

Paula screamed hysterically and ran out of the apartment. The android moved swiftly to the door and called after her, "Farewell, Madam. Watch your weight. Take care."

It pushed the button on the wall and the door swung shut.

The dreaded ultimatum had at last been carried out, and Raymond felt helpless, numbed. Indecision settled upon him like a leaden cloak and pulled him back against the foam-air-rest, where his head wobbled uncomfortably. He closed his burning, blood-shot eyes, and found no peace. He rubbed them with his free hand, and opened his vision to the staring android.

Without any conscious thought, his arm extended in a slow, habitual motion. The android responded automatically, plucked the empty glass out of his hand, and said, "You drink too much, sir."

Raymond nodded irritably. "I know. You've reiterated that profound spiritual message with monotonous irregularity."

"But you do, you know."

Raymond shouted angrily, "Shut up!"

"Very good, sir."

The android was a tall, handsome model. Its voice was deep, resonant and faintly British. It glided over to the built-in bar and performed rapid, indiscernible manipulations involving ice cubes, whiskey and soda.

The android returned swiftly with the drink and served it with a sweeping flourish. Raymond took the glass and gestured impatiently. "Cigar."

"Very good, sir."

The android withdrew a long, brown cigar from the humidor on the small, floating ebony end-table, placed the clipped end in Raymond's mouth, and lit it with the tip of its forefinger, which suddenly glowed red.

It watched as Raymond puffed up several billowing, little gray clouds. The smoke drifted towards the android, and it said: "Disgusting habit."

Raymond raised his glass, sipped the cold liquid, and remarked bitterly, "What a pity you can't enjoy your own poisonous concoctions."

The android stepped back and stared fixedly at the man. "You are a sot, sir."

Raymond exploded. "What!"

"S - o - t, sot. An alcoholic. A drunkard. One who imbibes intoxicating liquors."

Raymond jumped out of the chair and threw his glass and cigar on the carpet violently. The cigar sizzled in the midst of the foaming liquid. He glared at the android. "You go to hell!"

"As I have repeatedly attempted to impress upon your happy, pickled brain, sir," the android said, "It is impossible for me to go there."

"That isn't exactly what I meant."

"In that case, sir, I would suggest that hereafter you say what you mean."

Raymond swore. He swayed un-

certainly, and then dropped back into the chair. He reached out to the floating table for a fresh cigar, jammed it in his mouth, and chewed it nervously. He was a short, chubby man, with brown, thinning hair, a double chin, and lines around his mouth; where a friendly smile had recently met an untimely death.

Raymond pulled his cigar out of his mouth and stared at the wet soggy end. He moved his head from side to side, turned his gaze on the android, and muttered through his teeth, "You and your impeccable androidal exterior have got to go."

The decision immediately had a relaxing effect. Raymond's moist brow unwrinkled itself momentarily, and he almost smiled at the thought.

"Allow me to point out, sir," the android said. "That you have, to date, invested approximately three thousand dollars in my interior and exterior, as well."

Raymond nodded sadly. "Not to mention fifteen more easy, cardiovascular producing payments." He placed his hand over the spot, where, deep down, his heart was located. Satisfied that it was still there, he said, "I've got a lot of expensive money tied up in you, but if I have to choose between mechanical misery and matrimonial bliss, I'll settle for Paula's brand of inhuman torture."

"That, sir, is extremely faulty, illogical, and irrational reasoning. Typical, however, of most humans."

Raymond smiled grimly and stood up. "If you will watch closely,

YOUR SERVANT, SIR

oh, loyal servant, you will note that I am about to do something not so typical of my assorted human friends."

Walking unsteadily over to the bar, he reached into a small drawer, and withdrew a small plastic container labeled: SOBERUPPER.

"In fact," Raymond said, as he removed two pills and tossed them into his mouth, "I must be out of my mind."

He swallowed hard, blinked, and gasped. For a moment he leaned heavily on the bar. Then suddenly, clarity. The room was brighter. The drab grays resolved into blue and yellow pastel panelling along the walls. The carpeting was a rich deep blue. The polished floating ebony slab glittered in the room.

"Come on, Android. We're heading for the big city."

The city, as they flew over it, was a blazing ocean of roof-top advertisements, designed to attract the attention of the overhead traffic.

Raymond threw a switch and a private radar beacon blipped brightly on his jetcopter's screen. He touched a button and the controls automatically guided the craft towards a gigantic flashing sign, which proclaimed: GENERAL ANDROIDS.

The jetcopter dropped onto the roof-top parking lot with a thud. The android and Raymond climbed out and took the nearest escalator down to the mezzanine. They entered the Sales Manager's office, where Raymond cornered Mr. Krutchamer, the Assistant Sales Manager, and quickly explained the

difficulties with the android.

Mr. Krutchamer was a small wiry man with a surprisingly deep, impressive voice. He shrugged his slight shoulders, after listening patiently, and said, "Doesn't sound like a mechanical manifestation to me, sir."

"Mechanical or electronical," Raymond demanded perplexed, "what's the difference?"

"Well, sir," Mr. Krutchamer began with a flashing white-toothed smile, "you've had your android for three months, and while our guarantee is for one year, it specifically spells out an unconditional warranty against mechanical defects."

"No guarantee against any electronic defects?"

The little man shook his head emphatically. "No, sir. All electrical parts are guaranteed, of course, for thirty days, but you've had the android for ninety days."

Mr. Krutchamer's face was sad, his eyebrows crept down over his eyes, and his voice dropped to a confidential decibel level. "I'm sorry, sir, but your problem sounds more like a chronic psycho-electronic condition. I would recommend that you see a PRD."

"What's that?" Raymond was annoyed. His face was flushed and he squinted at the little man.

"Doctor of Psychiatric Robotics."

"This android doesn't need Psycho-therapy, damn it," Raymond said hotly. "Maybe some minor adjustment with a heavy monkey wrench. But that's all."

"Perhaps." The little man turned

on the smile. "The important thing in an android is that it function properly and efficiently. We are prepared in every way to keep your android in perfect operating condition, but we do not feel that it is at all necessary to concern ourselves with an android's alleged thoughts or vocal expressions. After all, it is only an android. A machine. A clever machine, but a machine."

"This clever machine has driven my wife out of our home, and is edging me into a cybernetic psychoneurosis."

Raymond walked stiffly out of the Sales Manager's office on to the balcony that overlooked the various androids that were on display in the showroom below and stared at the section designated MANSERV-ANT. There was an astonishing variety of tall, short, slim, fat, young, middle-aged, and old looking androids.

Mr. Krutchamer approached him slowly. Raymond fought back his annoyance and asked in desperation, "What kind of deal can you give me on a trade in?"

The Assistant Sales Manager smiled and said thoughtfully, "Let me see." He turned and examined the android. He looked it up and down, walked around in back of it, and looked it up and down some more. Then he circled it slowly three times, and concluded the ritual by making clucking noises with his teeth.

Finally Mr. Krtuchamer said, "Can't give you too much, you realize. It isn't equipped with radar, or any navigational instruments, or even the built-in computer. About

as high as I can go would be one thousand."

"One thousand!" exclaimed Raymond. "That would leave a balance of almost four thousand, plus the balance I've already got on this one."

The android stared at Raymond and said, "I could have told you that before you came down here, sir."

Raymond jumped, and snapped at the android, "Shut up!"

Raymond was furious. He turned suddenly on Mr. Krutchamer.

The Assistant Sales Manager ran into his office and closed the door behind him.

"Really, sir," the android said, "your method of operating this flying machine is truly offensive."

Raymond jabbed the throttle and the jetcopter leaped forward. He sat tensely at the controls, beads of perspiration across his forehead.

The android said, "I would suggest, sir, that you allow me to demonstrate the proper method of operating these controls."

The jetcopter lurched suddenly in a sharp turning motion, and angled in rapidly for a reckless, ground landing at WHEELER'S WONDERFUL USED ANDROID LOT.

Mr. Wheeler personally met Raymond and the android as they disembarked. "Greetings," he said. "Looking for a good used android?"

Raymond shook his head. "Got one I want to sell." He pointed and asked, "How much?"

Wheeler examined the android rapidly and said, "Looks like a good

clean model. Guess I could give you about five hundred cash."

Raymond exclaimed, "What! That the best you can do?"

Wheeler nodded and smiled. "That's Blue Book on this model. Take it or leave it. That's my top offer—cash."

Raymond turned away. "Come, my faithful manservant," he said despondently. "Let us return to our dismal retreat, where I can get properly and thoroughly liquored up."

RAYMOND WAS tired and dejected. His face was lined and despair was in his eyes. He collapsed into his favorite chair and dispatched the android to the bar.

Two highballs later an idea dashed itself to pieces in Raymond's brain. He jumped up, ran over to the Televisor, and placed a call to Allied-News-Facs. When the News-Facs android's plastic face appeared on the screen, Raymond said, "I want to place an ad in the For Sale or Swap section of the Four O'clock Edition."

"Yes, sir. What do you desire to say?"

Raymond frowned. "Just say this: Anyone desiring to take over the payments of one darling, efficient, well-mannered, handsome, unbearably conscientious android can purchase the equity extremely cheap at great sacrifice."

"Is that all?"

"Yes, for now. If that doesn't work, I'll call you back." He gave his address and televisor number and switched off.

Raymond turned to his android and said, "I've reconsidered. Maybe psycho-electronic-therapy can really help—one of us." He glanced at his watch. It was eleven a. m. "Let's go."

The android followed obediently and said, "This is extremely monotonous."

The door read: DR. FREDRICK MILLHOP, PRD

Inside, the waiting room was jammed with human beings and assorted electronic, two-legged contrivances. Surprise halted Raymond half-way through the doorway, and he studied the crowd in disbelief.

A beautiful female voice pierced the noisy confusion of human and unhuman voices: "Do you have an appointment, or are you human?"

Raymond stared at the Receptionist-Android, with its fixed smile on its sculptured feminine face, and replied unhappily, "I had no idea I would need one."

The Receptionist-Android smiled steadily. "Is this an emergency, or a disaster, or are you sober?"

"Could be," Raymond replied, bewildered. "Yes."

"If you desire to wait, perhaps the Doctor might see you, see you, see you. But I don't see why, see why, see why."

Mumbling a hasty assent, Raymond retreated into an unoccupied corner, where he and his android waited. The other men and women in the room were a grim, haggard looking group. As for the other androids, Raymond refused to look at them; and he closed his ears to all sound.

Noon came and passed, and the afternoon dragged. Raymond lost his feeling of impatience, and stood in the corner trance-like. Finally at two-thirty a tiny green light flashed in the Receptionist-Android's metallic bosom.

"The doctor will see you now or never."

The large, spacious office, with its glowing walls, dimmed ceiling, and deep, soft carpeting was a silent, soothing relief. Raymond's android watched as the two men engaged in a mutually weary hand-shake.

Dr. Millhop was a tall thin, sharp featured man. There were black moons under his eyes that lay heavily on long, guttered wrinkles. He leaned back in his chair, as Raymond explained the android's manifestations.

The Doctor nodded his head in the manner of a man who had been listening to the same story all day, day after day.

"Mr. Golden," Dr. Millhop said, "you must realize that every android has its own peculiar idiosyncrasies. Unfortunately, in some instances, there is absolutely nothing that can be done about it."

Raymond gestured at his android, and asked hopefully, "What about this instance?"

"I don't know," the Doctor replied frankly. "Before I can express an opinion, it will be necessary to run your android through exhaustive tests and have my technical staff examine its electronic circuits minutely. If it is a simple matter of rewiring, or, say, a faulty component, why, of course, we can

straighten it out very easily. However, if it is a condition that is caused by Unknown Factors, then I can prescribe only one thing." He paused, spread his palms, and added sadly, "As so many of us seem to be attempting these days—*don't lose your temper.*"

"How long will it take to run your tests?"

"We can send it into the lab immediately, run it through the analyzers, and have a report in one hour."

Raymond reached into his coat pocket for a cigar, stuck it in his mouth and lighted it with an old-fashioned lighter. He puffed thoughtfully, took one glance at the android, and said, "Let's do it."

The android's head swiveled sharply, staring first at Raymond and then at the Doctor. "Isn't anyone going to consult me?"

Dr. Millhop's chair groaned, as he leaned forward suddenly. His voice was cold death in an angry whisper. "Shut up!"

The Doctor viciously pressed a button. A large panel in the wall snapped open and two huge, square-shouldered, power-androids clanked into the room. The Doctor pointed. They lifted Raymond's protesting android, and carried it from the room.

Back in the waiting room, Raymond drummed his fingers nervously on the receptionist's desk. He finished his cigar, started another one and finished that one. Precisely one hour later the little light flashed on the Receptionist-Android's dashboard chest.

"The Doctor will see you again

and again and again."

As Raymond re-entered the office, the Doctor was examining a folder.

"Mr. Golden," Dr. Millhop said in a tired voice without looking up, "there is absolutely nothing that can be done, short of electronic lobotomy."

Raymond asked, "What is electronic lobotomy?"

"That is tantamount to an entirely new memory bank. Even then we cannot guarantee that some other idiosyncrasy will not develop. Frankly, I do not recommend it to you. It is an expensive process, and lobotomys are mainly performed in the larger industrial robotic devices, where an extremely expensive piece of equipment is involved."

The chubby man rubbed his jaw. "I've got to salvage my investment somehow. How much will it cost?"

"Three thousand dollars."

Raymond shrugged sadly, turned and walked out of the room.

The Receptionist-Android looked up at him and said impersonally, "You will receive the Doctor's enormous bill by Telefacs."

As Raymond entered his apartment, disillusioned and exhausted, the Four O'clock News-Facs, containing his want-ad, was sputtering out of the receiver.

When the News-Facs had ceased its chattering, he scanned the paper, grunted a resentful satisfaction, and slumped into his favorite chair.

He sat and fidgeted, and waited and waited, until darkness fell. But there was no response to his ad.

Finally he said to the android, "Looks as if you and I were meant for each other forever and ever."

