SUPER-SCIENCE FICTION

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BEWARE THE ROBOT!
by DANIEL F. GALOUYE

HORROR IN SPACE
by JAMES ROSENQUEST

WATERS OF FORGETFULNESS
by ERIC RODMAN

A PLACE BEYOND THE STARS
by TOM GOODWIN

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CONTENTS

COVER by Emsh

ILLUSTRATIONS by Emsh, Orban and Bowman

W. W. Scott — Editor

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BEWARE THE ROBOT!

by DANIEL L. GALOUYE

illustrated by EMSH

The robots were advanced thinkers, made by men to solve equations that men couldn't even conceive of. And they could meddle with amazing mysteries of time and space

"IN isolation compartments like this one, we keep our cases under observation until they are completely reoriented." The Institute guide swaggered along the balcony, shoulders pompously erect despite the weight of his garish epaulets. Supercilious boredom was heavy in his voice.

The students lined up along the railing and stared eagerly down into the treatment pit.

Below, Dr. Michael Halloran cast a depreciating glance in their direction, turned away from the patient and pretended preoccupation with pen and pad at his desk. He was a tall, rangy man with a recalcitrant thicket of red hair. And he was quite obviously perturbed.

"What's the diagnosis in this case?" one of the students asked.

"Oh, that's Euclid down there." The guide nodded toward the dejected patient who cringed in a far corner. "He's a homophobe."

"Is he—dangerous?" qualmishly asked a gum-chewing blonde.

"Of course not. As a natural consequence of his condition he's *afraid* of people."

"Oh." The blonde feigned satisfied comprehension.

Halloran fidgeted intolerantly. He didn't have too much time to spare away from

Euclid. But he was determined not to let an assortment of gawking teen-agers witness what might be another embarrassing demonstration.

"I don't think we'll see anything here," the guide apologized finally. "This is quite a complex case. Dr. Halloran's still engaged in theoretical exploration."

He herded the students through the opposite door. "In the next pit, however, we find an interesting case of servitude overcompulsion..."

Alone again, the physician advanced relentlessly on the cowering patient. There was the sharp glint of resolution in his unwavering stare.

Euclid tried to squeeze farther into the corner. His arms came up protectively and he raised a knee to supplement his defenses. His eyes were alive with intense apprehension.

"Hold, Euclid!" Halloran ordered, almost upon the patient now.

"I beg of you, sir—don't come any closer!" The other's voice quavered. *"Please!"*

The doctor made an outspread pincers of his arms and moved in.

Shimmering briefly, the robot disappeared.

Halloran raced down the hall and burst into the next therapy pit.

"Did he come through here?"

"2043A?" The other physician looked up sharply across his workbench.

Halloran nodded dejectedly. "The Euclid effect."

"Not *again!*" Dr. Emile Parker, standing beside an immobile, stripped-down robot, grinned. "This I got to see—a patient doing a fadeout."

He was of average height and evenly proportioned, with dark, wavy hair and a rugged but pleasantly amused face.

"That's the *third* time," Halloran complained despondently.

Parker offered a cigarette and took one himself. "No problem there. Euclid simply ran across one of those outlawed invisibility formulas."

"But how does he get through the walls?"

"There are illegal nuclear polarity formulas too, you know."

Halloran dropped sluggishly into the other's chair. "But where could he have gotten them?"

"Euclid's a prime thinker. He's equipped to handle abstruse concept. And I wouldn't put it past his owner, Dr. Richeldorf, to slip the poor thing a few choice bits of prohibited knowledge."

"Maybe it's developed a guilt complex over having that forbidden information."

"That's it." Parker spread his hands. "A repressed guilt complex that finds its cathexis in homophobia."

Halloran stared abstractedly at the floor.

"If it has prohibited knowledge," the other suggested, "you ought to call in the authorities."

"I can't. Euclid's the first of the prime thinker series to be sent here. If the Institute can cure his homophobia we'll have a whole new field of potential customers."

Parker exhaled audibly. "Then go see Richeldorf—"

"He's off-planet."

"Looks like you're stuck." Parker slapped his thigh futilely. "As a doctor of psychorobotics, I'm glad I'm average enough to stick with the servile series." He patted the inert robot's shoulder.

"What have you got this time?"

"Georgette here? Not much of a case. She was a pretty good domestic. But she's developed a slight paranoic circuit bias. Thinks she's RXM-1, the first experimental robot. Now she can't do a damned thing except walk around like a tin soldier and blow smoke rings."

Halloran ground out his cigarette and started for the door. "I guess Euclid'll pop up in his pit again," he said uncertainly. "He did the other two times. It's part of the Euclid effect."

"Lucky you were able to introduce a temporary confinement compulsion. If that homophobe ever broke loose you'd never find him."

"That would be bad?" Halloran asked facetiously.

The other loosed a raucous laugh. "The brochure says things are always cheerful at Brisbane's Robotarium. The ideal Rustic Reserve for Robotic Rumination. Quiet Rest.

Solicitous Attention. Freedom from the pressing complexities of social contact—"

Halloran cut him short with a distraught "oh, hell" and slammed the door.

EUCLID didn't return to his pit until late that afternoon. But when he did, Halloran was ready for him—almost.

He rolled the stasis field generator to the center of the room and carefully focused its parabolic grid on the robot's customary corner. Checking its output, he returned to the desk to get a cigarette.

And Euclid picked that precise moment to rematerialize.

The physician only stood there staring frustrated at the robot. He had counted on the advantage of surprise—on being able to flick the switch and freeze all of Euclid's circuits the moment he appeared. But perhaps there would still be a chance of getting back to the generator without arousing the thing's suspicion.

He lighted a cigarette casually. "Glad to see you back, Euclid."

The robot only pressed apprehensively into the corner.

"I'm not going to hurt you," Halloran reassured.

"I know that, sir."

"Then why are you afraid?"

"I can't explain it within the framework of rational analysis, sir."

Halloran took a surreptitious step toward the stasis generator.

"I implore you to stay away from that thing, sir."

Halloran swore and returned to his desk. He would have to rely solely on robopsychology. "Where have you been, Euclid?"

"I can't say, sir."

"Why not?"

"I'm under instruction not to discuss professional matters."

Naturally, Halloran realized, Richeldorf would have insured Euclid's silence on any special data entrusted to its memory banks. "This invisibility gimmick—is it something you learned from Dr. Richeldorf?"

No answer.

Halloran looked wistfully at the generator, then moved imperceptibly toward Euclid.

"Please stay away, sir. Or I'll be forced to flee again."

Irritably, the physician

tossed a shock of red hair off his forehead, ground out his cigarette and lighted another. No chance to get to the generator. No way of creeping up on Euclid. Apparently no hope of subduing him psychologically—not with the homophobia block and his incorrigible escape mechanism.

"Euclid, do you know Dr. Richeldorf could get into serious trouble over this?"

"Oh, no sir. I'm sure he couldn't."

"He could if he charged you with illegal data."

Euclid squirmed uncomfortably. "Dr. Richeldorf fed in basic information—none of it prohibitive. I took it from there and worked out some universal fundamentals."

"What sort of fundamentals?"

"If I told you, you might deduce the nature of Dr. Richeldorf's work. Anyway, I don't believe you'd even understand the fundamentals. The human mind has severe conceptual limitations. You wouldn't try to teach *mathematics* to a lower animal, would you?"

Halloran drew back stiffly.

"No offense, sir," the robot added. "I'm merely trying to draw a convincing analogy. *Please* stay away from that generator, sir!"

The physician quickly retraced the supposedly stealthy steps he had taken. "Won't you let me try to treat your condition?" he implored.

"It's more than *just* homophobia," Euclid offered. "Dr. Richeldorf didn't understand that he shouldn't have sent me here for circuit balancing. You see, some of the technical data had to be consigned to idle cells in the personal reaction bank. Tampering with those circuits could destroy valuable information."

Halloran's eyes fell on his desk and he tensed with sudden inspiration. "But Dr. Richeldorf would be willing to sacrifice some of that data to cure your homophobia."

Again, Halloran glanced at the switch on his desk. Just a flick of his hand would rob the room of all its light. Before Euclid could adjust, there might just be time to reach the stasis generator.

"This is something I've got to work out for myself—with your indulgence, sir," the robot

said firmly. "First, I must—"

The room was abruptly flooded with darkness as Halloran, reaching unobtrusively for his cigarettes on the desk, threw the light switch. Then he lunged to the center of the room and sent his hand stabbing out for the stasis generator control.

A cone of pale green light fell softly on Euclid's shining gray surfaces. The robot remained there—frozen and lifeless.

Humming triumphantly, Halloran turned on the lights, gathered up a voltammeter and an oscilloscope and uncorked a bottle of circuit marker dye. But, as he turned, his outstretched hand struck something that hadn't been in the room before—another robot.

The thing uttered a mechanical cry of distress and lurched backward—but not before the bottle of yellow dye had spilled half its contents on the robot's abdominal plate.

Still flailing backward, it collided with the stasis generator and knocked the beam off Euclid, who promptly disappeared.

The other robot vanished simultaneously.

OVER a late breakfast in the cafeteria the next morning, Halloran unburdened his more recent woes on Parker.

"I'd say Euclid applied some of Richeldorf's abstract theories and extrapolated a way of establishing empathy with another prime thinker," Parker guessed. "He simply called that other robot to his rescue."

"But how can a robot find the initiative to give original orders to another robot? And how can they establish empathy?"

The other robopsychiatrist leaned forward grimly. "How can we grasp the ultimate potentialities of the ultrathinker series? Can a two-year-old child define an adult's intellectual limitations?"

Halloran hadn't given much thought to robotic intellect. Of course, the mnemonic series was admittedly of immeasurable reasoning capabilities. But then, weren't they all unalterably dedicated to human welfare?

"I think you ought to report

this to the Solarian Robot Commission," Parker suggested. "You're on dangerous ground when you take a prime thinker and throw him in with a mathematical genius like Richeldorf and all the other brain boys who surround him. Without even being aware of it, that bunch could be training and conditioning a super-super-robot."

Letting his fingertips play thoughtfully over his wedge-like chin, Halloran conceded, "Euclid *did* say he had deductively arrived at the knowledge he's using in his escape shenanigans."

"You're going to report it to the Commission then?"

Halloran stared indecisively out the huge window at the hills and forest, the glimmering metropolis that sat proudly on the distant horizon. "No."

Parker slumped, showing little indulgence. "You're a fool, Halloran. I wouldn't play around with the Euclid effect."

"The Commission would pull Euclid in for special observation. The Institute would lose the case. I'd probably be blackballed."

Parker folded his hands solemnly. "For centuries there's been the warning, 'Beware the Robot'! What's happening now might be what they were afraid of all along."

Halloran smiled and his mood shifted accordingly. "You're an alarmist. This isn't the first time you've talked about a reign of robots—metal forms inundating the world and sweeping like a plague throughout the galaxy. But there hasn't yet been a single case of a robot acting contrary to human interest."

"Sure," Parker said dryly. "But suppose something goes wrong with their inhibitions?"

Halloran rose. "Richeldorf's due in today. I'll talk with him and find out just what he's been doing with Euclid."

A few minutes later Halloran closed the door and stood surveying the therapy pit.

"Euclid, stop it!" He started to lunge forward, but remembered the thing's irrational fear of humans.

The robot looked up from where it sat in the corner. "I think I may be getting somewhere, sir."

Its abdominal plate lay on the floor beside an outstretched

leg. A half dozen coils of varicolored wire protruded in a disheveled mass from the confines of the cavity. Euclid selected a snap-in resistor from a nearby tray and his hand disappeared with it into the visceral region.

"You can't do that, Euclid! You're supposed to be conditioned against tinkering with yourself!"

The robot lowered its head guiltily. "No doubt you're right, sir, but—"

"But nothing! I order you to stop it—*now!*"

Euclid obediently shoved the excess coils back into their confines and retrieved his abdominal plate. "I think I may have corrected some of the difficulty in at least one of the circuits."

"Which one?"

"We'll see. Come a bit closer, if you don't mind."

Halloran went forward.

"That's enough! Hold it, please! Step back. *Back, sir!*"

The physician retreated and Euclid rose shakily, pressing deeper into his corner. "Apparently I haven't decreased the homophobic bias at all. But I do *feel* better. Do you suppose I could have modified the confinement compulsion?"

Halloran lowered himself wearily into his chair. That was all he needed now—for the thing to overcome its induced compulsion and walk out of the pit, out of the robotarium. He looked up tentatively. But wasn't it already able to leave the pit whenever it wanted to?

"You do realize, Euclid," he said finally, "that we'll find *some* way to make you submit to treatment?"

"I suppose so, sir," the robot conceded glumly.

"Then why don't we have another go at it?"

"Not if it means your coming closer," the other objected. "And no more stasis generator tricks, mind you."

Halloran dug his nails into his palm. Maybe another psychological approach might work.

"Think, Euclid. Think of a serene dump yard, far from the hustling complexities of the city. A pile of corroded metal in one quiet corner beneath a tired old tree. No electromagnetic field within a

hundred miles. Magnetic deviation zero."

He studied the robot. It did seem to be growing somewhat more rigid. And its visual perceptors—weren't they just a slight bit out of focus now?

"There are no sensory stimuli," the physician went on, letting the words come out slowly and assuagingly. "And over the restfully rustic metal pile grows a velvet coat of ivy. You, Euclid, are comfortably inert at the bottom—"

"Pardon me, sir," Euclid interrupted, quite alert, "but I don't think we're getting anywhere, do you?"