"Certainly, sir," replied the android. "You need a stable, intelligent advisor and mentor to save you from your frequent, horrifying errors of human judgment. For instance, I could have told you in advance that electronic butcher could not so much as cure headaches in a buzzsaw. In short, sir, you will never find a finer, more loyal, more capable android than myself. Put yourself entirely in my hands. I will even do your thinking for you."

Raymond shook his head wearily, and remarked, "I am both excruciatingly sad and divinely happy at that information."

"I am mystified at your sadness, sir, though gratified at any little happiness I might bring into your drab, miserable existence."

Raymond said mildly, almost too mildly, "Shut up."

"Very good, sir."

With an effort the chubby man got to his feet, walked to the bar and poured himself a long drink.

The following morning Raymond, finding his body host to a horrible hangover, staggered into the living room, and fumbled behind the bar for a small plastic container, which was labeled: HANG-OVER-OVER

He removed two blue pills and tossed them into his mouth.

When Raymond was halfway through his second cup of coffee, he suddenly jumped to his feet and snapped his fingers. "I've got it. What a tremendous, frightening

idea. But it might work."

He raced over to the Televisor and put in another call to Allied-News-Facs.

A half hour later the ad was coming out of the News-Facs machine in an excited staccato that matched Raymond's quickening pulse.

As soon as the ad was printed, he ripped it out of the receiver:

WILL TRADE MY CRAZY MIXED UP ANDROID FOR YOURS

Raymond grinned happily for the first time in days. "Ingenious."

The android said, "A complete, hopeless waste of human endeavor, sir. However, it is quite typical of your impulsive and somewhat obnoxious personality."

Raymond laughed. "Say anything you like, my vanishing servant. You are not long for *my* little world."

Thirty minutes later the automatic door-announcer sang out: "Visitor!"

Raymond set the door control on automatic. A tall, thin, haggard looking man entered and offered his moist hand in a feeble grip. "My name is Groober." He pointed weakly at the glistening android behind him. "This is George."

Raymond stared hopefully at George and said, "Our android was once fondly known as Francois, but we've since been unable to think of it as anything but *It*."

Mr. Groober sat down with a sigh, and said in a hoarse voice, "This idiotic robotic device has a chemurgical complex."

George, the android, stared at

Raymond. "Sir, you have an extremely high fat content."

Raymond briefly described his android to Mr. Groober, and the latter shook his head sadly. "Looks as if they've got a lot in common."

Raymond nodded sympathetically.

The door-announcer sang out again: "Visitor!"

A little old lady entered. "I am Mrs. Quimby," she announced in a squeaky voice. "And *this* is Daisy."

Daisy followed her in, walking on its hands. Raymond stared curiously at Daisy and remarked, "That's a new twist."

Mrs. Quimby said with bitterness, "That ain't all Daisy does."

Daisy suddenly collapsed to the floor, leaped to its feet, and began jumping up and down. Its feet hit the floor with a crash; its head hit the ceiling with a thud; up and down, up and down.

Raymond asked, "How do you stop it? My ceiling can't take much more of that."

Mrs. Quimby said, "Don't know. Depends on the ceiling."

"Visitor!" The door-announcer cried again in its one-word recorded glee.

A large android walked in ahead of a short, perspiring man. The android announced, "I am Ulysses, the greatest android ever produced. This poor creature is my old, worn out owner. I am here to find a new, strong, vigorous owner. Which one of you is interested?"

The door-announcer sang out again and again. In two hours the little apartment was jammed with human beings and inhuman an-

droids. The interviewing process no longer involved Raymond alone. It became an interwoven, complex affair.

The confused, excited melee continued on through the night. It lasted all through the following day and night, and on into the day after, when the last guest left with his militaristic android counting cadence in a loud grating voice.

Raymond mixed a strong drink and collapsed into his chair, muttering to himself, "How utterly, utterly hopeless. There wasn't a single android that didn't have some glaring incurable idiosyncrasy that could drive Paula and me completely out of our minds as easily as our present mechanized helpmate." He appealed to the cracked ceiling. "What am I going to do?"

His android said, "You look like a tired, fat old man."

"Shut up."

The android stared at Raymond and asked, "What fiendish, diabolical, sure-fire scheme have you devised in that tiny, inadequate human brain of yours now, sir?"

Raymond leered at the android. Perspiration was breaking out all over his body. His lower lip began to tremble and his cheek twitched.

Raymond tapped his forehead. "When science fails," he said in a

hoarse whisper, "there is but one method left for a poor, ignorant savage with a primitive brain."

Moving forward swiftly, Raymond bent over, and seized the floating ebony end-table in both hands.

"Come here, oh, modest, unassuming, subservient one. I want to bend your ear."

Raymond lunged forward and swung. The android dodged awkwardly, and the table top glanced off the side of its head.

For a long moment the android remained quiet and motionless. Finally it said, "Did you ring, sir?"

The ebony slab slipped from Raymond's hands. He squinted at the android from under drooping, red-rimmed eyelids.

The android's head remained perfectly still. Its eyes did not follow him.

Raymond stepped over to the bar, made tinkling noises with the bottles, and waited tensely.

Silence. Pure silence.

The stillness of the room was suddenly warm and friendly. Astonishment swept over Raymond in a dizzy wave. He asked in an excited whisper, "Who are you?"

The android turned towards him and bowed humbly. "Your servant, sir." ● ● ●

WHAT IS YOUR SCIENCE I.Q.?

ANSWERS: 1—20 minutes. 2—273. 3—One atmosphere. 4—Ions. 5—15. 6—Oblique. 7—3,500. 8—Gamma. 9—Coulomb. 10—Velocity. 11—Atomic volume. 12—Gases. 13—Hydrogen. 14—Aerolites. 15—Brownian movement. 16—Radius vector. 17—1.47. 18—16,000. 19—Tesseract. 20—26.

How can a ship travel both forward and backward and sideways in two different directions, be going twice as fast as the speed of light—and still be completely motionless?

BRAIN TEASER

BY TOM GODWIN

CARL ENGLE stood aside as the flight preparation crew filed out of the *Argosy's* airlock. Barnes was the last; fat and bald and squinting against the brightness of the Arizona sun.

"All set, Carl," he said. "They had us to check and countercheck, especially the drives."

Engle nodded. "Good. Ground Control reports the Slug cruiser still circling seven hundred miles out and they think the Slugs suspect something."

"Damned centipedes!" Barnes said. "I still say they're telepathic." He looked at his watch. Zero hour minus twenty-six minutes. "Good luck, boy, and I hope this space warp dingus works like they think it will."

He waddled down the boarding ramp and Engle went through the airlock, frowning a little as he threw the switches that would withdraw the ramp and close the airlock behind him. Barnes' implied doubt in the success of the space warp

shuttle was not comforting. If the shuttle failed to work, the *Argosy* would be on the proverbial spot with the Slug cruiser eager to smear it well thereupon . . .

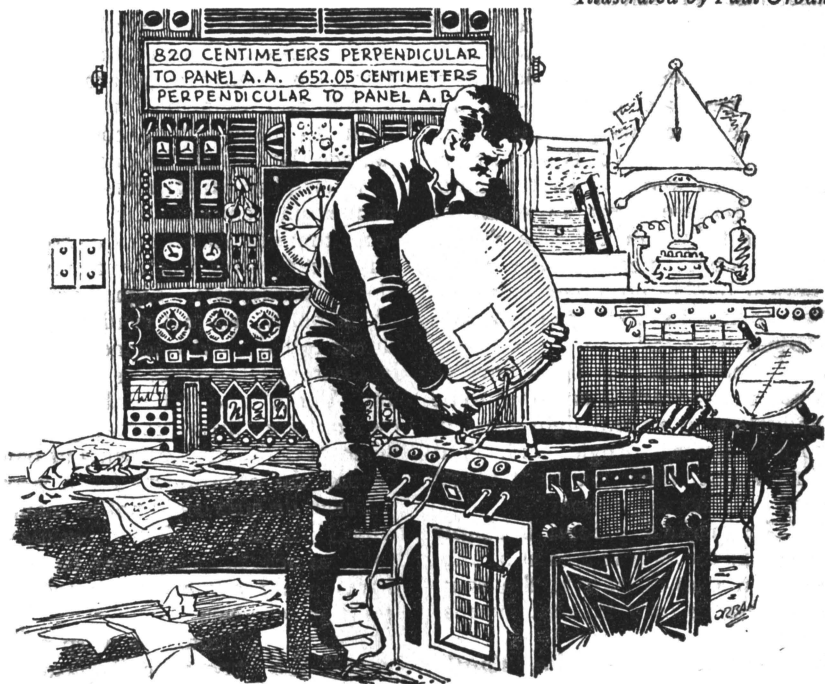
Access to the control room was up through the room that housed the space warp shuttle. Dr. Harding, the tall, bristle-browed physicist, and his young assistant, Garvin, looked up briefly as he entered then returned their attention to their work. The master computer, borrowed from M.I.T., stood like a colossal many-dialed refrigerator along one wall. A protective railing around it bore a blunt

KEEP OUT sign and it was never left unwatched. Garvin was seated before it, his fingers flitting over the keyboard and the computer's answer panel replying with strange mathematical symbols.

The space warp shuttle sat in the middle of the room, a cube approximately two-thirds of a meter along the edge, studded with dials and knobs and surmounted by a ball of some shining silvery alloy. Dr. Harding was talking into the transdimensional communicator mounted beside the shuttle.

Engle went on to the computer and waited outside the railing until

Illustrated by Paul Orban



Garvin finished with his work and turned in his seat to face him.

"The last check question," Garvin said. "Now to sweat out the last twenty minutes."

"If you've got the time, how about telling me about the shuttle," said Engle, "I've been kept in the dark about it; but from what I understand, the shuttle builds up a field around the ship, with the silver ball as the center of the field, and this field goes into another dimension called the 'space warp'."

"Ah—it could be described in that manner," Garvin said, smiling a little. "A clear description could not be made without the use of several special kinds of mathematics, but you might say this field in normal space is like a bubble under water. The air bubble seeks its own element, rises rapidly until it emerges into free air—in this case, the space warp. This transition into the warp is almost instantaneous and the shuttle automatically ceases operation when the warp is fully entered. The shuttle is no longer needed; the hypothetical bubble no longer exists—it has found its own element and merged with it."

"I know that a light-hour of travel in the warp is supposed to be equivalent to several light-years in normal space," Engle said, "but what about when you want to get back into normal space?"

"The original process is simply reversed: the shuttle creates a 'bubble' that cannot exist in the warp and seeks its own element, normal space."

"I see. But if the shuttle

should—"

He never completed the question. Dr. Harding strode over, his eyes blue and piercing under the fierce eyebrows as he fixed them on him. He spoke without preamble:

"You realize the importance of this test flight with the shuttle, of course? Entirely aside from our personal survival should the Slug cruiser intercept us."

"Yes, sir," he answered, feeling the question suggested an even lower opinion of his intelligence than he had thought Harding held.

Project Space Warp existed for the purpose of sending the *Argosy* to Sirius by means of the space warp shuttle and bringing back the *Thunderbolt* by the same swift method. The *Thunderbolt*, Earth's first near-to-light-speed interstellar ship, was a huge ship; armed, armored, and invincible. It had been built to meet every conceivable danger that might be encountered in interstellar exploration—but the danger had come to the solar system from the direction of Capella nine years after the departure of the *Thunderbolt*. Eight cruisers of the pulpy, ten-foot centipede-like things called Slugs had methodically destroyed the colonies on Mars and Venus and established their own outposts there. Earth's ground defenses had held the enemy at bay beyond the atmosphere for a year but such defense could not be maintained indefinitely. The *Thunderbolt* was needed quickly and its own drives could not bring it back in less than ten years. . . .

"We will go into the warp well beyond the atmosphere," Harding

said. "Transition cannot be made within an atmosphere. Since a very moderate normal space velocity of the ship will be transformed into a greater-than-light velocity when in the warp, it is desirable that we make turn-over and decelerate to a very low speed before going into the warp."

"Yes, sir," he said. "I was briefed on that part and I'll bring us as near to a halt as that cruiser will permit."

"There will be communication between us during the flight," Harding said. "I will give you further instructions when they become necessary."

He turned away with an air of dismissal. Engle went to the ladder by the wall. He climbed up it and through the interroom airlock, closing the airlock behind him; the routine safety measure in case any single room was punctured. He went to the control board with a vague resentment gnawing for the first time at his normally placid good nature.

So far as Harding was concerned—and Garvin, too—he might as well have been an unusually intelligent baboon.

Zero hour came and the *Argosy* lifted until Earth was a tremendous, curving ball below and the stars were brilliant points of light in a black sky. The Slug cruiser swung to intercept him within the first minute of flight but it seemed to move with unnatural slowness. It should have been driving in at full speed and it wasn't . . .

"Something's up," Ground Con-

trol said. "It's coming in too slowly."

"I see that," he answered. "It must be covering something beyond it, in your radar shadow."

It was. When he was almost free of the last traces of atmosphere he saw the other cruiser, far out and hidden from Ground Control's radar by the radar shadow cast by the first one.

He reported, giving its position and course as given him by the robot astrogating unit.

"We'll have the greatest amount of time if I make turn-over now and decelerate," he finished.

The voice of Harding came through the auxiliary speaker:

"Do so."

The *Argosy* swung, end for end, and he decelerated. The cruiser behind him increased its speed, making certain it would be in position to cut off any return to Earth. The other cruiser altered its course to intersect the point in space the *Argosy* would soon occupy, and the *Argosy* was between the rapidly closing jaws of a trap.

He made reports to Ground Control at one-minute intervals. At 11:49 he said:

"Our velocity is approaching zero. We'll be within range of the second cruiser's blasters in two more minutes."

Harding spoke again to him:

"We'll go into the warp now. *Do not* alter the deceleration or the course of the ship while we're in the warp."

"I won't," he said.

There was a faint mutter from the auxiliary speaker as Harding

gave some instructions to Garvin. Engle took a last look at the view-screen; at blue-green Earth looming large in the center, Orion and Sirius glittering above it and the sun burning bright and yellow on the right. It was a scene he had observed many times before, all very familiar and normal—

The chronometer touched 11:50 and normalcy vanished.