Halloran snorted in disgust and turned his back.

"My apologies, sir," Euclid offered contritely.

But was there just a tinge of haughtiness in the mechanical words?

HALLORAN paced along the front wall of the pit. "Suppose," he tried, "you tell me about some of these fundamentals you've discovered—the ones you say I can't understand."

"Oh, I couldn't do that, Dr. Halloran."

"Just why couldn't you?"

"Because of the—as I call it—principle of nontransferrability of ultimate concepts."

"What sort of ultimate concepts?"

"Why—ultrahuman concepts, sir—dealing with basic understanding of the transperceptive universe."

"Suppose you try transferring one of them."

"That would be impossible. I've already tried the simpler ones on Dr. Richeldorf. But I couldn't get the ideas through to him because they're supraconceptual. I've gone too far ahead of him."

"How far?" Halloran asked patiently.

"Mentally? Fifty to a hundred thousand years. Closer to a half million perhaps. The human mind would have to evolve into something ultrahumanoid before it could cope with the transconceptual intricacies."

With an impulsive display of Irish temper, Halloran mussed his hair and stood regarding the robot threateningly.

"If you'll pardon me, Doc-

tor," Euclid said uncertainly, "I have an appointment."

The robot strode out into the room, suddenly became tenuous and vanished.

But even before Halloran could recover from his surprise, Euclid reappeared in his corner. And another robot materialized simultaneously in the center of the room. It was the one on whom Halloran had splashed marker dye the day before.

The latter hurried to Euclid's side and pressed into the corner with him.

"I don't like it now," Euclid said.

"Dr. Halloran's all right this time," the other robot assured. "He respects homophobia. He won't come any closer."

"That may be so, but I'm leaving. Anyway, I really ought to stick in T-one. It quieted down then." Euclid disappeared.

Halloran's hands squirmed into angry fists. "Where's Euclid? Get him back here!" He strode resolutely toward the robot with the stained abdominal plate.

It immediately vanished.

Fastening his coat, Halloran strode briskly down the main hallway of the Central Administration building. Each callboard that he passed was urgently flashing his code number, indicating he was wanted in the Director's office—on the double. He pulled up hesitantly before the door, exhaled a futile breath and went on in.

Stanley Brisbane, his hands clasped behind his back, stood in front of the window soaking up sunshine. He was a massively built person with a blunt, bald head that complemented his appearance of overbearing intolerance.

"Dr. Richeldorf would like a report on our progress with PTR-2043A," the Director said.

Halloran had hardly noticed the ancient beanpole of a man half hidden in the depths of the plush chair beside the desk.

"Euclid—is he improving?" Richeldorf asked anxiously.

"We're still working on circuit analysis," Halloran lied. "I want to lay a good diagnostic foundation before I step off in any therapeutic direction."

"I'm sure you appreciate

our meticulous approach," Brisbane added.

Richeldorf thumped the floor with his cane. "Of course. Of course. But I shall have to have expeditious results. I'm lost without him. My research is at a standstill."

"Because you have so much vital data consigned to Euclid?"

"Precisely."

"Then let me ask you this: Would you be willing to sacrifice some of that stored knowledge to cure the robot's homophobia?"

The Director coughed embarrassedly. "Come now, Dr. Halloran. I'm sure Brisbane Robotarium can do the job without altering 2043A's mnemonic efficiency."

Richeldorf held up a skeletal hand. "I'm well aware of the fact that something will have to be sacrificed. I'm afraid I *have* overcharged Euclid's retentive banks."

At least, Halloran reflected in relief, that much was cleared up. "Will you tell Euclid that so I won't run up against any more psychoanalytical blocks?"

"I'll speak with him as soon as we get through here."

Halloran stared hesitantly at the mathematician. "There's something else. Besides homophobia, Euclid might be suffering from another obsession."

"I hadn't noticed anything," Richeldorf returned, surprised.

"He thinks he's acquired knowledge that will never be available to the—ah, lesser human minds."

"No doubt he has. His basic intellect is built on a foundation supplied by the best minds of our time."

"Then it's true that he can't convey some of these concepts to us?"

"Quiet true. He's too advanced. We could never understand all the things he understands. But, at least, we can tap his knowledge to the limit of our conceptual ability."

"Euclid," interjected Director Brisbane respectfully, "must have quite a mind."

"By our meager standards," the physicist assured, "we couldn't even call it a mere mind."

Halloran shifted uneasily. "Does he have any—illegal knowledge?"

Richeldorf managed an amused laugh that ended in a cough. "His disappearance routine? You really want to know, of course, whether I impressed any prohibitive data on his memory cells."

The mathematician shook his head. "No. And if you can find some way to cancel that little trick out of his repertory I wouldn't mind it in the least. But as for illegal knowledge—or any conceivable legal knowledge, for that matter—we must realize that the whole body of axiomatic convictions acquired by mankind represents only a small part of Euclid's total knowledge."

HALLORAN accompanied Richeldorf to the gallery overlooking Euclid's pit and left him there to convince the robot it didn't have to preserve intact all the data with which it had been entrusted. Then he went on to the lounge where he found Parker killing time over an afternoon cup of coffee.

"How'd it go with Richeldorf?" the latter asked.

"The old boy was a lot more cooperative than I thought he'd be."

"Find out if he fed Euclid any illegal knowledge?"

Halloran poured a cup of coffee and sweetened it. "Apparently not. He claims Euclid would be capable of *unlimited* deduction on his own."

"A real brain trust."

Halloran nodded. "I hadn't realized it, but we have here what might be—by virtue of its unique professional experiences—the most advanced mnemonic-reasoning organism in the entire galaxy."

Parker shoved his cup away and ran a hand over his blunt face. "Sort of frightens you, doesn't it?"

"I suppose so," the other admitted reflectively. "Let me tell you what happened this morning."

He recounted his latest attempt to subdue the robot with soporific psychology. Then he told of Euclid's disappearance and how he had subsequently rematerialized, together with the robot stained with circuit marker dye.

"Let's have that again," Parker requested obtusely. "You say this other robot had

a yellow splotch on its abdominal plate?"

"That's right. Which proves it was the same one that popped up in the pit yesterday."

But Parker just sat there with his thickset jaw unhinged and his eyes intense with astonishment.

"Don't you see what happened?" he blurted.

Halloran shook his head vaguely.

"What did Euclid say just before he vanished this morning?"

"He said he had an appointment."

"And what did he say when he rematerialized?"

" 'I don't like it now'."

"Halloran—*don't you see what the Euclid effect* really is?"

Halloran lost his grip on the cup and it dropped back into the saucer, overturning and spilling its contents on the table. Choking on the last mouthful, he lunged up from his chair.

"No!" he whispered incredulously. "But—"

Parker nodded with insistence.

"When Euclid was locked in that stasis field yesterday," Halloran said in a burst of comprehension, "Euclid—*Euclid of today*—went back there and rescued him!"

"He came back from yesterday with the marker dye splashed on him. So you naturally thought he was another robot—the same one that had rescued him yesterday."

"And the other one—the one that said, 'I don't like it now'—was the Euclid who had been caught in the stasis cone twenty-four hours earlier!" Halloran fell back limp in the chair. "A time-traveling robot!"

"A minimum of one. Two whenever Euclid decides to duplicate himself by being twice in the same time."

Parker was suddenly on his feet, nervously running a comb through his thick, black hair. "Come on. We don't want to miss this chance."

"What chance?" Halloran followed him through the door.

"The secret of time travel! Obviously not even Richeldorf himself knows Euclid can pull that stunt."

"You mean you think *we* could learn how to do it?"

"Why not? Euclid doesn't have any equipment. That means he's using a psychokinetic formula. So it's simply a matter of learning the proper conceptual approach."

WHEN they arrived at the therapy building, Richeldorf was just leaving. "Euclid won't be so reticent now," the mathematician assured. "I had him declassify all data for circuit psychoanalysis."

It was apparent that nothing out of the ordinary had happened while Richeldorf was with the robot and that the owner was still unaware of Euclid's time-travel potential.

With the aid of his cane, the old man started down the steps. "That stain on his lower torso—"

"It's just circuit marker dye," Halloran explained. "It'll come off."

Entering the pit, the two robophysicians found Euclid and another robot bleeding off accumulated static charges in a series of prescribed robotic exercises. When they heard the door open, however, they crowded fearfully into the far corner, jockeying with each other for the remoter position.

Surveying them from across the room, Halloran indicated the identical splotches of yellow dye on each of the robots. "It's time travel, all right. They're both Euclid."

"The materialization probably took place right after Richeldorf left."

Halloran turned a chair backwards and straddled it. "Are you ready to talk now, Euclid?"

"Yes, sir," the two robots replied in unison.

"Only one of you answer at a time."

"Which one?" they chorused.

"Either." Halloran leaned forward tensely. "Are you using a psychokinetic formula to travel in time?"

The robots looked expectantly at each other, then returned their stare to Halloran.

"I—" they started. Then they became silent and stood regarding each other with deference.

"All right," Halloran said

impatiently, "both of you answer."

"It's psychokinetic, sir," the Euclids confessed. "It's derived from the more advanced metaphilosophical axioms in the spatiotemporal-conceptual framework."

"Looks like they're ready to loosen up," Parker observed, grinning.

Halloran silenced him with a gesture. "What is the formula, Euclid?"

The robots looked at each other, then back at the two physicians. "I can't tell you, sir."

"Dr. Richeldorf instructed you to answer *all* questions," Halloran reminded.

"It isn't that I *don't want* to discuss it," the Euclids explained. "It's that you couldn't understand."

"I'm willing to have a stab at it."

One of the robots seemed to realize suddenly that it was a bit closer to the humans than the other. It shifted convulsively and maneuvered around behind its counterpart despite the latter's resistance.

"The first step of the basic formula," the pair answered finally, "is *v*-square times *T*-one plus the square root of *zuggo* over *v*-square times *T*-two minus the square root of *zuggo* equals *F* to the second power."

Parker's face clouded over. "What's *F?*"

"*F*, sir," they answered, "is Faith. It's the principal factor in the first executive formula, which follows."

Halloran squinted at the pair. "What's—*zuggo?*"

"That, sir, is a conceptual constant—in the same sense that *v* represents the velocity of light."

"What is the constant? What's its value?"

The robots looked helplessly at each other. "It has a value halfway between the bass note of a Jupiter rose, Sub-II-C hybrid, and the thermal taste of sodium chloride on a vulgar circumstance."

Halloran drew back incredulously. "I don't understand. What could be halfway between those two concepts?"

"What *are* those concepts?" Parker specified distraughtly. "A Jupiter rose doesn't *make* any sound!"

"It's no use, sirs," the

Euclids said sympathetically. "You can't comprehend it. There's no way to modify your restricted mental capacity. You would first have to divorce yourself from the human viewpoint—step out of your sensory selves and see the whole conceptual spectrum in orderly arrangement."

Halloran and Parker exchanged distressed glances. When they turned back toward the corner, there were four noisily squirming robots, all identical.

"AS though *two* of them weren't enough!" Parker groaned. "He has to call in a couple more other-Euclids as reinforcements!"

"We'd better let up a while," Halloran suggested. "Remember, they're homophobes."

Parker pulled a chair up beside the desk, lifted a slide rule out of his shirt pocket and sat toying with it until the robots quieted down.

"We'll make out all right," he ventured after a while. "Getting the secret of time travel is simply a matter of overcoming a few conceptual blocks."

Stealthily, the robots began sidling along the wall toward the door. When they saw their course would take them even closer to the robophysicians, though, they drew up sharply and returned to the dubious security of their corner.

"It looked like they were going to make a break," Halloran said worriedly.

"But what about the confinement compulsion?"

"Euclid tampered with the circuit."

"That's great," Parker said facetiously, depositing the slide rule back in his pocket.

There was a clanking upheaval in the robotic mass and it bulged farther out of the corner, occupying a much greater area of the room.

"...five, six," with an indicatively flicking finger Parker counted the Euclids, "seven, eight. There're twice as many of them now!"

Halloran drew back misgivingly from the mass of metal forms. "I don't like this. Why should they keep doubling their number? You suppose something's gone wrong?"

"I don't know," Parker said

soberly. Then he turned to the robots. "All right, boys, clear the deck—all except one of you."

"Which one?" the robots asked, their concerted voices roaring like thunder in the pit.

"Whichever is in normal time hold up your hand," Halloran directed.

A slim metal arm strut reared from the center of the shifting imbroglio of robots.

"You stay," Halloran ordered. "The rest go back where you came from."

The agitated motion ceased and there were a few minutes of deliberate calm. Finally the voices blared forth again. "There is no temporal transitive response, sir."

"How's that?"

"The feedback impulse—"

Parker held up a hand in customary signal for immediate attention. Then he told Halloran, "We're wasting time. Let's get back to the time-travel formula."

"But if they keep on piling up—"

Parker addressed the robots, "Tell us some more about this *zuggo*."

"It's a refinement of the spectromatic differential between the critical conceptual lines," the eight mechanical voices boomed. "By its position, it determines the basic kinetopsychic unit—as long as the third planet in the Arcturan system isn't at perihelion."

"What's *that* got to do with it?" Halloran asked, dumfounded.

"It figures to the extent of three Rigelian-II centuries over a half micromillimeter plus—let's see how I might express it—two shakes of a *hyllard's* tail."

Halloran clamped his hands over his ears, blocking out both the stentorian assault and its meaningless gibberish.