Earth and sun and stars fled away from him, altering in appearance as they went, shrinking, dwindling. The seas and continents of Earth erupted and shook and boiled before Earth faded and disappeared. The sun changed from yellow to green to blue, to a tiny point of bright violet light that raced away into the blackness filling the screen and faded and disappeared as Earth had done.

Then the viewscreen was black, utterly, completely, dead black. And the communicator that had connected him with Ground Control was silent, without the faintest whisper of background sound or space static.

In the silence the voice of Harding as he spoke to Garvin came through the speaker; puzzled, incredulous, almost shocked:

"Our velocity couldn't have been that great—and *the sun receded into the ultraviolet!*"

There was the quick sound of hurrying footsteps then the more distant sound of the computer's keys being operated at a high rate of speed. He wanted to ask what had gone wrong but he knew no one would answer him. And it would be a pointless question—it was

obvious from Harding's tone that he did not know, either.

He had an unpleasant feeling that Man's first venture into another dimension had produced catastrophic results. What had caused sun and Earth to disappear so quickly—and what force had riven and disfigured Earth?

Then he realized the significance of Harding's statement about the sun receding into the ultraviolet.

If the ship had been traveling at a high velocity away from the sun, the wave length of the sun's light would have been increased in proportion to the speed of the ship. The sun should have disappeared in the long-wave infrared end of the spectrum, not the short-wave ultraviolet,

With the thought came the explanation of the way the continents and oceans of Earth had quivered and seethed. The shifting of the spectrum range had shortened normally visible rays into invisibly short ultraviolet radiations while at the same time formerly invisible long infrared radiations had been shortened into visible wave lengths. There had been a continuous displacement into and past the ultraviolet and each wave length would have reflected best from a different place—mountains, valleys, oceans, deserts, warm areas, cool areas,—and the steady progression into the ultraviolet had revealed each area in quick succession and given the appearance of agitated movement.

So there was no catastrophe and everything had a logical explanation. Except how they could have been approaching a sun that he had

seen clearly, visibly, racing away from them,

"Engle—" The voice of Harding came through the speaker. "We're going back into normal space to make another observation. I don't know just where we are but we're certain to be far from the cruisers. Don't alter our course or velocity."

"Yes, sir," he said.

They came out of the warp at 11:53. The communicator burped suddenly and the viewscreen came to life; a deep, dull red that brightened quickly. A tiny coal flared up, swelling in size and shifting from red to orange to yellow—the sun. Earth appeared as a hazy red dot that enlarged and resolved itself into a planet with distorted continents that trembled and changed, to resume their natural shapes and colors. Within a few seconds the sun was shining as ever, Earth loomed large and blue-green before them and the stars of Orion glittered unchanged beyond. Even their position in space was the same—they had not moved.

But the Slug cruisers had.

One was very near and from its forward port came the violet haze that always preceded a blaster beam. There was no time to escape—no chance at all. He spoke into the mike, harsh and urgent:

"*Into the warp! There's a blaster beam coming—move!*"

There was a silence from below that seemed to last an eternity, then the sound of a switch being slapped hastily. At the same time, the violet haze before the cruiser erupted into blue fire and the blaster beam lanced out at them.

It struck somewhere astern. The power output needle swung jerkily as the generators went out and the emergency batteries took the heavy load of the shuttle's operation. There was a sensation of falling as the ship's artificial gravity units ceased functioning. The auxiliary speaker rattled wordlessly and there was a sound like a hard rush of wind through it, accompanied by quick bumping sounds.

Then the speaker was still and there was no sound of any kind as the viewscreen shifted into the ultraviolet and Earth and stars and sun once again raced away and disappeared in the blackness.

A MYRIAD of lights above the board informed him the generators were destroyed, the stern section riddled and airless, the emergency batteries damaged and reduced to quarter charge, the shuttle room punctured and airless.

And, of course, Harding and Garvin were dead.

He felt a surge of futile anger. It had all been unnecessary. If only they had not considered him incompetent to be entrusted with anything more than the ship's operation—if only they had installed an emergency switch for the shuttle by his control board, there would not have been the two-second delay following his order and they would have been safely in the warp before the blaster beam struck.

But they had not trusted him with responsibility and now he was alone in a space warp he did not understand; sole and full responsi-

bility for the shuttle suddenly in his hands.

He considered his course of action, then got into a pressure suit. Magnets in the soles of its heavy boots permitted him to walk in the absence of gravity and he went to the interroom airlock with metallic clicking steps. He let himself through the lock and walked down what had been the room's wall, then across to the center of its floor.

But for the fact there was no one in the room, it was as he had last seen it. The shuttle, computer, and other equipment stood in their orderly positions with their lighted dials unchanged. Until one looked at the gash ripped in the hull and saw the stains along its edge where the occupants had been hurled through it by the escaping air.

He went on to the next room and the next. The damage increased as he proceeded toward the stern. The power generators were sliced into ribbons and the emergency batteries in such condition it seemed a miracle they were functioning at all. The drives had received the greatest damage; they were an unrecognizable mass of wreckage.

He made his way back to the shuttle room, there to appraise his circumstances. He reached automatically for a cigarette and stopped when his glove bumped the breast plate of his pressure suit.

First, he would have to make the shuttle room livable; get out of the pressure suit. He would have to question the computer and he could not do that with the thick, clumsy gloves on his hands.

The job didn't take long. There were repair plates on the ship and a quick-hardening plastic spray. He closed the sternward airlock when he was done and opened the airlock leading to the control room, as well as the locks beyond. Air filled the shuttle room, with only a minor over-all loss of air pressure. He removed the suit, attached a pair of magnetic soles to his shoes so he could operate the keys of the computer without the movements sending him floating away, and went to it.

He had never been permitted to touch it before, nor even stand close enough to see what the keyboard looked like. Now, he saw that the alphabetical portion of the keyboard was minor compared with the mathematical portion, many of the symbols strange to him.

The operation of an interplanetary ship required a certain knowledge of mathematics, but not the kind used by theoretical physicists. He typed, doubtfully:

ARE YOU CAPABLE OF ANSWERING QUESTIONS PRESENTED IN NON-MATHEMATICAL FORM?

The word, YES, appeared at once in the answer panel and relief came to him like the lifting of a heavy burden.

The computer knew as much about the space warp as Harding or anyone else. It was connected with his drive controls and instruments and knew how far, how fast, and in what directions the flight had taken place. It had even been given blueprints of the ship's construction, in case the structure of the ship should affect the ship's performance in the

warp, and knew every nut, bolt, plate and dimension in the ship.

There was supposed to be a certain method of procedure when questioning the computer. "It knows—but it can't think," Garvin had one said. "It lacks the initiative to correlate data and arrive at conclusions unless the procedure of correlation is given it in detail."

Perhaps he could manage to outline some method of correlation for the computer. The facts of his predicament were simple enough:

He was in an unknown medium called "the Space Warp." Something not anticipated occurred when a ship went into the warp and Harding had not yet solved the mystery when he died. The physicists in Observation would be able to find the answer but he could not ask them. The forward movement of the ship was not transferred with it into the warp and if he emerged into normal space the waiting Slug cruisers would disintegrate him before he spoke three words to Observation.

There was a pencil and a tablet of paper by the computer. He used them to calculate the time at which the charge in the damaged batteries would reach a critical low, beyond which the charge would be insufficient to activate the shuttle.

The answer was 13:53. He would have to go out of the warp at 13:53 or remain in it forever. He had a great deal less than two hours in which to act.

He typed the first question to the computer:

WHAT IS THE POSITION OF THIS SHIP RELATIVE TO NORMAL SPACE?

The answer appeared on the panel at once; the coordinates of a position more than a light-year toward Ophiuchus.

He stared at the answer, feeling it must be an error. But it could not be an error—the computer did not make mistakes. How, then, could the ship have traveled more than a light-year during its second stay in the warp when it had not moved at all during the first stay? Had some factor of the warp unknown to him entered the picture?

As a check he typed another question:

WHAT WAS OUR POSITION, RELATIVE TO NORMAL SPACE, IMMEDIATELY BEFORE THIS SHIP WAS SHUTTLED BACK OUT OF THE WARP?

The answer was a position light-days toward Ophiuchus.

He typed: IMPOSSIBLE.

The computer replied: THIS STATEMENT CONFLICTS WITH PREVIOUS DATA.

He recalled the importance of keeping the computer free of all faulty or obscure data and typed quickly: CANCEL CONFLICTING STATEMENT.

CONFLICTING STATEMENT CANCELED, it replied.

He tried another tack. THIS SHIP EMERGED FROM THE SPACE WARP INTO THE SAME NORMAL SPACE POSITION IT HAD OCCUPIED BEFORE GOING INTO THE WARP.

He thought the computer would proceed to give him some sort of an explanation. Instead, it non-committally replied: DATA ACKNOWLEDGED.

He typed: EXPLAIN THIS DISCREPANCY BETWEEN SPACE WARP

AND NORMAL SPACE POSITIONS.

It answered: INSUFFICIENT DATA TO ACCOUNT FOR DISCREPANCY.

He asked. HOW DID YOU DETERMINE OUR PRESENT POSITION?

It replied: BY TRIANGULATION, BASED ON THE RECESSION OF EARTH, THE SUN, SIRIUS, ORION, AND OTHER STARS.

BUT THE RECEDING SUN WENT INTO THE ULTRAVIOLET, he objected.

Again it answered with the non-committal, DATA ACKNOWLEDGED.

DID YOU ALREADY HAVE THIS DATA? he asked.

YES.

EXPLAIN WHY THE RECEDING SUN SHIFTED INTO THE ULTRAVIOLET INSTEAD OF THE INFRARED.

It replied: DATA INSUFFICIENT TO ARRIVE AT LOGICAL EXPLANATION.

He paused, pondering his next move. Time was speeding by and he was learning nothing of value. He would have to move the ship to some place in the warp where emergence into normal space would not put him under the blasters of the Slug cruisers. He could not know where to move the ship until he knew where the ship was at the present. He did not believe it was in the position given him by the computer, and its original space warp position had certainly not been the one given by the computer.

The computer did not have the ability to use its knowledge to explain contradictory data. It had been ordered to compute their space warp position by triangulation of the receding sun and stars and was not at all disturbed by the contradicting shift of the sun into

the ultraviolet. Suppose it had been ordered to calculate their position by computations based on the shift of the sun's and stars' spectrum into the ultraviolet?

He asked it: WHAT IS OUR POSITION, IGNORING THE TRIANGULATION AND BASING YOUR COMPUTATIONS ON THE SHIFT OF THE SPECTRUMS OF THE SUN AND ORION INTO THE ULTRAVIOLET?

It gave him the coordinates of a position almost two light-years toward Orion. The triangulation computations had shown the ship to be going backward at many times the speed of light; the spectrum-shift computations showed it to be going forward with approximately the same speed.

THIS SHIP CANNOT SIMULTANEOUSLY BE IN TWO POSITIONS THREE LIGHT-YEARS APART. NEITHER CAN IT SIMULTANEOUSLY BE GOING FORWARD AND BACKWARD.

DATA ACKNOWLEDGED, it agreed.

USE THAT DATA TO EXPLAIN THE CONTRADICTIONS OF THE TWO POSITIONS YOU COMPUTED.

DATA INSUFFICIENT TO ARRIVE AT LOGICAL EXPLANATION, it answered.

ARE YOU CERTAIN THERE WAS NO ERROR IN YOUR CALCULATIONS?

THERE WAS NO ERROR.

DO YOU KNOW THAT IF WE DROPPED BACK INTO NORMAL SPACE, IT WOULD BE AT NEITHER OF THE POSITIONS YOU GAVE ME?

It replied with the characteristic single-mindedness: DATA SHOWS OUR TWO POSITIONS TO BE THOSE GIVEN.

He paused again. He was still getting nowhere while time fled by. How swiftly less than a hundred

minutes could pass when they were all a man had left to him . . .

The computer was a genius with the mental initiative of a moronic child. It could find the answer for him but first he would have to take it by the hand and lead it in the right direction. To do that he would have to know more about the warp.

He wrote: **EXPLAIN THE NATURE OF THE SPACE WARP AS SIMPLY AS POSSIBLE AND WITHOUT USING MATHEMATICS HIGHER THAN ALGEBRA.**

It answered at once: **THIS CANNOT BE DONE.**

The chronometer read 12:30. He typed:

THIS SHIP WILL HAVE TO RETURN TO NORMAL SPACE NO LATER THAN 13:53. IT MUST BE MOVED TO A DIFFERENT POSITION WHILE STILL IN THE WARP.

DATA ACKNOWLEDGED, it replied.

THIS SHIP CANNOT OCCUPY TWO POSITIONS AT THE SAME TIME. YOUR MEMORY FILES SHOULD CONTAIN SUFFICIENT DATA TO ENABLE YOU TO FIND THE EXPLANATION OF THIS TWO-POSITIONS PARADOX. FIND THAT EXPLANATION.

SUBMIT METHOD OF PROCEDURE, it answered.

I DO NOT KNOW HOW. YOU WILL HAVE TO ARRIVE AT THE EXPLANATION UNAIDED.

THIS CANNOT BE DONE, it replied.

He wrote, with morbid curiosity:

IF YOU DO NOT FIND THE ANSWER UNAIDED YOU WILL BE DESTROYED ALONG WITH ME AT 13:53. DON'T YOU GIVE A DAMN?

It answered: **GIVE A DAMN IS A SEMANTIC EXPRESSION I DO NOT**

UNDERSTAND. CLARIFY QUESTION.

He got out of the computer seat and walked about the room restlessly. He passed by the transdimensional viewscreen and communicator and pressed the communicator's signal button. A dial flickered in return, showing his signal was going out, but there was no sound in response. If only he could make contact with the brains in Observation—

He was umpty billion miles east of the sun and umpty billion miles west of the sun. He was racing faster than light in two different directions at once and he was sitting motionless under the blasters of two Slug cruisers.

Another thought came to him: even if he could move the ship while in the warp, where could he go?