Then there was a violent, clangorous upheaval in the conglomeration of robots and the growing accumulation expanded further out into the room. Now there was almost a score of Euclids—all with the same splotch of yellow dye on their abdominal plates. It was a clawing, shifting cluster that surged and ebbed as each metal homophobe frantically sought security behind the others.

Halloran tugged Parker toward the opposite corner. "They'll tear one another apart if we don't stand back," he warned.

"If they're so afraid," the other asked above the clanking din, "why don't they time-travel away from here?"

"D i d n ' t you understand what they said—about 'no temporal transitive response'?" Halloran asked grimly. "That means—"

One of the robots on the edge of the cluster broke loose abruptly, stared terrified at the two men, then bolted along the far wall and lunged out the door.

"I was afraid of this." Parker swore. "There phobia is stronger than the confinement compulsion. Nothing will hold them now!"

Two more Euclids charged through the door. Numbly, Halloran watched the spurious escape movement take hold with an almost hysterical desperation. The herd of steel thundered out of the pit, rocking the building as it lumbered toward the main exit.

Following them, the physicians stood on the plaza and watched the frenzied robots regroup on the lawn then, like an omnipotent battering ram, crash through the gate. They left a cloud of dust behind as they stampeded across the plain for the forest.

"Let's go after them," Parker suggested hopefully. "Maybe we can bring them back under control."

AN hour later they were still trudging through the forest, following the trail of skinned trees and churned ground that bore evidence of the Euclid-herd's passage.

"What would make that robot think of time travel in the first place?" Parker asked puzzledly as they started up a small rise.

"Probably got the idea from Richeldorf's work. I understand he was doing research into the transfinite, exploring probability mechanics and divergent eternities—whatever those are."

"And you think that just because Euclid stored up all that theoretical k n o w l e d g e he worked out the time-travel gimmick for himself?"

Halloran nodded. "First he

had to carry Richeldorf's hypotheses to a much finer point of development than any human could. He said he was dealing with effects we couldn't begin to understand."

"Then," Parker went on, "when he was faced with an impossible situation—a confinement compulsion to keep him where he was, together with homophobia to make him want to escape—he found the only solution consistent with both obsessions."

"That's about the size of it. He obeyed the compulsion by remaining *where* he was, but he satisfied his phobia by shifting to another *when*—one in which the pit was empty."

Up ahead, Halloran noticed, the width of the strip of churned ground had broadened considerably.

"Looks like they were joined by another bunch of robots here," Parker observed gravely.

"I'm telling you it's something beyond their control," Halloran repeated for the third time in half an hour. "There's something we don't understand about this time traveling. They're stuck in a pattern and—"

"Nonsense. Euclid simply realized that if he filled the pit with enough robots they'd all overcome their confinement compulsion."

"But why should they keep doubling their number out here?"

They reached the edge of the forest and stood looking out over an expansive clearing. The sun, low over the opposite rim of trees, beat into their faces and Halloran shielded his eyes against the glare.

"There they are!" Parker shouted.

The horde of robots—numbering in the hundreds now—was a slithering gray mass that coruscated with reflected sunlight. A phalanx of Euclids to one side of the vast cluster was attempting to effect some degree of order by lining up abreast of one another in several rows.

But even as the robophysicians watched, the main contingent heaved and bucked and the several orderly lines disintegrated in another violent surge of reproductive growth.

Almost half the clearing was covered with robots now.

Parker started and pointed. Less than twenty feet away a pair of Euclids lay half concealed behind a bush. Each had a broken right leg that remained attached only by identically twisted fibula struts.

"Here are two that can't get away," Parker said, starting forward.

"Please, sirs," the robots implored frenziedly. "Don't come any closer!"

Solicitously, Halloran held the other back. "What happened, Euclid?" he demanded. "Where are all these robots coming from? Why did you run away?"

The pair peered apprehensively from around either side of the bush. "For your own welfare, sirs. We had to get away—far away."

"Why?"

"There's a short somewhere in the psychomotor circuit assigned to handle the time-travel impulses," they explained. "It discharged erratically the first few times. But now the impulses have settled down to a regular ten-minute repitition pattern."

A vast array of vaguely ominous implications seemed to be screaming for attention. But Halloran could only stare dully at the pair of identical robots with their fractured leg shafts.

"Why don't you stop the pattern?" Parker asked.

The two robots approximated a human shrug. "What good would that do? I'm just an individual Euclid. There are thousands here now. The circuit would have to be repaired in each one to stop *all* branch line accumulations of probable Euclids at the current point of divergence."

"I don't understand," Halloran said, perplexed.

"There's a recurring temporal transitive impulse with a harmonic effect on all the main probability lines diverging from the present. The Euclids of those lines keep tumbling back ten minutes in time. The effect is a geometric progression."

"I still don't understand," Parker reiterated awkwardly.

"You wouldn't, sir," sympathized the pair of robots. "You'd first have to grasp the double-recurring temporal

harmonic principle and the infinity of infinities between each time quantum. And that's beyond your ability. You can't even comprehend a single infinity."

"But can't you stop the accumulation?" Halloran pleaded. "Can't you go back to where there was just one of you and repair the short before it gets out of hand?"

The Euclids gestured apologetically. "That's impossible. The temporal transitive circuit's stalled in the ten-minute return pattern. It won't respond to any other phasing. And even if I could go back and repair the circuit before the accumulation started, it would only modify some other probability line. This one—the one you're in now—would remain as a specific possibility progession. You wouldn't even know the difference. All these robots would still be here."

A DEAFENING clatter of metal on metal sounded with almost explosive force as the number of robots in the clearing doubled again. Under the stress of mass expansion, the carpet of Euclids that covered the field buckled here and there, spawning indefinite hills of gleaming metal bodies. The transverse wavefront of robots washed outward from the center like a tidal swell, inundating the entire plain and spilling over against the forest. The sound of snapping saplings commingled with the rattling din of robotic forms that collided with and slid over one another.

Dismayed, Halloran turned and raced back through the forest. It was several minutes before the other overtook him.

"If we can reach the institute," Parker suggested, "maybe we can get the fleet to bring up some firepower."

"There wouldn't be enough time to convince them." Halloran drew up and leaned exhausted against a tree. His face was pale and featureless in the thin twilight air.

Parker started off at a trot again and manipulated his slide rule as he went. Halloran followed.

Behind them was only the onimous sound of seething metal forms trying to disentangle themselves and find

more space in which to move about. Then there was another jarring clatter of naked sound. The ground shook violently and the air was filled with a sharp crescendo of splintering trees as the ponderous swell of robots surged outward once more. This time it covered almost the total distance over which the robophysicians had fled during the past ten minutes.

With a dull pall of futility covering his features, Parker paused and stared soberly at the numerals on his slide rule.

He dropped hopelessly to the ground. "We're not going anywhere, Halloran. Before we could get halfway back to the Institute it will be smothered by robots. Long before morning there'll be enough Euclids to cover the earth."

Halloran slumped on the ground beside him and began laughing.

"What's so damned funny?" the other demanded.

"The way you used to talk about a reign of robots inundating the world and sweeping over the galaxy."

They lighted cigarettes and waited.

THE END

LOOK TO THE STARS

by SCOTT NEVETS

It seems that the Milky Way is not a flat disk, but really is tipped down on one side and up on the other, much like the snap-brim of a man's hat. This news comes from a team of Australian radio-astronomers who have been mapping the galaxy's hydrogen-distribution.

The side with the downward tilt is near the Clouds of Magellan, our nearest extragalactic neighbors. It is thought that their gravitational pull probably accounts for the tilt of the edge of the galaxy.

Two Soviet biophysicists have put forth the theory that freakish forms of prehistoric life on Earth, such as the dinosaurs and the Coal Age plants, may have been caused by explosions on distant stars. They suggest that outbursts of cosmic rays from shattered stars would be powerful enough to change and eventually destroy forms of early terrestrial life.

Cosmic rays are intensely penetrative particles from outer space that can strike germ cells of organisms and bring about mutation. A probable source of these rays is in super-novas, or giant exploding stars. The Russian duo estimate that in the last billion years there have been about ten explosions of this kind close enough to Earth to cause genetic repercussions in terrestrial life-forms. Supernova explosions within a range of 26 light-years would increase the intensity of Earth's cosmic-ray bombardment by a factor of as much as ten.

Dinosaurs were dominant about a hundred fifty million years ago, but became extinct after a sway of eighty million years. The extreme variety and great size of dinosaur-age life might be explained by mutations caused by rays from space, argue the Russian biophysicists.

HORROR IN SPACE

by JAMES ROSENQUEST

illustrated by EMSH

In the infinite immensities of space, life can exist in many different forms. Some life may be so basically opposed to humanity as to be inconceivably horrible

"MORONEY!" Lieutenant Muller's voice rang out in the hot, dry air.

Moroney, came the echo, bouncing back from amethyst cliffs, and died quiveringly among the giant ferns a hundred yards off.

"Damn," the lieutenant muttered quietly to himself, shoving back his pith helmet from his reddened forehead and mopping the trickle of sweat as it oozed out of his wet hair. He put his hands on his hips and stared at the wall of giant fronds with weary disgust.

Silence. Somewhere toward the planet's west, beta-Centauri was declining rapidly. The serrated shadow of the jagged cliff-top crept almost perceptibly forward.

Muller cupped his hands to his mouth and yelled again in the direction of the green wall. A gentle breeze sprang up, and the fronds rippled like water. This time the echo was drowned out in a massive rumble. Thunder. The lieutenant looked over his shoulder, past the circular bulk of the ship, and over the looming cliff, blue eyes squinting against the glare from the planet's 0.86 magnitude sun.

A massive black cloud front hove ominously into sight, slowly dimming the intolerable glare, its advancing edge churning like boiling water.

Lightning ran through the bulging stormhead like swollen yellow veins, and the air quivered again.

A head popped out of the gaping ship's port, almond eyes regarding the angry, frustrated face of Lieutenant Muller. "Some one missing?" Pharmacist's mate Kim Lee called out, superfluously.

"Of course there is," Muller snapped irritably. "Who else but that damned bug-man?" He pointed past the bulk of the ship, indicating the turgid cloud mass. "And it looks like a beauty of a storm coming up. Oh Lord," he continued almost prayerfully, "I hope he gets a soaking. Teach him to be on board on time, for a change."

"Shall I have him put on the outdoor P. A.?"

The lieutenant grumbled in resignation. "Might as well. He won't hear me now over this thunder, wherever he is."

The slant-eyed face disappeared in the bowels of the ship. Muller waited a long minute, while the writhing storm-front moved directly overhead, accompanied by warning flashes and volleys.

Through his irritation ran a vague but persistent undercurrent of uneasiness. Something just might have happened to the old entomologist. True enough, six eighteen-hour days on the system's only Earth-type planet spent in exploration had uncovered only ferns and other primitive vegetation and numerous but harmless insect-forms. If there was any warm-blooded life, they had certainly not discovered it. Even the bodies of water harbored only aquatic insects and crustaceans.

Nonetheless, Muller was a cautious man. He had insisted that members of the expedition carry flare-guns at all times, even after Moroney and the ship's biologist had laughingly agreed that a fly-swatter was adequate protection on Centaurus-Four.

Now he was worried, and he used his mood of annoyance to shut his formless disquiet out of his own mind. Moroney was an hour over-due, and even though the Old Man had set take-off time in the area of sunset, with a liberal margin, he liked to have every one on board with time to spare.

JOHN MORONEY, REPORT TO SHIP AT ONCE.

Muller jumped as the stentorian voice of the loud-speaker blared out. As if in antiphony, a sheet of fire ripped the gathering darkness overhead, and shards of shattered thunder showered from a cracking sky.

A faint voice answered from the undulating green curtain a hundred yards distant. Great warm drops began to patter on the ground as a small figure burst through the leaf-barrier with flailing arms. Muller let his shoulders relax and heaved a sigh of relief as the old entomologist hurried toward him on short legs. He smiled wanly as he passed the ominously silent figure of the lieutenant.

"Sorry to be late," he mumbled in apology, and climbed the steep ramp to the ship's entrance, puffing with exertion. He looked back briefly, then disappeared inside.

"Sorry to be late," Muller mimicked disgustedly, then followed the tubby form into the great metallic sphere. Inside, he spun a wheel. The ramp lifted slowly, whirring softly, and clicked finally into place, forming the outer door. He crossed the narrow lock, stooped to pass through the bulkhead, and closed the inner door by hand. Removing his helmet, he stamped along the echoing corridor toward the command room.

THEY WERE already seated at the long table, with the tall, slender figure of the Old Man—Commander Forrester—at the far end, wreathed in fragrant clouds of smoke from his pipe. Muller approached and saluted briefly. "All present and accounted for," he reported, and took his seat to the right of the Old Man.

The Commander laid his pipe down carefully in a brass ash tray and ran his hand through gray, close-cropped hair. He nodded in the Lieutenant's direction. "Your report first, Fred. Anything unusual about this world? Any reason why it should not be reported to Earth GHQ as suitable for further exploration and settlement?"

Muller rubbed his chin thoughtfully, choosing his words carefully, and with some

reluctance. "As you may know," he began slowly, "the training school for ESP development does not claim to turn out telepaths and clairvoyants. It does not create them—it merely brings out what is already there. It removes the blocks, so to speak. In my own case, it merely sharpened a sort of feeling I had for things, taught me how to refine those feelings, and distinguish a true hunch from a mere impression."

His already ruddy complexion deepened a shade as he glanced quickly around the table and noted several pairs of amused eyes. "It is still experimental," he continued doggedly, "but there have been too many successes to brush it aside as mystical hogwash."

The Commander's eyes crinkled as he smiled good-naturedly. "We are all aware that your hunches have pulled us through some close shaves," he remarked gently. "There is no need for defense or apology." He cleared his throat. "You were going to say about Centaurus Four—?"

Muller wiped his forehead and frowned. "There's something there that I don't like. I can't put my finger on it, but there's some kind of danger."

Commander Forrester regarded him thoughtfully. "Any concrete idea what the danger is?"

"No, sir." Muller shook his head impatiently. "My impressions come as feeling-tones, not ideas in either words or images. I just have a feeling that something is right or wrong. Given enough time, the cloud usually gathers and condenses around something." He rubbed his eyes wearily. "I don't know what it is here, just yet, but I don't like it."

"All right, Fred," the Commander said amiably. "We'll let it stand at that for the time being." His calm gray eyes passed on down the line. "Dr. Wiley, what about micro-organisms?"

The stocky, red-haired biologist spread his hands. "Not a thing hostile so far. I have prepared about a hundred soil and air samples. Several types of primitive rods and cocci, but injections have failed to produce disease symptoms in the experimental animals. As a matter of fact," he chuckled,

"the little beasts probably do not have enough character even to produce a useful antibiotic."

"Very good," the Commander smiled with satisfaction. "And how about you, Professor Moroney?"

The tubby, elderly entomologist raised his eyebrows, shook his head and shrugged his shoulders. He grunted noncommittally. "Professor Moroney passes," the Old Man remarked drily. "I think we all understand his disappointment at the lack of interesting insect life on this planet." His eyes skipped by the physicist and the medic, and came to rest on the chemist. "Dr. Prentice, what have you got to report?"

The bald, middle-aged chemist leaned forward and snubbed out a cigarette. "You already know the preliminary report." He laughed briefly. "You have all acquired direct empirical knowledge of the planet yourselves. You have breathed the air without harm. Oxygen content is slightly more than on Earth, nitrogen and carbon dioxide slightly less, with the usual traces of inert gases. Soil and rock analyses are not exciting so far."

Commander Forrester nodded and rubbed his hands with some satisfaction. "So far, so good," he said. "It looks as if we have a world here suitable for colonization." He stood up. "That will be all for now, gentlemen. You may retire to your quarters now and prepare your written reports. Take-off will be in ten minutes. Mess will be served in three hours." He beckoned to the chief engineer and gave him instructions in low, clipped tones.

Muller remained seated through the scraping of chairs and the mingled clatter of withdrawing footsteps, watching the departing staff members through narrowed eyes. He felt a faint tingling at the back of his neck, and an icy finger touched his spine briefly.

"Oh, Bates," the Commander called out suddenly, slapping at his neck, and the quartermaster sergeant paused in the doorway.

"Yes, sir?"

"Please put some insecticide in the ventilating system. We

seem to have acquired some native forms of life." He swiped at the air, then opened his clenched fist and flicked off a tiny, crushed body.

"Aye, aye, sir." The sergeant turned and left the command room. Muller stared through the bulkhead door at the several dwindling figures. A vague, formless cloud seemed to obscure them as they headed for their various rooms and posts. He put his face in his hands, rubbing his eyes wearily.

The Commander finished his instructions to the chief engineer, stood regarding him with shrewd eyes, a slight smile lightening the face lined and creased with the responsibilities of command. "Still worried, Fred?" he asked softly.

Muller looked up, and shrugged his shoulders. "I must be wrong. Everybody is safely on board. No casualties." He shook his head as if to clear it. "After take-off the feeling should probably disappear. Or maybe it was just an impression and not a real hunch." He stood up. "If you'll excuse me now sir, I'll make the rounds of the ship."

The Old Man nodded assent, and he left.

In the control room, the instrument panel's chronometer showed eighteen hundred. The sweep-second hand touched zero, and the engineer reached out and turned a dial part way. Striding down the long corridor, Muller suddenly felt as if he stood in an express elevator.

Lifted on its Heisenberg field, the ship rose swiftly like a great bubble, gathering speed smoothly.

Somewhere on the surface of the planet, multiple-lensed eyes watched the sphere disappear into the cloud ceiling.

LIEUTENANT MULLER finished his inspection of the space ship. Everything in order. Still—. He frowned and chewed his lip thoughtfully. Twice he turned and looked behind him, uneasily, as if he expected to see some one following him through the circular corridor that ran like a girdle around the ship's power core.

Nothing. Only the faintest vibration, and a dimming of

the corridor lights as the anti-grav field ate power hungrily. He paused hesitantly outside room number three, then rapped firmly. A voice answered from inside. Muller turned the knob and entered, closing the door behind him.

Kim Lee looked up from a book and smiled. "Come in, Lieutenant. Sit down and be comfortable. To what do I owe the honor of this visit?" Dark, humorous eyes rested on Muller's solemn face. "Still bothered by the unknown menace?"

Muller grunted non-committally. "To heck with it," he growled. "Let's have a game of chess while we wait on chow."

"O.K." Kim Lee marked his place in the book and put it down. Muller picked it up idly and flipped the pages while the pharmacist put the chess board on a small table and began setting up the pieces.

"Still reading mystery novels, I see." Muller put the book down and took his place at the table behind the white pieces.

The little Oriental laughed briefly. "Oh yes. I have quite a collection." He waved his hand at a small, well-filled bookcase. "Right now I am going through the so-called deductive mysteries of the twentieth century. Authors like Ellery Queen. Very interesting exercises in deduction."

Muller moved his pawn to queen four. "You put a lot of faith in deduction, don't you? You don't think much of intuition."

Kim Lee moved a knight. His eyes crinkled at the corners, but his face was serious. "Not so, Lieutenant. I simply do not have your gift for the direct apprehension. So I have to use logic. Your mind does not need the syllogism; mine does. And your hunches have saved us before. Don't deprecate it, Lieutenant."

Muller moved the second pawn to king four. "But we've left the planet," he muttered, rubbing his forehead with a heavy hand. "Nobody hurt. Full crew intact. And still I don't feel right." He glanced at his wrist watch. "Spaceborne for half an hour now, and I still don't feel right."

Kim Lee nodded gravely,

moved a pawn. "You may yet be right, Lieutenant. We shall see."

They continued their game in silence, blinking once as the lights went out momentarily while the ship switched over to hyper-drive. In one of the rooms, startled eyes watched through thick port-hole glass as the stars went out, and space twisted sickeningly in upon itself. The ship seemed suspended like a bathysphere in an ocean of black ink, almost motionless, while millions of miles sped by in normal space.

The eyes turned away from the port-hole, approached the door opening on the corridor, surveyed the empty passageway.

THE quartermaster sergeant looked up as a shadow fell across the closet floor. "Oh, hello, professor," he said cheerily. "Just getting the insecticide to put in the ventilating system. Old Man's orders. Little gnats or something in the command room. A little iso-malathion ought to take care of that." He smiled briefly as the professor put a friendly hand on his shoulder and held it there for a moment, then stepped past him into the washroom.

The sergeant whistled an off-key tune. He selected a carton from a shelf, held it to his ear and shook it. "Half full," he murmured with satisfaction, half to himself and half to the professor. "This is the stuff, all right," he continued conversationally, entering the washroom. He leaned against the wall, tossing the round carton from one hand to the other, listening to the rattle of crystals inside. He glanced at the professor, who stood before a wash basin, rubbing his jaw reflectively as he stared into the mirror.

"You know," the quartermaster sergeant continued, chuckling, "if bugs is all they have on that Centaurus Four, a few tons of this stuff spread in the air ought to sweep it clean for occupation by humans. No competition. A real soft planet to colonize." He read the label reflectively. "Well," he corrected himself, "Maybe it would take a few hundred tons. But it could be

done. What do you think, professor?"

The other turned from his self-contemplation in the mirror, regarding the supply sergeant with an expressionless face. He shrugged his shoulders and turned back to the mirror again, staring as if fascinated by his own features.

"Well," the sergeant sighed, "at least we have enough on hand to kill any bugs in the ship for a long time to come, and some to spare." He set the carton on the edge of a wash basin and turned the tap, washing the closet dust from his hands. The professor turned slowly away from his basin and passed behind the sergeant, as if to leave the washroom for the corridor outside.

The door closed. The sergeant cranked out a paper towel, drying his hands, and caught sight of a pair of feet from the corners of his eyes. He looked up. "Oh. I thought you left." He tossed the crumpled wad of paper into a receptacle and picked up the carton of insecticide. He turned to the mirror for a quick checkup on his appearance.

The carton dropped to the floor. The sergeant's eyes bulged. His blood turned to ice-water, and his heart seemed to stop beating. He staggered forward, grasping the edges of the wash basin with numbed hands. His legs turned to wax, and his stomach heaved with fear and overwhelming nausea of revulsion. He opened his mouth to scream, but only a strangled gasp came out. He stared at the image in the mirror—the image that had replaced the form of the professor—with a shock so great that it turned his brain to water.

He turned away from the basin and staggered back against a wall, his arms stretched out before him. But then it was on top of him, the distilled essence of nightmare, a blur of many-jointed arms pinning him down with a crushing grip of steel, while a face of unbelievable horror pressed close to his. A pair of wiry black pincers emerged from a slavering gash in the center of the face, while many-

faceted eyes peered inhumanly into his.

Then the pincers stabbed into his throat, and fire replaced the ice in his veins. His muscles convulsed with agony. But almost before he fully realized what was happening to him, darkness crashed down....

THE rooms and corridors reverberated with the sound of the alarm bell. Hurrying feet clattered along the passages and up and down steel ladders leading to the upper and lower levels. Doors opened and closed. Flashlights illumined long-dark corners all throughout the rounded bulk of the great ship. They carried their flashes in one sweating hand, a flare-gun in the other with the control lever turned full to "lethal" position.

The clanging stopped, was replaced by the blare of the ship's public-address speakers.

ALL HANDS REPORT TO COMMAND ROOM.

One by one, they emerged from rooms and passageways, perspiring and breathing heavily, and converged on the command room, some reluctantly, most with relief.

Commander Forrester stood at the head of the long table, smoking furiously, lost in thought, oblivious of the entering figures. Lieutenant Muller stood to his right, his normally ruddy features several shades paler. He scanned their faces as they entered one by one. A few looked dejected, but the majority wore relieved expressions. Muller grunted to himself and smiled wryly. He himself felt that sense of relief—relief that he had not encountered *something* in a deserted corridor or in a store room, even though help could not have been many yards away at any given time.

Relief. And yet he knew that all was not well. The haze that only he saw shimmered in the air. The acrid scent of danger lingered in his nostrils. Fear was a bitter taste in his mouth. His skin tingled as though covered by tiny crawling insects.

At last they had all filtered into the command room and stood silently at their places around the table.

All but one.

The Commander looked up at last, breathed a cloud of smoke and set his pipe down carefully. His lined face seemed, suddenly, much older. He looked at the attentive faces, as if looking for an answer, or for some indication of discovery. The faces looked curious, or frightened, or excited, but nothing more.

He looked toward Muller and nodded. "Go ahead, Fred." The Lieutenant began the roll-call.

"Prentice?"

"Nothing to report."

"Kim Lee?"

"Not a thing, Lieutenant." The little pharmacist smiled sadly.

"Wiley?"

The biologist spread his hands. "Nothing but people."

"Moroney?"

The old entomologist shook his head.

Muller continued down the line and around the far end of the table, winding up with the medic at Commander Forrester's left side. "Doctor Griffith has been performing an autopsy on the body of Bates," he said heavily, "so he did not participate in the search." He turned toward the Commander. "All reports negative, sir. No alien form of life was found on the ship."

Forrester looked at him. "Yet Bates is dead," he said dully. "Something killed him." He turned his head to the medic. "Can you tell us what you found, Griffith?"

The ship's physician and surgeon nodded, a crease between his eyebrows. "Yes," he said slowly, as if in disbelief, "he was bitten on the throat."

"Bitten?" The Commander stared, incredulous.

The medic looked down at his hands, continuing in a low voice. "He was bitten. The puncture marks were not evident at first, due to the bruises on the throat. It was a double puncture, as if caused by a snake—or some large insect. It was undoubtedly the cause of death." He paused a long minute, as if reluctant to continue. "There was another aspect. He seems to have lost some blood."

"Blood?" The Commander looked at Muller questioningly. The Lieutenant shook his head.

"There was no sign of blood in the washroom."

The Old Man sank slowly into his chair, running a hand through close-cropped grey hair. "A snake or a large insect," he repeated the medic's words slowly. "Yet there was nothing near the body. And nothing was found throughout the ship." He looked up at Muller anxiously. "Fred—are you sure?"

The Lieutenant nodded emphatically. "Every one in the search was assigned a specific sector. We went over this ship with a fine-toothed comb. We would have seen anything the size of a spider, or larger." He mopped his face with a handkerchief. "If it was an insect, it would have had to be larger than a terrestrial tarantula. Right, doctor?"

Doctor Griffith nodded. "Judging from the spacing of the punctures, I would say so. Yes, definitely."

The chemist spoke up suddenly. "Say, I just had an idea. How about delayed action? Would it have been possible for Bates to get bitten while we were on Centaurus Four? And poisoning did not set in until later?" He looked around the table eagerly, and there were murmurs of relieved agreement.