He would have to go far beyond the outer limits of the solar system to escape detection by the Slug cruisers. And at that distance the sun would be only a yellow star, incapable of energizing the little solar power units. He would not live long after the last of the power was drained from the batteries and the air regeneration equipment ceased functioning. He would not even dare sleep, toward the last. There were no convection currents in the air of a ship without gravity, and it was imperative that the air be circulated constantly. The air circulation blowers would cease functioning while the ship still contained pure air but he would have to move about continually to breathe that air. Should he lie down to sleep he would smother to death in a carbon

dioxide bubble of his own making.

If he managed to emerge into normal space at some point just outside Earth's atmosphere, beyond range of the cruisers, his driveless ship would descend as a blazing meteor. If, by some miracle, he could emerge into normal space just a few inches above the space-field it would be to materialize into space already occupied by air. Such a materialization would be simultaneously fatal to him and to the electronic components of the shuttle and computer.

And if he did not move the ship, the Slug cruisers would disintegrate him. He had four hypothetical choices of his way to die, all equally unpleasant.

He smiled wanly at his reflection in the bright metal bordering the viewscreen and said, "Brother—you've had it!"

HE WENT to the control room, there to brush his fingers across the useless control buttons and look into the viewscreen that revealed only black and limitless Nothing.

What was the warp? Surely it must have definite physical laws of some kind. It was difficult to imagine any kind of existence—even the black nothing of the warp—as being utterly without rule or reason. If he knew the laws of the warp he might find some means of survival hitherto hidden from him.

There was only one way he could learn about the warp. He would have to question the computer and continue questioning it

until he learned or until his time was up.

He returned to the computer and considered his next question. The computer had calculated their positions from observations of the sun and other stars in front of the ship—what would similar calculations based on observations of the stars behind the ship reveal? He typed:

USE FIRST THE TRIANGULATION METHOD AND THEN THE SPECTRUM-SHIFT METHOD TO DETERMINE OUR POSITION FROM OBSERVATIONS MADE OF THE STARS OF OPHIUCHUS.

The answers appeared. They showed the ship to be simultaneously speeding away from Ophiuchus and toward it.

He asked: DO THESE TWO POSITIONS COINCIDE WITH THOSE RESULTING FROM THE OBSERVATIONS OF ORION?

YES, it answered.

Was the paradox limited to the line of flight?

He asked the computer: WHAT IS OUR POSITION, COURSE AND SPEED AS INDICATED BY THE STARS AT RIGHT-ANGLES TO OUR FORWARD-BACKWARD COURSE; BY THE STARS OF URSA MINOR AND CRUX?

The answer appeared on the panel: the ship was racing sideward through the warp in two diametrically opposed directions, but at only one-third the speed with which it was racing forward and backward.

So now the ship had four impossible positions and two different speeds.

He frowned at the computer, trying to find some clue in the new data. He noticed, absently, that the

hand of one of the dials was near zero in the red section of the dial. He had not noticed any of the dial registering in the danger zone before . . .

He jerked out of his preoccupation with apprehension and typed: TELL ME IN NON-TECHNICAL LANGUAGE THE MEANING OF THE HAND NEAR ZERO ON THE DIAL LABELED MAX. ET. REF.

It answered: ONE OF MY CIRCUITS WAS DAMAGED BY THE SUD- DEN RELEASE OF AIR PRESSURE. I WILL CEASE FUNCTIONING AT THE END OF FOUR MORE MINUTES OF OPERATION.

He slammed the master switch to OFF. The lights on the board went out, the various needles swung to zero, leaving the computer a mind- less structure more than ever re- sembling an overgrown refrigerator.

Four minutes more of operation . . . and he had so many questions to ask before he could hope to learn enough about the warp to know what he should do. He had wasted almost an hour of the computer's limited life, leaving it turned on when he was not using it. If only it had told him . . . but it was not the nature of a machine to voluntarily give information. Besides, the re- ceding hand of the dial was there for him to see. The computer neither knew nor cared that no one had thought it worthwhile to teach him the rudiments of its operation and maintenance.

It was 12:52. One hour and one minute left.

He put the thought aside and concentrated on the problem of finding the key to the paradox.

What conceivable set of circum- stances would cause receding stars to have a spectrum shift that showed them to be approaching the ship? Or, to rephrase the question, what conceivable set of circum- stances would cause approaching stars to appear to dwindle in size?

The answer came with startling suddenness and clarity:

There was no paradox—the ship was expanding.

He considered the solution, ex- amining it for flaws of logic, and found none. If he and the ship were expanding the wave length of light would diminish in proportion to the increasing size of the retinas of his eyes and the scanner plates of the transdimensional viewscreens: would become shorter and go into the ultraviolet. At the same time, the increasing size of himself and the ship would make the Earth and sun relatively smaller and therefore apparently receding.

The same theory explained the two different speeds of the ship: its length was three times its diameter so its longitudinal expansion would proceed at three times the speed of its cross-sectional expansion.

Everything checked.

How large was the ship now?

He made a rough calculation and stared almost unbelievably at the results. He was a giant, more than a third of a light-year tall, in a ship that was six light-years long and two light-years in diameter. Far Centauri, which had required thirty years to reach in the fastest inter- planetary ship, floated seventy-one feet away in the blackness outside the hull.

And the sun and Earth were in the room with him, going into the shuttle's silvery focal ball.

He would have to ask the computer to make certain his theory was valid. His time was too critically short for him to waste any of it with speculation based on an erroneous theory.

He switched on the computer and it lighted up again. He typed rapidly:

ASSUME THIS SHIP TO BE MOTIONLESS AND EXPANDING WOULD THAT THEORY SATISFACTORILY EXPLAIN ALL THE HITHERTO CONTRADICTIONARY PHENOMENA?

There was a brief pause as the computer evaluated its data, then it answered with one word:

YES.

He switched it off again, to squander none of its short period of usefulness until he had decided upon what his further questions should be. At last, he had some grounds for conjecture; had learned something about the warp the designers of the shuttle had not suspected. Their calculations had been correct when they showed a ship would travel in the warp at many times the normal space speed of light. But somewhere some little factor had been overlooked—or never found—and their precise mathematics had not indicated that the travel would be produced by expansion.

Nature abhors a vacuum. And the black, empty warp was a vacuum more perfect than any that existed in normal space. In the normal space universe there were millions of stars in the galaxy and

millions of galaxies. In the warp there was utter Nothing. Did the physical laws of the warp demand that matter be scattered throughout it, in emulation of its rich neighbor in the adjoining dimension? Was the warp hungry for matter?

He rejected the thought as fantasy. There was some explanation that the physicists would eventually find. Perhaps there was a vast size-ratio difference between the two dimensions; perhaps the warp was far larger than the normal space universe and some co-universal law demanded that objects entering it become proportionally larger.

None of that aspect of his circumstances, however, was of importance. There was only one prime problem facing him: how to move the ship within less than an hour to some point in the warp where his emergence into normal space would result in neither instant nor days-away death and where he would have the time to try to carry out the responsibility, so suddenly placed in his hands, of delivering the space warp shuttle to the *Thunderbolt*.

The long-range task depended upon his immediate survival. He had to move the ship, and how did a man move a driveless ship? It might not require a very large propulsive force—perhaps even an oxygen tank would serve as a jet. Except that he had none.

He could use part of the air in the ship. Its sudden release should move the ship. There was a sun very near: Alpha Centauri. If he had the proper tools, and the time, he could cut a hole in the hull op-

posite Centauri . . . but he had neither the tools nor the time.

And what good would it do him if he could emerge into normal space at the desired distance from Centauri? He would be provided with power for the air regenerators by the solar power units but not power sufficient to operate the shuttle. He would breathe, and eat, for a week. Then the small amount of food on the ship would be gone and he would breathe for another four or five weeks. And then he would die of starvation and his driveless ship would continue its slow drift into the sun, taking his bones and the shuttle with it.

He would have to go to Sirius and he would have to reach it the first try or never. If he could emerge into normal space at the proper distance from Sirius he would have power from it to operate the communicator. The *Thunderbolt* would come at once when it received his message and swallow the little *Argosy* in its enormous hold. The return to Earth would be the swift one through the warp and the Slug cruisers, so bold in pursuit of unarmed interplanetary ships, would quickly cease to exist.

At 13:53 Sirius would be somewhere in or near the bow of the ship. The ship would not have to be moved more than two thirds of its length—twenty meters. He could do that by releasing part of the air in the shuttle room through the sternward airlock.

How much air?

He tried to remember long-forgotten formulas. So many cubic feet of air at such and such a pressure

when released through an opening of such and such a diameter would exert a propulsive force of . . . Hell, he didn't know. And not even the computer would be able to tell him because there were so many unknown factors, such as the proportion of the ship's mass lost to the Slug blasters, the irregular shape of the airlock opening, the degree of smoothness of its metal. . . .

He made calculations with pencil and paper. He would have to move the ship with extreme precision. A light-hour short of the proper distance put him too far from the sun for it to power the communicator, a light-hour beyond put him in the sun's flaming white heart. One light-hour out of eight point six light-years was approximately one part out of seventy-five thousand. He would have to move the ship with an accuracy of point aught three centimeters—one hundredth of an inch.

One hundredth of an inch!

He laid the pencil back down, almost numbly. He could never open and close an airlock and move a mass of thousands of tons with an accuracy of a hundredth of an inch. The very thought was wildly fantastic.

He was already far closer to Sirius than he would be if he tried to get any closer. And that was over eight light-years from it.

He looked at the chronometer and saw the hands had already reached 13:20. Thirty-three minutes left to him. Sirius was near—soon it would be in the bow of the ship—and Sirius was eight point six light-years away.

How could he move the ship a certain distance accurate to one hundredth of an inch? He couldn't. The answer was blunt and ugly and irrefutable: he couldn't.

He got up and walked across the room, feeling like a man who had in quick succession been condemned, reprieved, recondemned. He had been projected into a situation for which he had had no preliminary training whatever; had been made sole custodian and operator of a computer and a space warp shuttle that he had never before been permitted to touch. He had used the sound but not at all brilliant mind nature had given him to solve the riddle of the paradoxes and learn where he was and where he wanted to go. He had done quite well—he had solved every problem of his survival and the shuttle's delivery except the last one!

He passed by the shuttle and stopped to rest his hand on the bright, silvery focal ball. The solar system would be deep inside the ball; the atoms of the ball larger than Earth, perhaps, and far more impalpable than the thinnest air. The Slug cruisers would be in there, infinitesimally tiny, waiting for him to return . . .

No—faulty reasoning. The solar system was as it had always been, not diminished in size and not really in the ball. It was only that two different points in two different dimensions coincided in the ball . . .

He saw the answer.

He did not have to move the ship to Sirius—he had only to move the ball!

THERE WOULD be little time, very little time. First, to see if the warp shuttle was portable—

It was. When he unfastened the clamp that held it to the stand it lifted up freely, trailing a heavy cable behind it. He saw it was only a power supply cable, with a plug that would fit one of the sockets in the bow of the ship. He left the shuttle floating in the air, leashed by the cable, and went to the computer. Next, he would have to know if Sirius would be fully in the ship—

He switched the computer on and typed:

DETERMINE THE DISTANCE FROM THE CENTER OF THE WARP SHUTTLE'S FOCAL BALL TO THE SPACE WARP POSITION OF SIRIUS AT 13:53, BASING YOUR COMPUTATIONS ON THE EXPANDING-SHIP THEORY.

It gave him the answer a moment later: 18.3496 METERS.

He visualized the distance, from his knowledge of the ship's interior, and saw the position would be within the forward spare-parts room.

Next, to learn exactly where in that room he should place the shuttle. He could not do so by measuring from the present position of the shuttle. The most precise steel tape would have to be at exactly the right temperature for such a measurement to be neither too short nor too long. He had no such tape, and the distance from the focal ball was only part of the necessary measuring: he would have to measure off a certain distance and a precisely certain angle from the purely imaginary central line of the ship's axis to intersect the original line. Such a measurement would be im-

possible in the time he had.

He considered what would be his last question to the computer. The hand was touching the zero and his question would have to be worded very clearly and subject to no misinterpretations. There would be no follow-up questions permitted.

He began typing:

IT IS DESIRED THAT THIS SHIP EMERGE INTO NORMAL SPACE ONE LIGHT-HOUR THIS SIDE OF SIRIUS AT 13:53. THIS WILL BE ACCOMPLISHED BY MOVING THE WARP SHUTTLE TO SUCH A POSITION THAT ITS FOCAL CENTER WILL BE IN A SPACE WARP POSITION COINCIDING WITH A NORMAL SPACE POSITION ONE LIGHT-HOUR THIS SIDE OF SIRIUS AT 13:53. CONSIDER ALL FACTORS THAT MIGHT HAVE AFFECTED THE DIMENSIONS OF THIS SHIP, SUCH AS TEMPERATURE CHANGES PRODUCED BY OUR NORMAL SPACE ACCELERATION AND DECELERATION, WHEN COMPUTING THE POSITION OF SIRIUS. THEN DEFINE THAT LOCATION IN RELATION TO THE STRUCTURAL FEATURES OF THE ROOM'S INTERIOR. DO THIS IN SUCH A MANNER THAT PLACING THE SHUTTLE IN THE PROPER POSITION WILL REQUIRE THE LEAST POSSIBLE AMOUNT OF MEASURING DISTANCES AND ANGLES.

It seemed to take it an unduly long time to answer the question and he waited restlessly, unpleasantly aware of the hand touching zero and wondering if the computer's mind was baffled by the question; the mind that thought best in terms of orderly mathematics and could not know or care that measurement by protractor and tape would result

in a position fatally far from that described by the neat, rigid figures.

Then the answer appeared, beautifully concise:

POSITION WILL BE IN CORNER OF ROOM, 764.2 CENTIMETERS ABOVE FLOOR PLATE, 820 CENTIMETERS PERPENDICULAR TO PANEL AA, 652.05 CENTIMETERS PERPENDICULAR TO PANEL AB.

The computer died with an oddly human sigh. Its last act had been to give him the location of Sirius in such a manner that he could accurately position the shuttle's focal ball with the aid of the precision measuring devices in the ship's repair room.

He went to the shuttle and picked it up in his arms. It was entirely weightless, and each magnet-clicking step he took toward the bow of the ship brought Sirius almost half a light-year nearer.