"Yes, I suppose so," the medic said slowly.

"Except that Bates never felt the sting?" Muller broke in harshly. "Or that he did know he was bitten, but did not report it or do anything about it? Oh no, gentlemen."

The Commander looked at him keenly. "I think you're right, Fred. It *must* be on board, whatever it is." He hit the table with a heavy fist. "I want the whole ship gone over again, inch by inch, until we find the thing that killed Bates. Fred, I want you to reassign search sectors, so that nobody goes over the same area twice. What one missed, some one else might see—some dark corner or shelf." He stood up. "Look sharp, all of you. Use your flashlights on any spot where ceiling illumination is not absolutely clear—and keep your flash guns turned up to full power." He looked into each face earnestly, one by one. "Let's do a good job, and find this—thing."

They got their new assignments from Muller and spread out again through the ship, hopefully, fearfully. Each man went over his area minutely, and when he had finished, went over it again. They overlapped, so that there was no chance of blind areas.

They found nothing.

MULLER sat opposite Kim Lee again, hours later, over the chessboard, their pieces locked in the delicate balance of the Giuco Piano game. The ship was hushed but for the gentle vibrations emanating from the power core. Under a curfew imposed by the Old Man, each member of the crew was confined to quarters, excepting the Lieutenant, and the Commander himself.

Rations had been delivered separately to each cubicle by the cook, accompanied by Muller carrying his flare-gun in the ready-to-fire position. They were to keep their doors locked, opening them only if Muller or Forrester were visible through the circular glass panel.

Kim Lee moved a pawn up one square, threatening an exchange of pieces that would upset the balance slightly in his favor. He leaned back and studied the Lieutenant's frowning face, bent over the board in concentration on the new situation. Kim Lee lighted one of his rare cigarettes and blew smoke. "How do you know I'm not it?" he said suddenly.

Muller looked up jerkily. "What?"

Kim Lee smiled. "A locked door can be for the purpose of keeping something in, just as easily as for keeping something out. I repeat, how do you know I am safe?"

Muller grunted in surprise, then grinned. "Old deduction, huh? Well, you guessed right. It was my idea." The grin faded. "I'm not quite sure myself what good it will do. But I know that the members of the crew must be kept away from each other—for a while."

"Hunch again?"

Muller looked straight at the pharmacist. "Yes," he said grimly, "a hunch." He moved a pawn up to meet Kim Lee's. "The same hunch," he added

pointedly, "that tells me you're o.k."

"Thank you," said the pharmacist, chuckling, and moved a knight. "Your queen is in take."

"Thanks for nothing," Muller replied drily, studying the new threat. He supported his chin with one hand, staring at the board abstractedly. "I wonder what made poor Bates smash all the mirrors in the washroom," he murmured, musingly. "He must have been in a frenzy of some sort."

Kim Lee looked at him curiously. "Smashed the mirrors?" He leaned back in his chair. "How curious! Now where have I read about mirrors before? Something in old mythology or superstition...." His voice trailed off. Then he sat up again, shaking his head as though to clear it. "No, it couldn't be. That's silly."

Muller moved his queen out of danger. "Come on, Lee. If you have an idea, let's hear it."

Kim Lee shrugged. "O.K. Before I developed this passion for crime detection novels, I used to read a lot of the old horror and fantasy stories of the nineteenth and twentieth centuries. A recurrent theme was that of the vampire. Now, one of the peculiarities of this creature was that it cast no reflection, so that it hated and feared mirrors as devices that could betray it."

Muller snorted. "You mean that we have a vampire on board?"

"No. It was just a suggestion." Kim Lee frowned slightly. "I offered it as an alternative to the idea that Bates must have smashed the mirrors. Sometimes it pays to throw away an assumption and entertain its opposite for a while. It could lead to a correct conclusion."

Muller bit his lip pensively. "Might be worth thinking about," he murmured, then slapped suddenly at the back of his neck and brushed off a small body on to the floor. He reached out one foot and squashed the still quivering insect. Kim Lee raised a quizzical eyebrow.

"I thought the Old Man ordered insecticide put in the air conditioning system?"

"That's another curious

item," replied Muller slowly. "We were supposed to have had at least two cartons on hand. Both disappeared, for Bates evidently never found them."

Kim Lee moved a piece triumphantly. "Mate in three," he announced. Rising from his chair, he began to pace back and forth in the small room, dark eyes flashing with excitement.

"I guess you win at that," Muller conceded grudgingly. "But I've never seen you get so excited about winning a game from me."

Kim Lee waved his hand. "It's not the game, Lieutenant." He came to a halt behind his chair. "Something just clicked into place. It's utterly fantastic, yet—." He snapped his fingers excitedly. "Lieutenant, I think I have the answer. Will you hear me out?"

Muller tipped over his king in acknowledgement of defeat, then: "Go ahead, Lee," he said quietly, "let's hear it."

ONCE again, Commander Forrester stood at the far end of the command room at the head of the conference table. Muller stood at his right hand, Kim Lee at his left. They surveyed the faces intently as they entered one by one, some with expressions of surprise, some with annoyance, rubbing sleep from their eyes. At last they had all entered.

"Be seated, gentlemen," said the Old Man, lighting his pipe.

Lieutenant Muller walked completely around the table, collecting flare guns to the accompaniment of surprised murmurs and exclamations. He returned to his seat near the head of the table. Quite ostentatiously, he placed a flare gun on the polished wood in front of him. He glanced over the assembled crew. The haze of danger in the air had become almost as thick as smoke. He felt the hair rise at the back of his neck.

"As you all know," Commander Forrester began slowly, searching for words, "a member of the crew died earlier today. He was apparently killed by the bite of some creature. It was not clear how he could have been bitten outside the ship and either failed to notice it; or, noticing it, to

have failed to report for treatment. The puncture marks were wide and deep—no doubt very painful—and there was some loss of blood."

The Commander shifted uneasily in his chair. "On the other hand, if the wound was inflicted on board, the creature was not found by the most thorough search." He grimaced, as if the words left a bad taste in his mouth. He nodded to Muller. "You take over from here, Fred."

Muller leaned back in his chair, toying with the flare gun. He spoke in a calm, almost didactic tone of voice, as if in a classroom, but his eyes flicked alertly from face to face.

"It is a truism that life takes many and varied forms. This was predicted by theory, and found to be true by experience on many inhabited planets. Each world capable of supporting life has presented us with novelties and surprises. All but Centaurus Four—or so it seemed. It alone. Why?"

Somebody coughed and looked up at the ceiling. Something had gone wrong with the air conditioning. A blast of cool air descended from the vents overhead.

Muller noted the glance and smiled grimly. "It is also a truism that survival is the law of life," he went on. "The urge to survive takes many forms. The animal may protect itself by simply being stronger and fiercer. Or it may wear protective armor, like the turtle. Or," he paused, hefting the gun, "it may use protective coloration, like the chameleon, or mimicry, like certain insects."

Half way down the length of the table, Prentice sneezed. "Excuse me, Lieutenant, but can't we do something about the air conditioning before you go on?"

"In due time," Muller answered briefly, and paused for a long minute while his heart pounded harder and the psychic haze of danger seemed to draw together and concentrate about one individual. He moistened his lips.

"To continue. You may recall the little lizard on Centaurus Three, whose protective coloration and mimicry put

the terrestrial chameleon to shame. As a matter of fact, a specimen was only stumbled on by accident, so thorough was its adaptation to its surroundings. Now, I ask you, what would be the ultimate form of mimicry?" The command room was heavy with silence as he answered his own question. "Very briefly, it would be mimicry that could imitate any other form of life it encountered."

"That's impossible," burst out Wiley, the biologist.

"Impossible to do organically, yes. But how about projecting a mental image into the mind of the beholder, so that he saw what the creature wanted him to see?"

Some one snorted skeptically. "Telepathic projection?" a voice called out. Somebody laughed nervously. The command room grew colder as the vents poured out their frigid exhalations.

"Exactly." Muller replied to the questioner. "You are probably wondering how such a creature could imitate, for example, spoken words. It would not have to. It would know it was being addressed, and would project a mental reply that would be *interpreted by the hearer in terms that he expected.*"

There was a sharp gasp from a crew member at the far end of the table, near the door. "What you mean to say, Lieutenant, is that such a creature might be one of us?"

Muller nodded. "It is quite possible that it is with us now. Why it does not suspect what we have in mind is hard to surmise. Perhaps it uses contact telepathy only. Or perhaps it understands alien thoughts only when they are verbalized and thus, so to speak, crystallized."

Muller felt the impact of a score of pairs of incredulous eyes—and a pair in which comprehension dawned slowly. He looked across the table. "To Kim Lee belongs the credit for this little test. Tell them why, Lee."

THE pharmacist stood up and bowed slightly. "Lieutenant Muller knows I am fond of mystery fiction, expecially stories in which deduction plays a large role. While we were playing chess

a short while ago, he mentioned two interesting features of this case, if I may call it that. You see, I fancy myself as an amateur detective." He smiled modestly.

"Lieutenant Muller pointed out that two things were missing. All the mirrors were broken. Two cans of insecticide were gone. I asked myself: what could this mean? I recalled a story in which the detective, searching a deserted cottage, found many burnt wooden matches lying about. There was still a faint odor of tobacco in the air. Yet there were no cigarette butts.

"He deduced, of course, that the recent occupant of the cottage had smoked a pipe. It was as much the *absence* of somethng that was significant."

Some one shivered in his chair. Breaths became visible, like smoke, as the temperature continued to drop.

"So you see," Kim Lee continued, "the lack of mirrors and the lack of insecticide indicated something to me. I thought: assuming that Lieutenant Muller's idea of projective mimicry is correct, would it show a reflection in a mirror? It seemed to me that it would not. Looking directly at the creature, one would see what it wanted one to see. But a mirror reflects light waves, not mental projections. The true reflections would tend to cancel out the thought forms of the—creature—and reveal it as it truly is."

"This is what happened to Bates. He saw the thing's real form in the washroom mirrors. It killed him, then smashed the mirrors. Who knows why it came on board? Perhaps it had no conception of a space ship, and merely entered in the search for prey, *imitating the form of its first victim.* Or perhaps it is more intelligent than we imagine, and came with the purpose of preventing the expedition from returning home and reporting its home world as suitable for colonization by humans."

Murmurs sprang up in the command room, subsided as the Commander rapped on the table with his pipe. Silence returned, and the crew members regarded each other with uneasy suspicion.

Kim Lee continued unperturbed. "The second item was the missing insecticide. Now, we know that insects seem to be the dominating or only form of life on Centaurus Four. Assuming that our deadly mimic encountered Bates in the act of getting out insecticide to put in the ventilaing system, it could have realized that here was something inimical to its existence. It disposed of the two cartons of iso-malathion.

"Acting on an inspired hunch, Lieutenant Muller put on a pressurized suit earlier tonight and ventured outside the ship on the end of a long rope."

Part way down the table, a chair scraped.

"His surmise was correct, The creature had thrown the cartons out a small escape hatch. The puff of air from the opened lock carried the cartons out of sight—but not far enough. Interplanetary space is a high vacuum, without air resistance. The cartons simply followed the ship by their own inertia."

Kim Lee looked around the table out of slitted eyes, then glanced at his wrist watch. "You have doubtless been aware of the growing cold," he went on, each word crystal clear in the dead silence. "It has a purpose. Insects, being cold-blooded, slow down in direct ratio to the drop in temperature. I now call your attention to something else: the slight floral odor in the air."

Several faces looked up to the ceiling vents, sniffing audibly.

"Lieutenant Muller recovered the insecticide. The floral odor indicates its presence. It is quickly lethal to all insect life."

What happened then seemed like a nightmare. A tubby form pushed back its chair and stumbled toward the door. But its legs moved slowly, like a figure on a film in slow motion, or like a diver on the floor of the ocean. Somebody reached out to restrain him. Muller's voice cracked out like a whiplash.

"Don't touch him!"

The tubby figure fumbled at the door. Muller called out again: "No use. You can't get

out. It's locked, Professor Moroney—or whatever you are."

Moroney turned around, leaning weakly against the bulkhead door, and snarled at them. Then—his face dissolved. The tubby figure wavered like smoke, and the smoke was blown away. Those at the end of the table nearest the door shrank back in horror. Somebody stumbled to a corner and retched.

A shiny black five-foot stick stood there, a stick pinched in slightly in two places, vaguely like a neck and waist, so that it had a head, thorax, and abdomen, like a giant ant. From the lower end of the abdomen sprouted two spindly legs like articulated iron rods. A pair of double-jointed arms just below the head flailed the air madly, and still another pair attached to the lower part of the thorax, smaller and almost vestigial, feebly opened and closed its claws. Where human eyes had been, was a pair of polished onyx, many-faceted eyes.

It fell to the floor on all its legs, mandibles drooling. It quivered suddenly, and the legs tensed as if to spring. Muller snatched up his flare gun and fired. The thing was enveloped in blue flame. Its chitinous skin crisped and cracked. The six legs collapsed into long threads of ash, and an acrid odor filled the command room. Then there was nothing but a charred log on the floor, vaguely divided into three segments.

Commander Forrester strode over to it and looked down in disgust. "Get that thing out of here," he ground out. "Throw it out through an air-lock and disintegrate it with cannon fire." He turned to Muller. "Fred, put it in the expedition's records that Centaurus Four is uninhabitable. Temporarily, that is. It's going to take a lot of insecticide to make that planet safe!"