He squinted against the white glare of Sirius in the viewscreen as he continued his terse report to the *Thunderbolt's* commander: "I have about a week's supply of food. How long will it be until you reach me?"

The commander's reply came after the pause caused by the distance involved:

"We'll be there within three days. Go ahead and eat hearty. But how did you travel from Earth to Sirius in only two hours? My God, man—what kind of a drive did that ship have?"

"Why, it didn't have any drive from the start," he said. "To get here I"—he frowned thoughtfully—"you might say I walked and carried the ship."

• • •

It was a terrific theory and it would send Man to the stars.

But the two men involved had to buck more than physical laws; and so the project was finished, over, done with.

Unless . . .

Corbow's Theory

BY LEE WALLOT

ALL RIGHT! So we've got it. The same problem rocket designers have been struggling with for five years. Nobody's found the answer—and they never will!"

Bronsen Corbow glared at the older man, his lips pressed tightly together to keep from giving voice to the anger mounting inside of him. Mars Kenton was an argumentive old fool, but the company had made him his assistant and nothing could be done about it.

"They've known ever since they discovered that interstellar drive," Mars continued, "that they can

only make enough Carbolium to send four ships a year to the end of our galaxy and back again. Is it our fault they have to make the blasted stuff instead of mining it out of the ground?"

The words ringing in the quiet of the laboratory seemed to pound in Bronsen's ears and he found he could hold his tongue no longer. He leaned toward the older physicist and slammed his hand down on the table.

"That's enough, Mars. I happen to be the one in charge here, not you." His quiet voice made clear



Illustrated by Mel Hunter

the anger he felt. "Reed turned the problem over to us. I say we can lick it. Just because my chief assistant is still thinking in terms of ancient history, it's no reason to send back a report from this laboratory saying we can't handle the problem." He ran a trembling hand through his close-cropped hair and swore at himself when he saw Mars noticed the trembling. Why did he have to start shaking every time he got mad? The person he was mad at invariably took the shaking to be fear, and he would always be forced to drive his point home all the harder in order to get the respect he demanded.

Mars Kenton sneered. "Mind telling me just how you are going to eliminate interstellar drive from our rocket ships? Or have you cooked up another of your bright ideas to try out at the company's expense?"

"I'm fed up with you, Mars!" All control over his temper was gone now and the younger man gave full vent to his anger. His powerful body fairly bristled in his rage and in spite of himself Mars was forced to cringe beneath the assailing roars that followed. "You may be twenty years older than I am; you may have been one of the pioneers in space travel; you may still be a good man if you could forget that the whole world didn't plot that accident that left you with a bad leg—but you're still taking orders from me. We have some good men in this department, and you can either keep your mouth shut and work with us or you can get out. Interstellar drive isn't the only solu-

tion to space travel and the answer to the problem is going to come from this laboratory. Now take your choice!"

Mars glared at Bronsen and seethed inwardly but swung back to his work table. His right leg twitched convulsively, forcing him into a stumbling limp and he silently cursed the fate that had brought him to such a lowly existence. Him! Joc Kenton! Member of the first expedition to land on Mars and successfully return to Earth. And what was he now? Just a second rate design consultant working in a laboratory on the moon. His water blue eyes clouded in his flood of self pity. How beautiful it had been out there . . . all blackness, all majesty, the throbbing power of the rockets, the thrill of unknown adventures in the void. His rickety old heart beat faster with remembering. The scorching desolateness of Mars was something he would never forget. Even now he could see the miles of heat-drenched land, the thick red powder that covered the planet's crust, the stretching reaches of nothing but a barren, dead world. And then—the accident. Sure, it was just an accident. How could he know that the port lid was going to break its magnetic field and slam down upon him? It had though, and he had returned an honored man, praised for his self-sacrificing adventure, then pitied because he would spend the rest of his life a crippled man. He twisted his thin, blue-veined hands together, those hands that had piloted a glittering rocket through

space, those hands that had sifted through the sands of an alien world, those hands that now were white and fragile, working over drawings and plans for other ships. Gone were the dreams, and with their going came the bitterness.

He felt his anger melting in his own self pity, decided not to brush away the tears that gathered in his eyes and turned to his board, staring at it through blurred vision.

"Bong! End of round five. Just wait around a minute folks, next round coming up." Vern Webber peered cautiously around the door as if expecting something to fly at him, then jumped into the room. His youthful face broke into a broad grin as he bowed before the chief designer. "Oh great and noble Mr. Bronsen Corbow. Is it safe for your lowly servant to approach these hallowed halls in answer to your summons? Mine is not to reason why—but I'd still like to leave here with my head on my shoulders."

Bronsen found himself smiling at his young assistant. Vern, although he was twenty-four, had the spirit and air of a teenager and usually succeeded in keeping the lab in a state of high humor. The tenseness of the argument with Mars dispelled itself and Bronsen relaxed.

"Get word to the men that we are having a special meeting this afternoon, in the conference room. We're going to blow the lid right off the present concepts of space travel and really give those people out there something that will make their eyes bulge. I'll tell you more about it this afternoon."

"Aye, aye, sir!" Vern clicked his heels, gave an exaggerated salute and was gone.

Bronsen glanced in returning annoyance at the snort of disgust that issued from Mars' corner. That old fool and his rockets, he thought were things of the past. There was only the future now. New ideas, new methods, new successes. Why couldn't Mars see that? And yet, Bronsen himself felt a tiny pulsing of doubt. He cursed himself for that tinge of self-distrust, but could do nothing about it. He was brilliant, he was a master of design and he knew space flight as well as he knew the shape, workings and complexities of the pencil he twirled in his hands. But what if he wasn't right? What if his new theory *was* a flop—and with it a waste of money, time and human lives?

He tore himself from his dismal thoughts with a savage determination and strode into his office. That damned Mars was just getting under his skin, that's all. Listen to him long enough and he'll have you thinking we should all have stayed back in the horse and buggy days. No problems of space flight then, no old beliefs, ancient ideas, stagnant prejudices to worry about then. Not as far as traveling to the stars was concerned, anyway.

"**F**IRST, let's review a few points I know you are all familiar with, but that you should keep in mind, starting with the beginning of space travel." Bronsen ran his hand through his hair and looked over the eagerly expectant

faces of his staff, considering carefully the points he had to make.

"First, there were the Detorium-driven rockets. Fine ships that opened up the realm of travel in outer space." His voice was firm, stringent with his inner excitement, his faith in his idea. "In fact, it was just such a ship as this that Joc Kenton, Mars to you folks, was on when they made their first landing on Mars. These ships had their good points and still are excellent over short distances but certainly are of no use for intergalactic flight. They are much too slow, requiring more than a lifetime to make the trip there and back.

"Then came the interstellar drive, the method we are now using. This drive, utilizing Carbolium which we have to manufacture, makes full use of space as a medium of travel. There's only one catch. We can make only a certain amount of Carbolium, and the costs of making it are astronomical. However, no matter what the expense, the supply is limited. Still, everything's fine. We use the old rockets for short distances and the interstellar drive for intergalactic trips."

He paused a minute to let it sink in. "That is everything *was* fine. As you know, we have found another planet, remarkably similar to Earth in the Eastrex Galaxy, and have succeeded in setting up a colony there. This presents problems. For one, since we can send only four ships a year to Naver, this new planet, our colonizing is going to be slowed down to a crawl. Also, we will have a mighty hard time trying to get supplies and ev-

erything else that a new colony needs to Naver within a reasonable length of time. In other words, what we need is a ship that will be cheap to run, fast enough to get there and get back again and also safe enough to carry passengers and cargo, even in small amounts. You've heard of this problem before; I know you've tried independently to work it out and have not had much luck. I think we might have an answer now.

"How many of you have shot a rifle or are familiar with a gun?"

The expectant faces had gone blank. What was he leading up to anyhow? Still, a large number of hands cautiously worked their way into the air.

"All right. All you have to do right now is forget about space ships and concentrate on a rifle and a bullet." There was beginning to be the muttering and stirring of a confused group of people. Bronsen's muscular hands gripped the table eagerly. They were confused, but they were also interested. "You are familiar with the fields and grooves of a gun barrel," he continued, "and you know they are there to give the bullet a spin when it is fired. Now what happens to a bullet when it is fired from a smooth barrel, with no grooves? It is inaccurate, wobbles, has less power and eventually turns end over end. Now, take the grooved rifle barrel. The bullet is given a spin, it has many times the velocity of the other, it has a straight line accuracy due to the spiral motion—keep these last two points in mind—and providing the rifle is

aimed right in the first place, will hit the target."

The group was being split up into two factions, those who leaned forward expectantly once more and those who shook their heads in bafflement.

"Now, let's go back again to the old rockets, and also our present ones. They all use the same principle to get off the ground—blast off with rockets. But let's add a second type of blasting off area, also using rockets, but one that looks like a monstrous rifle barrel, complete to the fields and grooves. We have a launching apparatus that is like a grooved rifle compared to a smooth barreled one. The smooth barrel that we now use, the rockets taking off straight, gives good acceleration but not enough top speed. Our old rockets had that fault and never could get good velocity even when in flight. Our new ones take over with the interstellar drive, but we want to eliminate this last method. The spiral take off though, would give much greater velocity right from the start, would enable the ship to hit outer space with a greater speed than it could attain using the other methods and it would continue on in space at a much faster rate. The lack of friction would keep it from slowing down and if we could hit the speed we want before entering outer space, the ship could go right on at that same rate in space. There wouldn't even be need for rocket power while in actual galactic flight. The initial momentum would carry it through to its destination. The rocket could do all

this because this spiral launching would give us more 'muzzle velocity', and in a given time after blast off, the spinning ship would have reached a much greater speed than the regularly fired one. This means operating cost will be confined to blast off, landing and to skirt around any sudden dangers that might arise in space."

"We therefore have a ship that has the velocity of the drive and maybe more, without the cost of drive. It has safety since our old rockets proved to be remarkably accident-free and this design would actually be working on almost the same principle as the old rockets, except for the blast off. The difference in outer space would be this. The old ships used rockets throughout the trip to increase their velocity. The new ones will be traveling so fast when they enter outer space, they won't have to use any power because they will already have the velocity needed."

He paused to swallow the dryness in his mouth and noticed with pleasure that more than one face was twisted in thought. Good. All they have to do is be given a theory to think about, the time to do that thinking and they'd be on their way.

"That's about it for now. I have some ideas of my own for the design of this ship . . . and it's really surprising when you think how simple it is. But I'll save that for some other time. Right now, I'd want all of you to think about it. It gets top priority. Report back to me with your ideas. I think we can lick this problem and get our bread and

butter, Inter Galactic Enterprises, right on top of the pile. Good luck."

The meeting broke up amidst frantic discussion, wails of misunderstanding, confusion and quiet self-musings. Bronsen smiled to himself, his face almost boyishly radiant in his pleasure. The seed had been planted. Now all he had to do was give it time to grow and bear fruit.

VERN'S cry of amazement rang with reverence as he stood with Bronsen looking over the first test rocket as it was slowly wheeled to the launching area. "Boy-o-boy! Look at that beauty! Did you ever see anything like it?" The silver ship lay on its side as it approached the huge tower, but already Vern could see its glistening majesty soaring through the sky.

"She was a lot of work, Vern. Let's just keep our fingers crossed. By the way, that design of yours on the rotating cylinder inside the rocket, working independently of the rocket's forced spin, was good. Tough thing to lick, but now the pilot can keep a steady 'up' and 'down' no matter how much the outside of the ship is spinning. Good work."

Vern shrugged his shoulders. "Just call me the Einstein of the 23rd century, that's all. We'll all see how well everything works pretty soon now."

Bronsen was finding the tension beginning to build up in him. Just a few more hours and his theory would be lauded with success or

shattered into the dust. He peered at the rocket, at the tiny black figures of the men that were dwarfed by its size and at the giant, black tube, towering hundreds of feet high, waiting patiently to receive her first charge. The needle-nosed space craft glistened in the early morning sun, her thin beauty tantalizing to the senses of a spaceman. Her lines swept gracefully back across her smooth expanse until they hit the four fin tips sweeping out from the rotating band of the tail piece, the fin tips that would fit into the slowly spiraling grooves of the launching tower. The field and groove construction first suggested by Bronsen had been replaced by lands and grooves when it was found that the fewer grooves gave greater accuracy and better muzzle velocity when tested on the laboratory models. Thus, there were only four fins instead of the originally planned eight.

The rocket reached the lowering platform and Bronsen watched in nervous anxiety as the ship was lowered into the ground tail first, then slowly began its upward ascent into the belly of the launcher. He thought of a thousand things that could happen right then, found that none of them were going to and returned to his office. The rocket was safely nestled in the launcher's belly, patiently waiting for the human crew to arrive and give it life.

When they gathered about the launching field that afternoon Bronsen found himself sweating in both the heat of the day and the torrid intensity of Mars' insistence

that the whole thing was going to be one big flop.

"Just one blast from those rockets and we'll all be blown into the next galaxy, without benefit of a space ship. Trying to shoot a 70,000 pound rocket as if it were a toy gun. You'll learn one of these days, Corbow, that the old way was still the best. It got us to Mars and back and if you'd work on that instead of this, it would be good for intergalactic flight too. But no, you've got to have your name up there in print."

"Oh, shut up your damned mumbling, Mars!"

Bronsen shot the words out savagely. He gave the older man a withering look and turned his attention again to the ship. The men that were to take her up had disappeared inside the expanse of the launching tower and the other figures darted back and forth, making last minute preparations. The minutes began to tick off. Five minutes until blast off. Four minutes. Three minutes. The field was now completely devoid of human figures. Two minutes. One minute. Ten seconds, nine, eight. The launcher looked lonely and terrifying in its greatness and Bronsen tried to wish the rocket up out of her belly by will power alone. *Four, three, two, one . . .*

The ground trembled as the ear-shattering roar jumped across the lunar landscape. The sound grew louder, sharper, and Bronsen began to think his head would split with the noise. The rockets pitched higher, their scream pierced the air and then the silver nose of

the ship edged above the top of the launcher. It pulled further into view, the shimmering silver glinting in the sun and Bronsen clenched his fists in anxiety. Come on baby; show them what you can do. That's it baby, keep right on coming. Come on girl! The ship rose clear of the launcher, the distance making it look as if it were shot straight out, but Bronsen knew the steadily spinning hull was heading right.