MULLER and Kim Lee sat over the chessboard. "Poor Moroney," murmured Muller pityingly, "no wonder he was so late getting back to the ship—or rather *it* was late. It must have killed Moroney, perhaps after gleaning his mind and studying his face and build. Once on board the

ship, it could do nothing but play out its role."

They finished the game an hour later, and Muller stood up, yawning. "Excuse me now, Lee. I think I could use some sleep now." He went to the door, then hesitated. He turned around. "Uh, Lee, I wonder if you could let me have some of your books to read," he said, reddening self-consciously. "You know, some of those deduction stories."

Lee laughed briefly, then stepped to his bookcase and searched the titles. He picked out a bulky volume and handed it to Muller. "Start on this," he said. "It's an old work, called *The Adventures of Sherlock Holmes.* I recommend it highly!"

THE END

A PLACE BEYOND THE STARS

by TOM GODWIN

illustrated by BOWMAN

When humanity had to flee the earth at last, scouts went ahead to prepare the path. Theirs was a life of greatest danger, and their best weapon was knowledge

THE dark star was detected in 2050, already less than two light-years from the sun and approaching at a speed of 700 miles per second. It would enter the solar system in 2550 and the resultant nova would destroy Earth.

Preparations began for the flight of the human race.

Suitable ships were the prime necessity. The gigantic mass ratio of photon drive ships prohibited really long flights and acceleration at one gravity would require years to approach the velocity of light. Extended interstellar voyages with such ships would consume lifetimes and generations.

In the year 3000 the Gravinetic Attraction-Repulsion Drive was developed—"Half the universe pulls the ship while the other half pushes it," was the layman's more-or-less correct conception of it—and the mass-ratio barrier was eliminated. Shortly afterward came the Davis Field; a field-type force which inclosed every atom of the ship and its contents and made possible accelerations so high that near-light speed could be attained in hours rather than years...

The means for interstellar travel was achieved, as nearly perfect as the laws of relativistic physics would ever permit, and construction of the giant Emigration ships began.

Since stocking the ships with large supplies of fuel and food would have meant a drastic reduction in the number of passengers, it was necessary that there be some way of replenishing supplies at periodic intervals. The use of already-inhabited Earth-type planets along the route as refueling and reprovisioning stations was the only solution to the problem.

Finding and preparing such worlds for use as way-stations was the job of the Imigration Scouts—the lonely, far-spaced men who led the way across the galaxy and upon whom depended the survival of all those who followed. Theirs was a life of danger and responsibility without precedent and a trust they must fulfill no matter what the cost nor how the means...

—From HISTORY OF THE GREAT EMIGRATION.

IT was very still in the Scout ship's control room as the sunlit world turned slowly on the viewscreen. Glen Bradley watched the distant smudge of the city come into view, the city that would be his destination, and thought with the bleak detachment of long experience: *They'll want to kill me first and ask questions later.*

But he had observed the world for seven days by means of the ship's various scanning and detecting instruments and he could do no more from a distance.

It was an arid world, with a virtually complete absence of elements of more than 220 atomic weight. The natives were humanoid, their degree of civilization roughly equivalent to that of Earth in the first quarter of the 20th Century.

The emphasis was on the military. The military craft and vehicles were fairly well-designed, but there had been little in the way of non-military progress. Roads were few and poor, factories were small and black with coal smoke,

towns and cities were jumbles of box-like little houses, crowded closely together to leave as much as possible of the arable land open for cultivation.

There were rivers in deep channels in the deserts, capable of supplying water for irrigation and power for industry, but there were no dams.

Such a world would be unable to refuel and reprovision the Emigration Ship groups.

He had made multiple copies of a variety of films from the concealed microfilm library—a selected assortment that contained only passing references to relativistic physics and no mention whatever of weapons of war—and their distribution on the world below would insure the advanced type of future society that was desired.

But most of the military installations flew the same eye-and-sword flag, which meant that one man or one group of men controlled almost the entire world. They would grimly insist on retaining the dreary status quo they had created.

He would have to meet the leaders and find their Achilles heel. The most effective method of doing that would be to appear before them as their prisoner; as a harmless goose potentially capable of laying golden eggs for them.

He touched the control buttons and the ship arced downward.

One hour later, after some difficulty, he convinced the heavily-armed military officers that he came in peace and wanted to speak to their leaders. They then, without delay, had him locked in a stone-and-steel cell.

THE ability to learn exceptionally quickly was one of the characteristics required of an Emigration Scout. By the third day Bradley could converse to a satisfactory degree with Dran, the gloomy-faced native who came to his cell each day for the exchange of language lessons.

Bradley was certain that watchers were constantly on duty behind the rows of pseudo-ventilation slots along the tops of the cell walls, but there was an exchange of surreptitiously-written notes. Dran, behind his gloomy, non-

commital exterior, hated the regimented life he lived and looked upon Bradley's coming as a faint, faint hope for deliverance.

Bradley learned what he wanted to know by the tenth day:

The world was called Bonthar and he was in the capitol of Sejoa, the largest nation. Sejoa had conquered most of the other nations of the world, under a leader named Graldo.

Graldo's tight control was maintained both by his military forces and the efforts of his two most trusted aides: Brend, head of the world-wide secret police, and Chilson, head of the Scientific Research Bureau. Brend's spies detected unrest wherever it might occur and Chilson's SRB developed weapons that would guarantee victory to Graldo's military forces.

Under Chilson's program of Prescribed Research it had long been forbidden to explore any field other than those officially designated as "Useful." Chilson had decreed: "Technological progress depends upon sound and practical approaches. From now on there will be no place for the bubble-heads, those Investigators Of The Insignificant who would spend their lives trying to learn why tree leaves are green or why the sun doesn't run out of fuel."

There had been a man named Vodor in one of the conquered nations who had evolved a theory that was remarkably close to Einstein's *Theory Of Relativity* despite Vodor's lack of such essential data as the true velocity of light.

Chilson had not bothered to read it since its abstract concepts were difficult to grasp, and in its uncompleted state it suggested nothing of any value to Chilson's SRB. But Chilson had had Vodor—who was an outspoken enemy of governmental control over men's minds—brought to Sejoa and put to work in a lumber mill.

"His new appointment will assist him in his masstime-energy studies," Chilson had been quoted as saying in the government-controlled press. "He can equate it all: the mass of building timbers, the time required for him to stack

his daily quota, and the amount of energy he must expend in so doing. In addition, for the first time in his life, he will be doing something useful for Society.."

Dran, himself, had been an astronomer when Graldo conquered his nation and Chilson had ordered him removed from his observatory, saying, "Gazing at the stars is the pointless pastime of a child." Dran's ability to learn new languages quickly had made him the logical choice to learn his, Bradley's, language. When the language lessons were finished he would resume his task of teaching balistics to student artillery officers.

On the eleventh and twelfth days Bradley was taken to his ship, which was crowded with military officers and SRB officials. He was ordered to teach them how to operate it.

He repeatedly explained that the control buttons were made to respond only to his own neural pattern. He demonstrated, while the SRB men watched every move he made.

At the end of the second day they were forced to admit defeat. The control buttons refused to function for anyone but him and the collapsed-atoms alloy that sheathed the control units proper and all other vital portions of the ship could neither be cut nor melted by any means they could contrive.

The language lessons continued for thirty more days. Dran grew thin and haggard from his double duty of teaching Terran to those who would view the microfilms as fast as he learned it from Bradley. On the thirtieth day Dran was gloomier than ever and there was an air of tension about him. At the end of the day, as the guards were opening the steel door, he handed Bradley his last note. It read:

Tomorrow you will be taken to Graldo, then to a thing named Bethno in the Interrogation Chamber. Suicide tonight would be far better. I am very sorry—I wish I could help you.

THE guards came for him at daylight the next morning; the rattle of the door and their brittle *"Up!"* awakening him. On an upper floor he was

turned over to another group; tall, wooden-faced men whose insignia was that of Graldo's Elite Guard. The new guards took him down a corridor and to a massive door.

Beyond it, in a vast, gray room, three men were waiting for him.

One sat behind a wide desk, the ribbons and medals on his blouse the only bright color in the room. His lips were a thin, hard line under his jutting, hawk-like nose and his eyes were exactly the same expressionless gray as the metal top of his desk. That would be Graldo.

To Graldo's left stood a thick-set, swarthy man, heavy-jawed, his little brown eyes flickering as he watched Bradley. Brend, of the secret police system...

The third man was in civilian dress. He was tall and he looked down his long nose at Bradley with an objective curiosity and a self-satisfied assurance that was nothing short of contempt. That would be Chilson, who knew everything worth knowing and tollerated no nonsense from bubble-heads...

The guards withdrew from the room and Graldo spoke, in a metallic tone that matched his eyes:

"Your ship has been thoroughly examined. All microfilms found in it have been studied and every word of your conversations with Dran was recorded. I tell you this so that you will waste none of my time with subterfuges.

"Why are you here?"

He knew that Dran had long since conveyed his explanation to Graldo but he told his story again, speaking to Graldo while the other two listened; Chilson with his objective contempt and Brend with suspicion in his little monkey eyes. He told the truth, all of it, about the need for a friendly, well-developed world as a stop-over base for the Emigration ships.

"The microfilms you now have," he finished, "will teach you everything from the construction of large hydro-electric plants and smelters to the mass-production of labor-saving machines which can be available for all. You can jump the centuries of research that would ordinarily have to pre-

cede these things and within a few years raise your people's standard of living to a height they could never have dreamed of."

It was all true, but in the grim room, speaking to the cold Graldo, the scowlingly suspicious Brend and the contemptuous Chilson, it sounded naively Pollyanna-ish. A long silence followed his last words.

"I see," Graldo said at last. "We are supposed to gratefully alter our entire way of life for the future benefit of an alien species."

"The benefit to your own race would be even greater," he answered. "And there will be scientists on the Emigration ships who can teach your scientists still more—a great deal more—than they can learn from the microfilms."

Quick, hot resentment flashed across Chilson's face, eradicating the smug self-assurance for the moment.

"A reminder, alien—" he said. "We are not in need of enlightenment. Our own scientists are quite capable—under my supervision they developed the weapons that gave Sejoa world leadership and under my supervision they will continue to develop whatever I may demand. They need no tutoring from alien bubble-heads."

Brend shifted his eyes to Graldo and spoke:

"I could maintain little in the way of security if scientists and technicians, without careful screening and clearance, were permitted to study those films. Many of the so-called labor-saving devices could be transformed into dangerous weapons."

"Yes, yes—I know." Graldo said. His opaque metal eyes studied Bradley while his fingers tapped thoughtfully on the desk top. "You say the first Emigration ships will not arrive until a hundred years from now. Will there be any other ships in this section of space before then?"

"None," he answered.

"Part of your story I believe. You would not have left your ship and become my prisoner to ask for my help unless your race badly needed it. But you have offered nothing of value to pay for it. Your assortment of more-leisure-

time machines and gadgets would be incompatable with intelligent discipline of the masses—they would be weakened into laziness, perverted into demands for more and more freedom.

"Perhaps such was your true plan—which you might have thought to be clever and subtle—to dispose of me and my regime. But I did not become ruler of a world by being stupid and gullible."

"No," he said. "I have no desire whatever to play power politics on an alien world. I only want your cooperation so that I can go on my way."

"You have offered nothing of value," Graldo said again, "and you, yourself, are of no value to me until you do so."

There was finality in Graldo's tone that told Bradley the interview was ended. Graldo's finger was pressing one of the buttons on his desk....

"I have withheld nothing that would be beneficial to you," Bradley said.

"Except your ship. That, alone, I could use—and you refuse to tell how the control buttons can be by-passed."

"There is no way to by-pass them. It was a safety measure built into the ship."

"I cannot believe that," Graldo said. He glanced beyond Bradley. "Perhaps Bethno can stimulate you into remembering."

Bradley turned and saw the three coming up behind him. Two were heavy, muscular men, thick leather straps in their hands. The third was bulbous of face and body, utterly hairless, his eyes in his formless face as pale as milk and giving him the appearance of a maniac.

"This is Bethno," Graldo said. His thin lips almost smiled. "He will give you his undivided personal attention—which is an honor awarded only to the most important prisoners."

Bethno's milk-gray eyes were shining with the flat sheen of wet stone. *He enjoys his work,* Bradley thought with grim amusement. *It's his life—and I'll be his masterpiece..*

Bethno nodded his hairless dome of a head at the guards and they stepped forward with the binding straps. They

jerked Bradley's arms behind his back, to buckle the straps, and he thought of what Dran had written: *Suicide tonight would be far better.*

There was no possible way-station world but Bonthar in that section of space and the Emigration ships would have neither fuel nor food to go on and try to find another. If he failed to have Bonthar prepared for them they would have to land and walk out of the ships, the men and women and frightened children, into suspicion and violence and slavery.

He made the decision that he had hoped would not have to be made. The cost would be great, but there was no alternative.

He braced himself against the hard twist of the guards' hands on his shoulders and said to Graldo:

"There is a weapon you might like. With it you could entirely destroy a rebel city in seconds."

The impact of his words was such that even the guards froze in their attempt to turn him. There was a moment of blank-faced silence, then Graldo asked quickly:

"How long?"

"Within seconds. We call it the hydrogen bomb."

Again there was a silence, desire and suspicion conflicting on Graldo's face.

"Is this a lie?" he asked harshly. "Why didn't you tell me about it before?"