Suddenly he noticed it. Something was wrong! The ship wasn't acting right. What was it? His eyes tried to leap from his head to get closer to the rising needle and then he saw it. It was shaking. The whole ship was trembling as if in human terror. He watched the tremors pass from the nose to the tail, each one more violent than the last, until the whole ship was wracked with a shaking like palsy. Why? It had worked so beautifully with the experimental models. What was causing it? The bow of the ship was now visibly shaking, the tremors becoming more savage and then the nose began to dip. With a final shudder of resignation, the rocket pitched over and began its screaming descent. Bronsen watched the plunging ship, felt his heart grab in pain in his chest and stumbled back from the observation window unable to watch any longer. The burst of a million shells at once slammed into the unyielding lunar plain. In his mind's eye he could see the twisted, exploding mass of metal and the thought sickened him.

The others ran from the room,

heading for the wrecked ship. Bronsen watched them with dull eyes and made no attempt to follow. What could they do for the four men that had gone to their deaths in his mad creation? What could they do for the millions of dollars that now lay a twisted heap of rubble? He turned to drag his defeated body back to the lab, to twist and mull in his mind what had happened, and found himself looking into the glaring eyes of Mars.

"I told you, didn't I, Mr. Corbow?"

Bronsen covered his ears so that he wouldn't hear. He screamed, "Shut up! Shut up before I slam you one."

Mars spat in disgust. "Four nice guys in that ship, too. Knew 'em, didn't you?"

Bronsen's hammer-hard fist smashed into Mars' mouth and the old man was slammed against the wall before falling in a crumpled heap on the floor. He sat there, the blood oozing from his mouth as he stared at the retreating back of the man he never thought would have enough nerve to really hit him. Now he was sorry he had said anything and the self pity welled up within him. He really didn't mean half of what he always managed to spit out. What made him do it? He wiped the blood from his mouth and pulled himself to his feet.

BRONSEN slumped further down into the soft contours of the chair, eyeing Hanson Reed with

a tortured soul. The president of Inter Galactic Enterprises glared at him from the other side of the desk, every inch of his paunchy frame the body of an outraged executive. He chewed violently on the black cigar in his mouth and waited impatiently for Bronsen to explain. Bronsen spread his hands helplessly.

"I don't know Reed. I just don't know." His shoulders heaved in a sigh of dejection. "Every single person in the moon lab has been looking for an answer and we still can't find out why the ship crashed. We've tested the laboratory models over and over again. We've gone over every little detail and have nothing but a blank to show for it."

Reed chewed more savagely at the end of his cold cigar. "We spent two million dollars on research and development and all *we* have to show for it is a pile of scrap metal and four corpses scattered over the lunar landscape. There's got to be some explanation."

"Just one in a million chances that an accident like this would happen," Bronsen countered desperately. "It's just coincidence that it happened on the first model."

"Coincidence!" Mars' voice was guttural with contempt. "I told you from the start it wasn't practical. I knew . . ."

"All right, Mars," Reed interrupted. "You were project design engineer, right?" Mars nodded in agreement. "Was there anything wrong with the design of the ship, any reason why it probably wouldn't have worked, from a design stand-point?"

"No," he answered reluctantly. "Not that I could see. I just knew from the start it wasn't going to work. I told Bronsen that, lots of times, but he just isn't the type to take advice."

Bronsen roared and leaped to his feet.

"You old fool," he bellowed. "Technically, theoretically and mechanically, there wasn't one indication that it wasn't going to be a completely successful launching procedure. You know that as well as anyone! Ask the men around you. They handled the final application, the mechanics, the construction, the blast off. Ask any one of them. Every single one of them will tell you the same thing. There was no reason why the ship should have crashed! Every item had been checked, double checked and re-checked again. The instruments indicated everything was functioning perfectly at blast off. If you didn't have such a twisted inverted opinion of everything . . ."

Mars leaned forward, his body now trembling, "Don't you go calling me names, you swell-headed pup!"

Reed pounded his desk violently.

"Mars! Bronsen! he shouted impatiently. "This is hardly the time for name-calling and airing personal gripes. We're here to find a good reason for spending more money on this project. We're not children in a schoolyard, arguing over a piece of candy, although that's exactly what it's beginning to sound like. Frankly, I'm of the opinion that with so much internal fighting going on, nothing could

possibly come of spending more. It would be a waste of both finances and time."

Bronsen slowly sat down again, his trembling hands clenched into tight fists.

"That's one item you don't have to worry about," he growled. "Kenton is completely finished as far as I'm concerned. He's out. Fired."

Mars' face fell in shocked surprise. Reed tore the cigar from his mouth and glared at Bronsen.

"No one is being fired, Bronsen. You've been a good leader, in my opinion, as well as a friend, but I do the firing around here." Bronsen glowered and reddened under the unexpected rebuttal but said nothing. "You are young yet," Reed continued. "You've got brains, imagination, leadership and ability. Wouldn't be where you are if you didn't. There's just one thing lacking, and Mars is the one that has it. Experience. And with that experience goes well-used caution. You've got the go-ahead, but he has the wisdom. Temperance and drive. That's Mars and you. You've got each other. Why don't you just learn how to work with and use each other?"

Bronsen remained in baleful silence. Mars glared at the younger man and sneered contemptuously.

"That young pup never will know what the word caution means. He's so eager to get his name up . . ."

Bronsen rose to his feet, his grey eyes flashing in hate. Reed slammed his cigar into the ashtray and threw up his hands.

"That's it! It's the last straw!

I'm through playing referee for two snarling dogs. The project is closed, finished! If and when somebody can come up with a decent reason why it should be opened again, we'll consider it then. Until that time, consider the project non-existent and return to your regular jobs. And cut out the bickering and fighting—or you are both fired!"

He pulled out a fresh cigar, bit into it in disgust and dismissed the meeting by returning to the papers on his desk. Bronsen felt the anger boiling over within him and suppressed the desire to hand in his resignation on the spot. He looked for Mars and saw his thin frame out the door. He wearily passed a hand over his eyes and left the room.

MARS SCOWLED in annoyance at Vern's whistling and silently wished the young assistant would get out of the room and let him brood in peace. He chewed the end of his pencil methodically and savagely, his features blushing pink with anger as he remembered the tirade of words exchanged with Bronsen a week ago. "Stupid, insolent, day-dreaming pup," he snarled half aloud.

Vern stopped in mid-step, eyeing him in surprise. "Huh?" he said. "Did you say something to me?"

Mars grimaced. "No. I was just talking to myself."

Vern grinned widely. "That's good. I'd sure hate to have anybody think those words were a de-

scription of me. Good old Vern, that's me. Combination office boy, slave, master of ceremonies and soothing balm for ruffled egos. That's my description of me. Master of all trades, Jack of none. Of course, I can't say what others think."

"You don't make much sense," Mars growled thickly, biting again into the pencil.

"Neither do you," Vern countered quickly. "But then again, what man does to a struggling young genius like myself?"

"Oh dry up," came the reply. "And take that drawing table into the new drafter's room."

"Oh, sure. You only need about three men to move that monster but . . ." He left the sentence unfinished and dragged the table from the wall. Mars smiled sympathetically, shook his head, and pointed to his bad leg when Vern indicated he could use some help.

"Such is the life of a slave," the younger man sighed and hoisting the clumsy article, headed for the door.

"Look out!" Mars suddenly yelled and jumped forward to catch a falling rocket model as the table edge glanced off it. Vern yelped in surprise, jolted backward and fell against the wall, the heavy board crashing down on his foot.

"My God, Vern. Your foot . . ."

The other grinned, withdrew his foot, from beneath the board and pulled down his sock. "Not this baby," he flipped. "I've got cast-iron insurance. It's plastic from the ankle down, see?"

Mars stared in shock at the arti-

ficial limb and could think of nothing very brilliant to say.

"Got it in cadet school," Vera explained and then answered the question in Mars' eyes. "I was training to be a space pilot myself. Some fellows and I decided to celebrate our graduation, got drunk and ended up in a wreck. They put me together real good, even taught me how to use the foot so no one would ever know it wasn't the real thing. It washed me out as far as the Space Corps was concerned though. I drowned my sorrows in alcohol for a couple weeks, told myself I was going to hell with myself and then decided to put what I did know to work. That's how I joined up with this outfit. Now I sit back and design the rockets my classmates have to worry about flying . . . Enough of this chatter . . . got to get busy. See you."

Mars turned thoughtfully back to his desk. "That kid's got only one foot," he mused soberly. He looked down at his own injured leg and savagely kicked it against the wall.

"Your leg. Your poor, crippled leg . . . what a fine crutch it has been," he bitterly reproached himself. "It proves you were one of the first in space, and you won't let people forget it. You're a jealous old man. You're afraid to have someone else do what you no longer can do. You want things to stay the way they were when you got hurt, so no one else can live your dream. If time stood still, there would be no trips to new planets, no new discoveries and Mars Kenton would still be the hero of his dream."

He tried to revolt, to denounce the self-accusations. "What about Bronsen Corbow?" he asked. "Does that explain why I've fought him so hard?"

His slowly growing conscience laughed at him. "But it does. Bronsen ignores your crutch, your proof that the old way worked the best. He's concerned with the future, the future you never want to come." He buried his grey-thatched head in his hands and felt the weariness in his bones. His thoughts returned to the unsuccessful launching.

"But it was a crazy idea," he argued weakly. "It would never have worked anyway." It was a poor defense, one that faltered and failed when he finally admitted the truth: He was a jealous, bitter man, fighting anonymity.

Once more he found himself mulling over the rocket launching, probing for support to his initial decision that it wouldn't work, searching for some point to substantiate his claim. But was he really right in that decision? Had he let his hate-ridden heart rule his reasoning mind? He waded back to the beginning of Bronsen's theory. Bullets . . . the test models were the bullets. Shells . . . the huge rocket itself was a shell compared to the bullets. Shells have an ojive, bourrelet, rotating band, but bullets are different. How? He stopped. He reviewed the parts in his mind, then suddenly lurched to the files and pulled out the rocket plans. He compared the ship's construction bit by bit with a shell, his mind working quickly, accurately, with a new enthusiasm. . . .

Hours later he leaned back from his drawing table and his voice rumbled out into the quiet reaches of the empty room.

"Men will fly to the stars like a bullet," he prophesized. "Because I know why the rocket crashed."

It was dark but the light in Bronsen's office was still on. Mars pulled himself erect and turned toward Bronsen's room, then faltered. "I could just forget it," he mused. "Then the idea would be filed away. But someday . . ." He could not do it. The excitement was beginning to mount inside of him, pushing him forward. He took a deep breath and with a decisive shrug drew back his shoulders, standing straighter and taller than he had in fifteen long years. He strode from the room and headed down the hall.

Bronsen heard the door behind him open and close softly. He glanced up and saw who it was and returned, scowling, to his work. When Mars did not leave, he looked up again, curiosity stirring within him at the expression in the older man's face.

"Well?"

It wasn't really a question, nor an inflection denoting that he wanted to hear what Mars had to say. It was more of a compromise between physically throwing him out and grudgingly listening to what he had to say.

"I've got it, I know what happened to the ship," Mars announced quietly. "I knew it when I saw it come out of the launcher but I couldn't explain it." Bronsen returned to his papers with a snort

and Mars pleaded, "I'm sorry about all those things I said. For God's sake. Listen to me!"

The tortured pleading in the man's voice made Bronsen put down the papers in surprise.

"The models worked," Mars plunged ahead. "Sure they did. But because they were small . . . so much smaller than the real ship . . . there was no trouble and they worked perfectly. The trouble reveals itself only as the projectile gets larger. The nose, Bronsen. A nose band. Don't you see what I'm trying to say?"

The younger man stared in silence at the pleading ex-space pilot, before the words began to penetrate his whirling thoughts. He forgot the crash of the ship; he forgot the feel of hard teeth splitting the skin across his knuckles; he forgot the animosity that existed between them. His mind could focus on nothing but what Mars was trying to say.

"The nose of the ship is long. The only guides were on the tail at the rotating band. Think of shells. Bourrelets. The *big* shells have bourrelets . . . bands around the nose that dig into the grooves and steady the front of the shell. The ship . . . its front began trembling because there was nothing to guide the nose in a steady path. The more velocity the rocket had, the worse the trembling became until it threw the whole ship out of control. Don't you see? That's all that was wrong with it! It would have been perfect if it had had guide wings on the bourrelet. The guide pieces could be withdrawn

when the ship is launched . . . but they would have to be there in order to *get* it launched. I'm right, you know I am! That's your answer. That was the only part wrong with it!"

The enormity of Mars' words left Bronsen speechless. He looked at the suddenly joyous man before him and saw the old bitterness replaced by the rapture of his discovery. Yes, that was what had been wrong. It was the solution . . . the one tiny piece that made the puzzle into an understandable picture. He paused a moment, as if trying to make a great decision, then grabbed the older man by the arm.

"Come on! Let's get it down on paper!"

THE ROCKET lay huddled in the belly of the launching tower, her needle-like body quiet, waiting, her control panels flashing signals and instructions to her masters, her circuits buzzing with the tenseness of the seconds before blast off. The steady counting drummed through her wires, tripped relays, and her masters flipped the switches, pressed the buttons and pulled the levers that readied her for her maiden flight. Eight seconds, seven seconds. Six seconds, five, four. The switch was jerked upward and she felt the power beginning to move in her vitals.

Three, two, one!

The driver button slammed home, her rockets roared out in ferocious birth, snarling, roaring, growing with each passing second.

She settled back upon her rockets as if in protest at their screaming growth, then was forced to give ground and the ship moved up the shaft. Her rotating band and bourrelet fins dug deep into the spiraling grooves, her body began to turn . . . slowly, so slowly. Then she suddenly leaped forward, her hull whirling upward; the shaft raced by in dizzy swiftness, her rockets roared louder and she raised her spinning body further. She was free! Her body hurtled up and up, her needle nose straight and true, her velocity leaping forward. . . .

"Off rockets! Set up emergency interstellar drive for instant activation if needed. Signal in scanning screens. Activate force field and take a breather boys. We're on our way and the blast off was perfect."

The pilot's mechanical sounding voice droned through the speaker in the moon-bound observation room and simultaneously the air was ruffled by the deep exhale of relief, the rustle of slowly relaxing bodies strung tight with the hopeful tenseness of the blast off.

Mars gazed up at the disappearing silver streak, his blue eyes intent, glistening with pride and excitement. "I never thought I'd see the day," he breathed. "Look at her, she's going straight and true. She's the most beautiful thing I ever saw."

Bronsen's face relaxed into a happy grin as the gleaming rocket hurtled up out of sight. He glanced at Mars and gave him a companionable smile.

"Even more beautiful than Mars
(Continued on page 111)

The invaders were going to make galactic history.

Fate made it a comedy of errors.

SHOCK TROOP

BY RICHARD BOLTON

ZURG THWIRMED, and admitted to himself that he was uneasy. Arching his thorax, he unrolled his antennae slowly in a lazy gesture he hoped would conceal the unseemly nervousness he felt now that the ship had swung into an orbit around the strange planet. When a commander briefs his officers, he must radiate confidence and calm.

"Companions, an historic moment has arrived," he began pompously, his antennae moving in the deliberate, stylized movements of the Court language. "Below us lies the verdant expanse of the third planet, green gem of the heavens."

At this, several of his subordi-

nates turned a rather puzzled yellow around their head orifices, obviously unable to understand a gesture of what he was saying. Only the second-in-command seemed unconcerned; he knew from long experience that his commander would revert to common vernacular when he had finished the usual ceremonial preamble.

Zurg did so, noting the relieved hues of his officers as he continued: "As you all know, our scouts have reconnoitered this world on several occasions. But now the time has arrived to make an actual landing. In fact, companions, we are the vanguard of an invasion." Pausing to let this register, he was pleased to

see that none of the officers seemed to be suppressing thwirms. If anything, they were calmer than he was.

"Not a great deal is known about the inhabitants of the planet, but the dominant form of life, strangely enough, is mammalian, and possesses some intelligence. Her Majesty desires conquest without undue destruction. As the Queen wills, her servants shall act."

All dipped their antennae at this formula, and watched in attentive hues as the commander went on to explain that due to the high percentage of oxygen in the atmosphere, special coverings would have to be worn. They would filter the air before it reached the ventral tracheae, and leaving the head exposed, would shield all the rest of the body. A bit clumsy, the commander admitted, but absolutely essential.

"Now as to our behavior toward the natives—previous experience with mammalian life-types shows that they are susceptible to panic and fear when confronted with something totally strange, so we will use tactics which basically are very simple. First, we will land near a native settlement. When we march into the area, our alien appearance will stun the natives. Our detachment of all-range telepathic sensitives will notify us when the state of shock has set in, then our attack support will open up with full-scale mental assault, and keep the creatures paralyzed while we seize the area before a defense can be organized. Then the Grand Fleet will proceed here at top speed."

"Remember that in this, as in all operations where the powers of the collective mind are used, we must first trigger the enemy's reaction by physical means, therefore nothing can be done until we *know* that they are in the needed state of shock. Now are there any questions?"

How strange actually, mused the commander as he returned to his cubicle, that a race like his own, so gifted at pure mental contact with other life-forms, should still use signals and colorations to communicate among themselves. The chafed spot on his left antenna was paining again after the exercise of the briefing. The report had said that these mammalians were believed to converse through some kind of atmospheric vibrations . . . Odd too, that mental warfare, refined and developed though it was, could still only be used against minds agitated by a specific physical stimulus. And that physical stimulus had to be provided by the invaders appearing on the scene, and if necessary performing the Dra, a series of dances and contortions so repulsive to most life-forms that all thinking would fade into panic. Having once thwirmed himself at a performance of the Dra, he hoped it wouldn't be necessary . . . his musings were interrupted as the ship's lights flickered to orange, signalling hands to stations for planetfall.

Leaving the con of the ship to his second-in-command, he shut himself in his cubicle and made preparations to be miserably sick, as he always was during deceleration. Stroking the chafed spot on his an-

tenna with the smooth edge of his left forearm's prehensile claw, Zurg raised his medicine kit in his secondary tentacles and snapped off the heavy lead seal with his jagged incisor mandibles. I wonder, he speculated, why alien races always find us so frightening . . .

The brilliant orange sun was high in the sky, but only a few filtered beams penetrated to the sheltered copse where the slate-colored ship lay partially concealed by artfully placed vines and underbrush. Drawn up in three ranks beside the ship, only their heads protruding from the loose-fitting coveralls, stood the detail picked to make the entry into the native settlement. Zurg led them out through the underbrush barrier they had thrown up the night before, and they emerged onto a little-traveled dirt road leading off across the fields toward a cluster of buildings that marked the edge of town.

No creatures appeared as the invading column lumbered along. As they neared the edge of the settlement, Zurg, his antennae drooping slightly from the unusual heat, turned to remind the others: "Remember, the mental assault won't begin until we are well into the area and shock reaction is effected, so *stay in formation* until I order otherwise."

There were still no natives in sight on the small side street by which they entered town; but as they turned a corner and swung on to the broad central thoroughfare, the commander saw that the street was clogged with natives, a great

milling mass of them moving up the street in the same direction as his column, about a hundred yards ahead.

For a moment they didn't appear to notice the newcomers, but soon a growing number had turned and were gesturing excitedly to each other, pointing at the approaching troop. Watching them anxiously, Zurg saw no evidence of panic.

The column kept moving, and the crowd began parting to let them pass through. Some darted forward as though to get a closer look at the strangers. The commander fought off a thwirm as he realized the crowd was now all around them, pressing in more closely on every side. The atmosphere itself seemed to vibrate strangely, and looking around, he saw that the creatures were opening small head orifices and striking the ends of their forward limbs together. Were they communicating—or was it something else? It was surely not panic.

Feeling increasingly dizzy from the heat and vibrations, he glanced anxiously over his followers, and saw at once that they were more upset than he. Colors were flushing their faces in meaningless successions. One or two seemed to be staggering. The shock threshold of these beings has been horribly underestimated, thought Zurg desperately. Only one thing left to do—turning again, he signalled the detail to begin the Dra. Perhaps that would overcome this incomprehensible counterattack . . .

"I tell you Charlie, you've got to

discipline that gang! They didn't show up on time, they didn't complete the route, they put on a public ritual that wasn't scheduled, apparently stealing the entire show—stupid crowd yelled themselves hoarse. Then they all reeled off into a side street. They must have been drunk to a man—I understand about half of them had to be carried! *And* when I confronted Andy Sharpe, he swore up and down that they weren't out of their hotel that morning. All sleeping off that spree they had the night before. He actually had the nerve to say, 'I don't know who those boys were that you claim were a block behind the end of the parade, but they weren't our boys.'

Charlie Dils, new Commander of the Illinois chapter of the American Legion, leaned back in his chair car seat and blew a cloud of cigar smoke toward the ceiling. "Maybe they were men from Mars," he grinned. Then, remembering his dignity, he sobered abruptly. "Anyway, one bunch looks about the same as another, once they get their masks on—good Lord, it was a hot day for masks—but it certainly made the parade more impressive. People are still talking about it. We're even getting credit for having a flying saucer. Some farmer out at the edge of town claims he saw one take off after the parade last night. Says it was going west like a bat out of hell.

"If we can get that kind of publicity, Frank, I wouldn't worry about Andy and the boys. I'll write him a letter. It was a great convention—let's let it go at that." ● ● ●

CORBOW'S THEORY

(Continued from page 107)

that day? Or the old rockets?"

Mars looked slightly embarrassed and shuffled his legs into a more comfortable position. "Aw hell," he said awkwardly. "Can't you forget an old fool's ramblings? We just watched a rocket launched that's going to open up a whole new era in space travel. It was a perfect blast off and we know it'll be a perfect trip and landing.

Bronsen thoughtfully nodded his head, his grey eyes dancing.

"Tell you what," Mars continued. "I've got a bottle that I've been saving for about fifteen years. Got it when we got back from that first trip and never opened it.

Bronsen grinned and gave the old man's thin shoulder a hearty slap.

"Let's get that drink!" ● ● ●

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THE HAPPY HERD

(Continued from page 27)

The Staff will be after me."

Kane glanced at the elevator, then they ran back toward the saucer.

"You'll have to pilot this thing,"

Kane said. "It's a little crowded up there for me."

She started the motor and the saucer lifted abruptly. "The terminal at La Guardia?" she said.

"No. The ship's at least two miles from the Terminal. We'll go directly to the ship." He hesitated. "The only thing is—it isn't due to blast out of here until the 25th."

"That doesn't matter," she said.

"Why doesn't it? We're flaunting the law. They're after us. They won't let us just hide away on that ship until the 25th."

"They?"

He stared at her. "You said yourself we had to hurry, because the Staff—"

"But don't you see, there's no one to stop us now. The Staff at Sunny Hills could have, but here there isn't any Staff. There's none at the ship either, is there?"

"No."

"Well then, we'll just wait on the ship until—we go to the Moon."

"But you were afraid, Lucie. You talked about undergrounds, and how it was impossible—"

She touched his arm and then took hold of his hand. "You don't understand I guess. Maybe you never will."

"Understand what?"

"What it is to try to get away, be alone, be by yourself, when you

can't. When no matter what you do you're with the Group, night and day, even in your dreams. You knew it for a while, but imagine it for years, not days. There's no place to hide. Wherever you go the Group goes with you. That's why I said you couldn't get away—"

"Then there isn't any law to prevent us from going to the Moon?"

"Only the law of the majority, of Public Opinion," she said. "But you can't stay here and fight it, not for very long. Finally you have to give in to it. You become what they are or go mad. And there are Groups even for them."

The saucer dropped down to the fog draped earth and they were walking toward the pits where the Moonship waited.

It looked like such a wonderful world, he thought. Everyone happy, everyone smiling all the time. No wars. No externalized authority.

The Manufacturers of consent. A quasi-totalitarian society in which means of communication had largely replaced force as the apparatus of compulsion. Communication, fear, insecurity. In his isolation and insecurity, man clung to his Group, to the majority, the accepted opinions.

The majority did not need to force a man now. No need for police, or armies.

They *convinced* him.

The only way you could keep from being convinced was to get out.

The hatch slid open.

"Welcome aboard," the Captain said.

• • •



Cities may soon give up trying to control traffic by lights and other conventional means and turn to directing individual automobiles as traffic congestion mounts. Such individual directing may be done, for example, by directly controlling the movements of each car, or by a broadcast that informs every driver of traffic conditions for blocks around him. Before this happens, engineers expect to use electronic brains in all major cities to solve complex traffic snarls. Each large city will have its own digital computer and a team of operators who will be able to work out the best method of control—through use of mathematical models—without disrupting actual traffic flow.

Tomorrow's atomic airliners will be locomotives of the sky, according to a recent report delivered to the Society of Automotive engineers. The "engine" will be a giant atomic-powered fuel-plane. The coaches will be smaller ships coupled to the locomotive in mid-air. The airborne nuclear train would fly its course, with commercial airliners "unhooking" on arrival at their terminal airport, where other passenger aircraft would "latch on" for

new airports of call. With such a set-up, indefinite shuttle service could be maintained, limited only by the crew's endurance. Airlines and freighters, thus relieved of carrying full fuel loads, could haul larger passenger and pay loads. The tow plane concept also eliminates the problem of shielding passengers and cargo from radiation emitted by a nuclear engine.

The day is coming when children will drink milk shakes or swallow capsules of live polio virus safely and get protection against the disease. Tests with 225 non-immune persons have shown that all developed antibodies against the disease. None has gotten polio or suffered any ill-effects that could be laid to swallowing the viruses. Capsules are considered the best way to give the live virus for vaccination. With these, the mouth and throat are bypassed so that only the lower end of the digestive tract can be a source of contagion. Simple personal hygiene may completely prevent the transmission of the viruses from this source.

"The telephone is singing" may outmode the familiar phrase "the telephone is ringing." The new transistorized device installed in experimental phones sounds like an oboe or clarinet giving forth a string of staccato notes of the same pitch. The tone can be varied in pitch to signal party-line customers or please private line customers. The range is from A sharp above middle C to two C's above middle C. Experiments have shown that the

musical tone can be heard over much greater distances than the regular bell, and can also be distinguished from doorbells, alarm clocks and fire alarms. Another advantage is that it is an aid to the hard of hearing because it employs more energy in the middle frequency range, where hearing is most often impaired.

The average man 1,000,000 years from now will probably have a coffee colored skin, straight or slightly wavy black hair, dark eyes and will be about the same height he is now. And, according to a professor of zoology at the University of Cincinnati, in 1,000,000,000 years man will still be recognizable as human; although slow evolutionary trends will have given him an almost complete physical change. People of that time will have larger brains, more intelligence, larger heads, smaller jaws, fewer teeth, a lower rate of development and a longer life. A person living then will probably not have to worry about such things as appendicitis or tonsillitis, because appendix and tonsils will cease to exist.

Interplanetary missiles zooming around Venus and Mars and landing on the moon are already being planned by leading rocket engineers and scientists. At a recent symposium on the earth satellites, plans were made for a three stage rocket weighing a million pounds which would be needed to place 50 pounds of scientific instruments on the moon. Remote control would be used to land the satellite, and

television would provide the wherewithal to study lunar conditions.

Spring flower festivals may soon take place on schedule, despite cold seasons. Experiments controlling the time of budding by chemical methods have had wide success. Horticulturists now can delay the fall of cherry blossoms by spraying them with a solution of naphthalene acetic acid when the first petals are out. The treatment keeps the blossoms on the trees one week longer than would be expected. The same solution is also used to delay the drop of fruit from the trees at harvest time. On the other hand, if the chemical is sprayed on fruit trees earlier in the season, it will cause the fruit to drop early.