"We haven't used the hydrogen bomb for two hundred years," he answered, "and it's against our moral code to give it to any other race. But under my present circumstances my people would consider it ethical for me to cooperate with you, alone.

"Now, if you want to see them, the microfilms are in my ship—the ones that show our last atomic war and what the hydrogen bomb did."

GRALDO, Chilson, Brend, and the six highest-ranking officers of Graldo military forces were gathered in Graldo's office as the microfilm projector reinacted for them the flaming thunder and destruction of the last atomic war; the war in which a bil-

lion people died in less than ten days.

There was a hushed quiet in the room when it was over, then Graldo's chief-of-staff said with awe in his voice:

"Sir, that bomb is a weapon against which the full military power of any enemy nation would be like feathers tossed against a hurricane."

Graldo turned to Bradley, the sweat of eagerness like a shining film on his face. "These other films here—they show how to make this bomb?"

"Yes," he answered. "Everything needed is to be found on this world except some of the heavier elements. Those you can get on a heavy-element world which the instruments on my ship show to be not far from here...as interstellar distances go."

"How long will it take?"

"The trip? About eighty days."

"The other—the making of the bomb."

"You must understand," he said. "These microfilms deal specifically with the construction of the bomb. They are not complete in themselves. The other microfilms I gave you will be needed to produce the mines, mills, factories, chemical plants, electronics industries—all the things you must have before you can make the bomb's component parts.

"I doubt that you can have the bomb in less than twenty years."

"*Twenty* years?" Disappointment was followed at once by savage refusal to believe. "You lie—it can't take that long!"

"Project the films showing the bomb's construction and then project the other films again. When you have seen for yourself how numerous and complex are the machines and methods that go into it all, you will know that I do not lie. And then, perhaps, you will believe me when I tell you the only way the time can be shortened."

It was late the next day when the guards took him from his cell and to Graldo's office. Graldo, Chilson and Brend were alone, the film projector near them. Graldo would have trusted no one to see the films of the bomb's construction, even though such information would have been

utterly meaningless to all but a few scientists. Except two men—Chilson, who would be in charge of the building of the bomb, and Brend, who would see to it that no secrets were divulged that might threaten Graldo's sole control over it.

The faces of Chilson and Brend were sagging from lack of sleep and Graldo's face was flushed and ugly with frustration.

"I want the bomb now, not twenty years from now," Graldo said. "Show me how to cut the time to no more than four years and you go free the day the first bomb is made."

"Four years?" he asked. "That's an extremely short period of time... But there is one single way in which it can be done."

"How? Get to the point!"

"No nation alone—neither Sejoa nor any other—could possibly accomplish so much in such a short length of time. But the people of all nations, all working toward the same goal, could do it."

Graldo's amazement was almost instantly a snarling question:

"You fool—do you mean you think they would *want* to build hydrogen bombs for me?'

"Not hydrogen bombs—I suppose they wouldn't even know of them. But the high industrial level that must precede the bombs would greatly improve living conditions for all of them and *that* all of them would want to work for.

"You can't have full-scale cooperation and the swiftest possible progress under a program of governmental restrictions, supervision of every minor detail, and no incentive for the workers. But offer the people of Sejoa and all your subject nations, from scientists to laborers, the right to benefit from these things they will build and production of the bomb will be possible within four years."

"I see," Graldo said. There was a menacing softness in his tone. "So this is your trickery, your plan for getting what you wanted on Bonthar, after all?"

"My life and freedom depend upon helping you get the bomb and this is the quickest way it can be done."

Chilson laughed; a short,

snorting sound. "I think the alien's prime consideration truly is his own welfare—he can't be stupid enough to think his program could not be halted at will."

"Perhaps," Graldo replied. He gazed long and calculatingly at Bradley and said at last, "Of course, your plan is harmless. There would be a great deal of resentment when full governmental control was re-established but it would be meaningless against the bomb. Did you think of that?"

Bradley shrugged. "I know."

Chilson laughed again and even Brend's thick lips parted in a smile.

Graldo summoned the guards who would return Bradley to his cell and said, "I'll consider the plan."

GRALDO'S decision was made by the next morning: he would adopt Bradley's production program to a large extent. But, first, the ship would make the trip to the heavy-elements world and bring the ores without which all the other work would be pointless.

"No," Bradley told him in flat refusal. "The ship goes nowhere until the other work is started."

Graldo's face darkened with rage.

"You forget your position, alien. Shall Bethno remind you of it tonight?"

"If Bethno's torture should alter my neural pattern," he replied, "the controls of my ship would no longer function for me. You would never get the ores, never have the bomb."

"Perhaps. And perhaps you lie and a few days in the Interrogation Chamber would wring the truth out of you and make you quite unnecessary to me."

Bradley made no answer and Graldo's anger faded into a hate-filled thoughtfulness.

"There will be time, later, to take care of certain matters... For the sake of convenience, I may humor you by doing as you insist."

Bradley's program was weakly launched three days later, made almost useless by smothering restrictions.

"Nothing will be accom-

plished that way," Bradley said to Graldo. "You will have to lift the restrictions and give people the promise of freedom-to-come."

"After I have the ore," Graldo said. "Not now—not when I will be away for eighty days."

"It will have to be now," he answered. "You, yourself, told me that my life depends upon helping you toward having the bomb as soon as possible. A great deal of work can be done here while we are gone—that time can't be wasted."

Graldo's desire for the bomb had been growing daily and that time he did not argue or threaten. The next day he lifted some of the restrictions.

Thirty more days went by during which, by means varying from subtle persuasion to outright threats of non-cooperation, Bradley altered his role from that of a condemned prisoner to one approaching that of a technical advisor. It was necessary that he see for himself that his plan was being carried out and he was grudgingly given limited freedom; Brend's agents always with him when he was not in his cell, watching every move he made and reporting every word he spoke.

But Graldo's submissiveness to Bradley's demands began to change to impatience and on the fortieth day Bradley knew he could force him no farther. On that day he told Graldo he was ready to leave but for one last request: the appointment of Vodor to chairman of the newly-created Technical Advisory Board.

Chilson objected with his usual vindictive anger, speaking to Graldo:

"My Scientific Research Bureau has already been transformed into a travesty, with day-dreaming theorists given status equal to that of practical scientists. Now he wants the most impractical bubblehead of all—Vodor, who babbles of fourth dimensions!—to be appointed to the most important position of all!"

Bradley spoke to Chilson: "There are aspects of this program that only a theoretical physicist, familiar with a variety of fields, could fully comprehend."

"This is the alien's last re-

quest," Graldo said to Chilson. "I've pampered him long enough. As for this Vodor: could he do us any harm in eighty days?"

"He'll probably put everyone to measuring the distance to rainbows or the tensile strength of sunbeams!" Chilson retorted. "Eighty days of time will have been wasted; time that my own scientists, if they had been left alone, could have used to accomplish something worthwhile."

"An interesting conjecture, Chilson," Brend said. "Did you ever stop to consider the fact that the alien's future welfare depends upon his plan not failing?"

"Why...no." A thoughtful, almost pleased, expression replaced the protest on Chilson's face. He turned to Graldo. "I have no objection to a Bubblehead Holiday so long as this alien is held responsible for what they do while we are gone. Or, rather, for what they do not do."

"We will return to find that a tremendous amount of progress has been made during our absence," Bradley said.

Then he added with the sincerity that came from telling the absolute truth:

"I'm betting my life on it."

GRALDO was alone in his office when Bradley was summoned the next day.

"We leave tomorrow," Graldo said. "I want no more delays—is the ship ready?"

"It is," he answered.

He made a rapid mental review of his progress to date and the one more thing he must cause to be done. Graldo was going, of course—he would trust no one else to oversee such a vital mission. Chilson was going, with some of his SRB specialists, to make certain Bradley tried no such trickery as the substitution of low-grade for high-grade ores. But Brend would stay on Bonthar....

"I understand Brend will not go," he said to Graldo. "It might be better for your own plans if he should stay."

Graldo gave him a quick look of surprise. "What do you mean?"

"It's very improbable, but not impossible, that something

might happen to delay our return," he said. "Lack of a governmental leader could conceivably disrupt the production program and Brend, as head of the world police, is second only to you in influence. If necessary, he could easily take your place while you are gone."

Graldo did not reply to the explanation, but there was an abstracted air about him during the rest of the short interview.

The next day, when Graldo and Chilson came to the ship, Brend was with them.

Graldo had had extra seats installed in the control room the night before, so that he and the other two could sit in comfort behind Bradley and watch both him and the viewscreen. They seated themselves and six heavily armed guards took up positions in various parts of the room. Twenty more guards and SRB technicians were assigned to other portions of the ship.

Bradley looked questioningly at Graldo when all was in readiness and Graldo said shortly, "Go!"

He pressed the buttons that had refused to respond to the touch of the SRB experts and on the lower viewscreen the city fell away from them. There was no sensation of movement—the Davis Field prevented such.

The hot, barren deserts could be seen stretching endlessly away to the east and he said, "There lies the future for the people of every continent on Bonthar: the deserts. They need only dams in the rivers to give them water."

No one answered him, or even looked up.

Bonthar dropped faster, curving into an immense hemisphere. The sky turned dark, then the stars appeared in the dead blackness of deep space.

He increased the acceleration and Bonthar shrank and fled on the viewscreen. Graldo and the others watched as it became a star that was fading while the sun beside it slowly dwindled.

"We'll reach full velocity in a few hours," he said to them. "Our speed will then be ninety-nine point nine nine nine six three per cent that of light."

Only Chilson bothered to

look up; a brief and pointedly disinterested glance. He smiled companionably at Chilson, unable to resist the impulse to tell him:

"As a scientist it might interest you to know that three hundred years ago one of our bubble-h e a d s — Einstein — calculated that a ship would travel an enormous distance each day at that speed. It turned out that he was right, down to the last decimal point."

Chilson gaped as he tried to find some intelligent meaning in the statement, then he closed his mouth to say with acidic wonder, "Do you mean your bubble-heads were regarded as geniuses if they could do simple arithmetic?"

"Oh, no—Einstein found arithmetic unsuitable for setting forth such c o m p l e x thoughts and he always used special mathematics to express his theories."

Chilson's quick anger came. "You were not ordered on this mission to entertain us with inane comedy!"

Grado looked up from the viewscreen and said with the c u r t n e s s of preoccupation, "Confine all future remarks to necessary statements."

He shrugged. "I'll be glad not to go into it any farther."

THE days dragged by like little eternities as Bonthar's sun became a bright star that was fading. Graldo was moody and unpredictable; sometimes cheerful and almost intoxicated with the thought of his destiny, sometimes surly and snarling in impatience.

Brend was without emotion, sleeping most of the time when he was not eating, although he remarked once with satisfaction: "The Bubble-head's Holiday will serve one very useful purpose—it will encourage people to speak their minds while we are gone and a complete and detailed list of all subversives and malcontents will be waiting for me when we return."

Chilson was nothing short of happy, wearing the same smug expression he had had the day Bradley first met him. Chilson's ego still rankled and galled at thought of his temporary loss of prestige and control over the SRB and, as

much as Graldo was looking forward to possession of the hydrogen bomb, Chilson was looking forward to the day of the ship's return and the resumption of his, Bradley's, walk to the Interrogation Chamber.

The journey was only a stay of execution for him. He had no illusions otherwise.

On the forty-first day they came to a small white sun. They arced around it, to the ragged, poisonous planet that lay beyond, and landed in the area which the ship's instruments showed to be the most abundant in the minerals they wanted.

"This is it," he said to Graldo.

The guards mined like madmen, working until they staggered with exhaustion while Graldo paced in his impatience and drove them harder. The ores were plentiful and rich and the ship was loaded two days after it had landed. Ten minutes later it was on its way back to Bonthar.

It was then that Chilson came to Bradley with a sheaf of papers in his hand, smiling with his perpetual self-satisfaction.

"I had these star maps drawn at periodic intervals on the way here," he said, "and if you veer in the slightest from the proper return course, I will know it at once."

"I'm glad to have you check on me," he said. "I want to see Bonthar again as much as you do."

Graldo's impatience increased in the days that followed but surliness no longer accompanied it. He talked often with Chilson about the best methods of producing the bomb as soon as possible and with Brend about the most effective methods of maintaining rigid secrecy.

He totally ignored Bradley, except to ask once with objective curiosity, "Would your Emigration ships have any defense against the hydrogen bomb?"

"Not if they had to land," he replied. "And by the time they reach Bonthar they will be so short of fuel that they will have to do so."

"Then you haven't accomplished much for them, have you?"

"I tried," he answered, and Graldo turned away with a faint smile.

It was three days later, when he was dozing in his chair during sleep period, that he heard Graldo say:

"This ship will be the perfect carrier for the bomb—no aircraft can fly high enough to intercept it."

"When we learn how to bypass the control buttons," the voice of Chilson answered. "Bethno should be set to work on that problem as soon as we arrive."

"He will be," Graldo said. "And he had better produce results."

Bradley wondered if they knew he had heard them then decided they presumed he had not, but really didn't care.

Bonthar's star brightened and detached itself from the galactic background. Eighty-three days from the start of the round-trip journey it was a yellow sun again and visibly enlarging.

"We'll reach Bonthar in a few hours," he said to Graldo. "We'll come around from the night side—it will be morning in the capitol city when we land."

Graldo made no reply but later, when the nighttime surface of Bonthar was dark and close under them and destination was only minutes away, the control room door opened and six extra guards filed in.