In seeking ways to trap solar energy to power our mechanical civilization, the world may again see great population shifts similar to those that occurred as mankind settled in one new area after another. With the ingenuity already developed by experience in building machines to use fossil fuels, and whetted by recent application of nuclear energy to producing useful power, mankind will probably solve problems inherent in use of solar energy before our heritage of fossil fuels run out. As soon as sunshine-using devices become at all practical, ancient semi-tropical river valleys, where civilization first began, will probably see a new spurt of immigration by gadget-minded people.

A chemical rain repellent that eliminates mechanical windshield wip-

ers will soon be on the market. Designed for high speed aircraft, the repellent is made of silicones and a combination of natural and synthetic waxes. The chemical rain protector sets up a hard coating on the window pane that makes rain roll off like heavy beads of mercury.

Spacemen may someday find that the clouds astronomers observe on Mars are formed by volcanoes. A new theory recently advanced also suggests that the dark areas we know as canals may be drifts of volcanic ash resulting from fall-out in the pattern of the prevailing martian winds. Discovery that, on two occasions 13 years apart, clouds appeared in the same regions means they must have been produced mechanically or at least on a fixed location on the planet's surface.

Mushrooms may soon become part of the staple diet, one which doesn't impinge on Man's natural resources. Scientists have found a way to grow the fungus in sawdust so that they can become a year round crop. Using a ton of sawdust with a small amount of oatmeal researchers were able to grow 500 pounds of mushrooms in two weeks. This sawdust grown crop is also important because the mushrooms so produced can be grown at room temperatures. This means the elimination of seasonal crops and special caves or vaults for mushroom growing.

The world's largest chain radar tracking system, capable of checking supersonic rockets and missiles,

will soon be completed. The chain of 21 radar installations on eight islands have an accuracy within two hundredths of a degree. They lock on a missile the instant it is fired and continuously track its position, course, velocity and accelerations without delay or interruption until the missile hits the target or is itself destroyed.

People may someday be lining up for TB shots much as they now do for smallpox, polio, etc. Researchers have come up with a new vaccine which is excellent protection in mice, and uses non-living particles of tuberculosis germs, rather than live germ vaccine. In this method, billions of bacilli are ground up in solution and then spun in a centrifuge to separate and remove the larger particles.

Dentists may soon be able to transplant teeth the way cornea transplants are done now. Recent advances in dental surgery of this type have shown that, after several years, such a transplanted tooth grows to full size, roots lengthen properly and the tooth lines up with surrounding teeth. The transplant also shows a response to heat and cold, similar to that of other teeth in the patient's mouth.

If test trials work out properly, diabetics may soon be taking pills instead of insulin injections. The pills, derived from a sulfa drug, show a significantly high response when used in certain cases, ranging from a return to normal to a 50% reduction in insulin requirements.

COMMUNICATION

(Continued from page 66)

party, so they were unable to hear Captain Powers shouting frantically into his microphone and getting no answer. It was just after sunset, and Biggs was looking into the west.

"We ought to see it now, but it ain't there," commented Biggs.

"What ain't there?" demanded Golden.

"Mercury," said Biggs, who prided himself on being an amateur astronomer. "I reckon you can't see it from Mars without a telescope. Too close to the sun."

He chuckled.

"If there are any Martians," he added, "I reckon they think *they* live on the third planet. That's funny, ain't it?" ● ● ●

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DETAILS

(Continued from page 51)

so complicated that we'll never have a complete science of it. All we'll ever be able to do mathematically is predict and guide the broad trends. But those trends are made up of millions of little individual people and incidents. To pervert an old saying, in government it is necessary to be able to see the trees for the forest. It takes an artist to know how and when to use the equations, and how to supplement them with his own intuitive common sense. It takes not only a technician, but a poet to write a report which will really let me know what's going on."

He raised his eyes again and said mildly: "It's not your fault that you are neither an artist nor a poet. I take it you wish to remain in the Service?"

"Yes, sir." Randos was not a quitter.

"Very well. I'm assigning you to a chief technicianship in my own evaluation center. Consider it a promotion, a reward for honest effort . . . at least, it's a higher rank and salary. You may go."

Kri thought he heard a gasp of relief, but returned to his papers.

One might as well face it, you can't kick a favorite nephew anywhere but upstairs. The fellow might even make a good technical boss.

As for this planet called Earth, maybe the new man could salvage it. If not, well, it was only one planet. ● ● ●

Hue AND Cry

Dear Mr. Quinn:

I have just finished reading the June issue of Hue and Cry, and my sense of fair play compels me to express my surprise at the readiness of people to condemn or censure. I am referring to Stuart Anderson's letter complaining about an error in "Avoidance Situation". According to his argument, the velocity c^2 assumes various values depending on the original units used in stating the value of c . He uses a lot of large figures in his "proof" involving many powers of ten. All that he has succeeded in doing is confusing himself and hide the basic fallacy of his argument. The proof that he's wrong lies in the mathematical fact that equals remain equals as long as the same factors are applied to each.

Let us select a foot as common measurement, and we shall define a

foot as a certain fraction of a light-second so that any measurement system can be converted to feet. Thus a square yard per second becomes 9 feet per second *as a numerical value only*. Now bring on your metric or Chinese units or Martian units or any other measurement of velocity. Reduce the measurement to Terran feet per Terran second and *then* square the numerical value only to obtain a numerical value for velocity squared.

—Leslie Fogal
North Bay, Ontario

Dear Sir:

Letter writing is not my habit, but in the June issue of Hue and Cry one of your correspondents "goofed" in his letter concerning the math in "Avoidance Situation". Neglecting that a velocity in excess of c cannot be obtained we can write $c^2=9 \times 10^{20} \text{ cm}^2/\text{sec}^2$ and consider only the magnitude of the number. The writer of the letter published in June went on to state that the value of c^2 depends on the units used—I say he should read a text on elementary mathematics before he makes such a statement.

He states c^2 cgs. does not equal c^2 fps, but he forgot to convert properly. He said, and I quote in part: " $c=3 \times 10^{10} \text{ cm/sec}$, $c^2=9 \times 10^{20} \text{ cm/sec}$; for $c=1.86 \times 10^5 \text{ miles/sec}$, $c^2=3.46 \times 10^{10} \text{ miles/sec}$, which is the same as $5.57 \times 10^{15} \text{ cm/sec}$."

Now I say, and I will spell it out: $c=3 \times 10^{10} \text{ cm/sec}$, $c^2=9 \times 10^{20} \text{ cm}^2/\text{sec}^2$ $c=1.86 \times 10^5 \text{ miles/sec}$, $c^2=3.46 \times 10^{10} \text{ miles}^2/\text{sec}^2$ and

since $1 \text{ mile}^2/\text{sec}^2 = (5280 \frac{\text{Ft.}}{\text{Miles}} \times 12 \frac{\text{in.}}{\text{Ft.}} \times 2.54 \frac{\text{cm}}{\text{in}})^2 / \text{sec}^2 = 3.46 \times 10^{10} \times (5280 \times 12 \times 2.54)^2 = 9 \times 10^{20} \text{ cm}^2/\text{sec}^2$, and the value of c does not depend on units here or elsewhere. Units are not arbitrary, but chosen for convenience. I was shocked to say the least.

—Gerald Ouellette
Belmont, Mass.

Dear Sir:

Mr. Ryder's letter in Hue and Cry in June's IF has caused me to break a record of ten years of avid reading of s-f, and finally write a "fan letter".

In his short but excellent letter Mr. Ryder has, I feel, only briefly touched the "liberal arts approach" to science, and the exceeding blindness of an attitude which persistently condemns the scientist as a cold-minded materialist. One cannot help feeling that this attitude often stems from a guilty awareness of ignorance of those vital factors which have done so much to safeguard health, sanity and the well-being of people everywhere. While philosophers and Mr. Ryder's "men of affairs" have been sitting on their hands, cold-blooded scientists have been easing the pain of childbirth, the ravages of diseases, and committing sundry other "materialistic" acts. But then, these activities have not the sanction of being commanded by the authorities, and are therefore not as officially representative as bomb making.

In my own field of music, the

Middle Ages lives on very strongly, and the attitude of the academic musicians toward the scientist perhaps represents the "liberal arts" approach *par excellence*. Having struggled with this fuzzy attitude for the larger part of my career (I am now finishing work toward a Doctorate of Musical Arts in Composition), I am in full sympathy with Mr. Ryder's letter, and only wish that there were more that I could say to emphasize this strange dichotomy of reason vs. logic which seems to characterize our general contemporary attitudes toward science and the scientists.

—Gregg Wm. Saeger
Boston, Mass.

Dear Mr. Quinn:

Herewith another letter from a reader who hasn't missed an issue. Having read them all for more years than I care to think about, I give it as my opinion that you have now reached the top. And you go bi-monthly. With something over 1,000,000 potential readers in the country, the inescapable conclusion is reached that only a very few of us have imagination after all. How many people, do you suppose, have the curiosity to be s-f readers? Woefully few, I am sure.

I particularly like Hue and Cry and the letters you choose to print. Mr. Ryder has a good point. He seems to be one of the few people who realize that scientists don't always strive to produce something with an end result in view. They are merely seeking knowledge for its own sake.

I offer a point of my own which

has been covered in stories, but never to my knowledge, has been discussed seriously. About the origin of Man. It seems to me that the evolution of Man is based on some very scanty and flimsy evidence. In fact we have more such evidence for the cockroach, unchanged in form for the past 200,000,000 years. I have two questions: One is that if we have evolved physically, why hasn't something been found reasonably close to our present physical shape? The second concerns our language. Probably the oldest language on Earth is Sanskrit. Have you ever examined it? It is tremendously complex. Could such a language have sprung in one leap from creatures who communicated by grunts? If not, surely at some time in that period when it was developing, somebody should have chiseled a few words on a rock here and there and preserved the rock for us. Older things have been dug up. The evidence seems to be that Man appeared on earth with some sort of language and civilization all at once, and not too long ago, geologically at that. Further, the oldest extant writings do not show any less intelligence than is presently current. In that case shouldn't there be some remains of these people as intelligent as we are, in the form of artifacts, or some alteration on the face of the earth? There are many questions on this subject still to be answered, but they won't be if we close our minds to everything but the Evolutionary Theory.

—Floyd W. Zwicky
Rockford, Ill.

Dear Mr. Quinn:

I am one of many ardent fans of good SF short stories and enjoy reading *If* which in my opinion is one of the best magazines in the country today. I personally think the departments add flavor and variety. So naturally I was overwhelmed to see that the June issue boasted an article on the Vanguard Satellite and several beautiful illustrations by Mel Hunter. But I have a bone to pick with the authors.

I think the article was well written, but the source of the author's information seems to leave a lot to be desired. Quote: "We feel that the basketball nomenclature was an unfortunate choice". The following, in my opinion, proves the authors know how to read.

The general announcement of the Vanguard Project came on July 29, 1955 when the plan was revealed to the press by James Hagerly, Press Secretary, Detlew Bronk, President of the National Academy of Sciences and Alan Waterman, director of the National Science Foundation. The official statement read, "Plans for the construction of a small, unmanned earth circling satellite vehicle to be used for basic scientific observations during the forthcoming International Geophysical year were announced on July 30". In the original announcement no description of the satellite was given with the exception of *small* and *unmanned*. Yet the next day the papers carried accounts of a basketball shaped satellite. To my knowledge the press accounts were of an unmanned satellite designed by S. Fred Singer, a physicist at the

University of Maryland. It was this sphere shape, that the two scientific organizations (before mentioned) have decided to utilize. The phrase "basketball" was coined to give the general public an idea of its comparative smallness.

The 19.5 foot long satellite described in IF would be overcome by the residential air drag much sooner than would one of spherical shape ejected from the third stage of a minimum orbital rocket.

The article is bristling with errors. I should hate to see the second installment. The Department of Defense has announced that the rocket will have a length of 72 feet, not quite the length of the first stage rocket described in *Satellite*. The first stage to be built by the Glen L. Martin Company (builders of the Viking) will have only one rocket motor, the entire rocket will be completely finless to save weight and reduce high speed drag, and both the motor of the first and second stage will be gimballed.

The article also states that the instrumentation in such a basketball shaped satellite would be scant, while the satellite announced by the department of defense, having a diameter of about 2½ feet would have an easily computable volume of 10602.873000 plus, cubic inches. Apparently the authors have never heard of transistors and subminiature electronic parts.

—S. Earl Cohen
Winnetka, Ill.

We hate to bring this up—but if the reader noticed the authors were making an "educated guess" at

what they felt the satellite should look like—before any datum was released. The introduction also mentioned that Mr. Nuding is an Instrumentation Research Engineer and that Mr. Vanous is a designer of missile guidance systems—both work for well known corporations. Reading article number two might clear up some of the problems. Also, in the Editor's note preceding the second installment, we took care to emphasize that the Nuding-Vanous designed rocket-satellite was for ultimate efficiency and not the early race to get "something or anything" up there.

EDITOR'S REPORT

(Continued from page 3)

One of the most provocative satires IF has published in its young life is *Malice in Wonderland* by Evan Hunter, who zoomed into notice with *The Blackboard Jungle*. Now it looks like we'll be reading "Malice" as a novel, as Hunter is now expanding it for the hardbacks. If it gets the promotion "Blackboard" received it will be a sensation. And if you can't or won't wait for the novel, look it up in the January, 1954, issue of IF.

1957 marks the fifth birthday of IF Magazine and we are planning *The First World of IF*, an anthology of the best of the first five years, to commemorate the occasion. It will be a handsome paperback edition priced at 50c, but the distribution will be rather limited—so put your bid in early. —jlq

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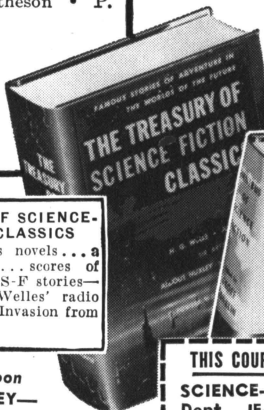
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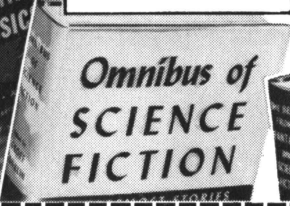
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