"Sometimes," Graldo said in answer to the questioning lift of his eyebrows, "a prisoner will try to do something desperate when his reprieve ends."

"There was an agreement," he said. "You promised me a chance for freedom."

Graldo laughed, the first time Bradley had ever heard him do so. "We played a game, each to get what he wanted in any manner possible. You should have known you would lose."

Bradley looked at the viewscreen, where the horizon of Bonthar was black under the golden brightness of coming sunrise.

"It was a game for high stakes, wasn't it, Graldo? The destiny of Bonthar—and only one of us could win."

The ship sped out of the

night, into the golden sunlight of morning. Ahead, made unmistakable by the mountains to the north, was the site of the capitol city...

But another and far larger city was there. A network of roads radiated out from it and beyond, to the east, was the shining gold-blue of an immense man-made lake. Beyond the lake, where the gray desert had been, were green fields that reached to the horizon.

Graldo swung up out of his chair, staring in disbelief, his hand reaching automatically for the weapon he always carried. *"What—"*

"The fortunes of war, Graldo," he said. "You lost."

Graldo whirled on the wordlessly gaping Chilson. "Your star maps—you let him trick you. *This isn't Bonthar!"*

"This is Bonthar," Bradley said to them. "Look—"

The city rushed up at them on the viewscreen and the details were sharp and clear.

"There is your capitol building," he said. "There are the barracks for the Elite Guards. There is the Interrogation Chamber building and there is the multiple gallows where you used to hang rebels—see? They've kept it all intact to remember you by."

Chilson said in a choked voice:

"It has to be Bonthar—it *has* to be."

Then, in a queer whimper. "The bubble-heads—*what did they do while we were gone?"*

THE ship settled to earth, in the spot where it had set before. The guards surrounded Bradley at a command from Graldo and one on each side of him held his arms.

"Kill him at once," Graldo said to them, 'if we are attacked in any way." He looked at Bradley. "I don't know what has happened here—but I know what is going to happen before the day is over."

Bradley and the guards beside him led the way out of the ship.

A small group of men was coming toward the ship, dressed in civilian attire entirely different from that which had been the custom before. The guards halted at Graldo's command and the guard captain blew his whistle.

Bradley saw that he was looking expectantly toward the nearby Elite Guard barracks, where a door was swinging idly in the wind.

The group of civilians reached them and the old man in the lead greeted Bradley, smiling, and seeming not to notice the guards who held him.

"We've been expecting you," he said. "Vodor found the data he needed to complete his theory, in bits and pieces throughout your microfilms, a staff officer finally told about the bomb, and Vodor realized what you were doing for us. He calculated your return almost to the day."

The guard captain blew his whistle again, his cheeks puffing with the effort, but there came no answering sound or movement from the barracks. Graldo pushed forward, his confidence restored by the unarmed condition of the civilians and his face dark and ugly.

"Where is my Guard?" he demanded of the old man. "Where are my staff officers?"

The old man looked questioningly at Bradley.

"Tell him," Bradley said.

Graldo's face turned darker. "*I* am Graldo, you fool! Announce my arival to my Guard and officers—at once!"

"I can't," the old man said mildly. "The last one died thirty years ago."

There was a silence of incomprehension in which even the guards were not quite wooden-faced any longer. The eyes of all turned to the silent Guard barracks, where the door still swung idly in the wind, and the touch of fear and uncertainty came to their faces.

Bradley spoke to Graldo:

"There were the laws of relativity, which you and Chilson didn't want to hear about; the laws that Vodor would have discovered if he hadn't been persecuted as an impractical fool. Nothing can exceed the speed of light, but there is a time dilation at high velocities, the same time dilation that makes it possible for my people on the Emigration ships to live to cross hundreds of light-years of space. Time is relative to the speed at which the observor is moving and at the near-light speed of

my ship one day of time for us on the ship was one year for those here on Bonthar.

"It was eighty years ago that we left here. Your empire is long since gone—it died while you were planning and dreaming about it on the ship."

"No!" Graldo said, and the word was sharp with protest. "Not gone—not in eighty days..."

But he looked away, at the broad city, the busy highways, the distant green of what had been a desert, and was silent with the numbness of realization.

Brend worked his thick lips soundlessly, then said, "He lies. Bethno will make him tell—" He looked at the long-deserted Guard building and did not complete the sentence.

Chilson laughed, and Bradley saw that his eyes were shining-bright. "Don't let the fakery fool you. None of it is real—it can't be!"

The crowd had grown thicker and men moved among the guards, disarming them. They looked in question and bewilderment at Graldo and then submitted without protest when he did not speak or turn. They were marched away and still he did not seem to see them.

The old man said to Bradley:

"A place will be found for everyone, even Graldo—jobs where they can do Society no harm. As for you—will you be with us for long?"

"Only a few days. This has cost eighty years of time and now the foremost group of Emigration ships is only twenty years behind me."

"We will be prepared for them when they come."

Chilson laughed again, a high-pitched giggling sound, his too-bright eyes staring without focus. "I know—I know! Fakery—stage props—I'll order it all torn down tomorrow..."

"We have a place for you to stay while here," the old man said. "Shall we go there now?"

"Yes," he said. "I want to talk to all of you, then I'll have to go on again. The Emigration ships are coming and until we find a world of our own, somewhere, someday, there will be no time for any

of us to ever stop and to rest."

He looked back when they were some distance on their way. The crowd had dispersed, leaving Graldo and Chilson and Brend alone in the center of the field. Chilson was babbling about stage props but Graldo and Brend stood stiff and silent, like men who watched in mute helplessness as forces beyond their control or understanding brought their world to an end.

And so, in a way, it had happened for them....

"They were sure that they already knew everything worth knowing," he said to the old man. "I was honest with them —I told them no lies and I gave them what they thought they wanted."

He looked back once more when they came to the edge of the field. The three who had ruled a world looked very small and lonely as they stood together in the center of the field and Chilson's laughter was like a distant, giggling echo. He walked on again, thinking....

"What did you just say, sir?" the old man asked.

"I guess I spoke aloud to myself," he answered. "An old Terran proverb:

"A little learning is a dangerous thing."

THE END

NUCLEAR NEWS

by STEVEN RORY

The Atomic Energy Commission has authorized the building of what will be the world's most powerful atom-smasher yet devised. To be erected at the Argonne National Laboratory in Illinois, the new particle accelerator will be able to accelerate protons to energies of 12.5 billion electron volts, considerably better in performance than any American or Soviet accelerator now in existence or on the drawing boards.

A major puzzle of atomic physics is the fact that the neutron, though it has no electric charge, produces a magnetic field. One theory offered to explain this mystery is that the neutron is internally electrified, with a positively charged core and negatively charged circulating mesons which balance the core charge, giving the neutron its net charge of zero. But now data coming from Stanford University casts doubt on this hypothesis.

The Stanford physicists report that they have bombarded atomic nuclei with high-speed electrons and have found that the diameter of the magnetic field of the neutron is about seven-tenths of a fermi, roughly the same as that of the proton. But the electrical diameter, or range, of the supposed electric charge, is virtually zero.

In other words, they found no electric charges circulating around the core—at least, not far enough to produce magnetism. So the unexplained magnetism of the neutron is more enigmatic than ever, and remains a stumbling-block of atomic theory.

WATERS OF FORGETFULNESS

by ERIC RODMAN

NOVELETTE *illustrated by* BOWMAN

The unexplored planet was not a bad place for shipwreck. The air was breathable, the food was eatable. Everything was normal except the water. — The water was different!

HALDERSON had just about given up the search for survivors of the missing space-liner *James P. Drew* when his detectors picked up the faint, sputtering S.O.S. signal.

He sprang to his phones and tried to boost the signal, just in case coordinates were coming over as well as the bare, unadorned S.O.S. But the dim piping faded away and died within seconds. Halderson moistened his lips. The input tape had recorded the signal; he activated the playback switch, cut in the noise filters, and listened.

Yes. It was unmistakable, for all its indistinctness. It had only lasted a few seconds, but that was long enough for his detectors to pick it up. There were survivors of the *James P. Drew!* They were calling for help!

The super-luxury liner *James P. Drew* had disappeared somewhere in the thickly-populated Second Octant area of the galaxy about ten days before. It had been bound for Darrinoor out of Earth, and it had carried eight hundred wealthy first-class passengers plus a crew of nearly sixty. Just what had happened

to the *Drew* was highly uncertain. Its messages had grown increasingly fragmentary and incoherent, and they were practically impossible to understand in the final minutes of the giant ship's fire. It appeared that there had been a series of explosions aboard ship, beginning in the drive compartment and culminating with a grand outburst that split the liner apart.

Like all superliners of the Earth Line, the *James P. Drew* had been fully equipped with lifeships. It carried thirty ships, each built to hold ten or twelve people but each capable of holding as many as thirty if necessary. And there were hundreds of planets in the Second Octant to which survivors might have gone. Some of the planets were heavily settled; others were still utterly unexplored. But there were numerous Earthtype planets for the escaping survivors.

For ten days since the disappearance, over a hundred Disaster Patrol scouts had been combing the entire Second Octant area, hoping to pick up a message transmission from a group of survivors or, perhaps, to find one of the lifeships adrift in space. The scouts had drawn blanks so far. Not one had come upon a trace of the survivors of the *James P. Drew* disaster.

Disaster Scout Halderson had been on the verge of giving up and returning to home base. His small ship only carried two weeks' supplies, anyway, and he saw no point in continuing the fruitless search for the missing millionaires. It was too bad about them, of course; but space travel was not completely safe, and accidents did happen.

He had been about to notify home base of his decision to return when his ultra-sensitive detectors picked up the feeble impulses of the call, coming in on the special wavelength that had been reserved for *James P. Drew* lifeships.

He played it back on his recording tapes. Yes, there was no doubt about it. The brief message had said, *"S.O.S. ... S.O.S. ... James P. Drew survivors .... S.O.S. ... S.O.S...."*

HALDERSON integrated the signal and fed it to

his computing tapes to get a directional fix. Perhaps the computer could give him an exact location; if not, it could at least pinpoint a general area which could be subjected to an exhaustive search.

He waited. He was in no hurry now. The computer took its own sweet time, checking probabilities and directional quadrations before beeping out a string of linked coordinates.

Halderson studied the sheet of paper that had issued from the computer. It gave a fairly precise orientation for the signal-source. Halderson nibbled on his writing stylus for a moment, then jabbed at the button that activated his chart-screen.

The screen lit up, glowing green with dark flecks in it. Quickly Halderson tapped out the directional coordinates the computer had given him, and the screen obligingly shifted to show him a view of the heavens in the area he had called for.

One small dark fleck stood alone on the field of green. Halderson grinned in satisfaction. There was only one planet from which that signal could have emanated, then! It made his job that much simpler. The *James P. Drew* lifeship that had signalled him had come to rest in a relatively uncrowded sector of the galaxy's Second Octant.

Nodding, Halderson jotted down the planetary data and shut off the chart-screen. He jacked in the contact for sub-radio communication with his home base on the planet Skaldek. Moments later came the crackling response from headquarters: "Disaster Patrol HQ. Come in, scoutship. Come in. Major Lang speaking."

"Lieutenant Halderson calling, sir. Are you getting me? Halderson calling."

"We read you," came the reply from HQ. "Proceed, Halderson."

"My detectors have picked up an S.O.S. message from survivors of the *James P. Drew*. I've made a directional estimate on the signal and I've come up with a possible planet of origin for it."

"Let's have the coordinates," Lang said. "We'll check them for you and advise."

Halderson said, "It's a Second Octant planet with Abso-

lute Coordinates DY1164/AD2306. Repeat: Absolute Coordinates DY1164/AD2306."

"DY1164/AD2306. Okay, Halderson. I'll check them on the master planetary chart and let you know what to do next."

Halderson waited patiently. It was impossible to install a complete galactic data-chart in every small scoutship; for any detailed information on a given planet, it was necessary for the scout to refer back to his home headquarters.

In a few moments Lang's voice said, "I've checked that planet of yours, Halderson. So far as our records show, it's a good potential harbor for castaways. It's an Earthtype planet to three places, surveyed twenty years ago but never settled."

Halderson nodded. Earthtype to three places meant that Earthmen could live there indefinitely without need of artificial protection. The air was breathable, the natural life edible, the water drinkable....

He said, "Very well, sir. In that case I'll run a direct check on the planet immediately. If I find the *Drew* survivors there I'll notify HQ."

"Right."

"Perhaps more than one lifeship landed there. I'll keep you posted on my findings, Major."

AFTER he had broken contact with home base, Lieutenant Halderson pulled his small ship out of the idling orbit it had been in for the past hour, and punched out the coordinates of the new planet on his drive director. He estimated it would take no more than a day to reach the unnamed planet from his present position. He hoped the *Drew* survivors would be readily accessible, not stranded on a mountainpeak or in the midst of some dreary alien desert, as so frequently happened.

Halderson had been in the Disaster Patrol for seven years. He liked the work, in an obscure way, even though it was lonely going and low paying. Disaster Patrol scouts were forbidden by law to accept rewards from people they rescued. Halderson didn't mind that. Many times some rich

tourist rescued by Halderson would offer to give the Disaster Patrol scout a fat reward, but Halderson was not even tempted.

He had no need for large amounts of money. He spent eight months of the 365-day Galactic Standard Year roaming the spaceways in search of stranded castaways, and the remaining four months of the year were his own, to be spent groundside on the more entertaining worlds of the universe.

That was all he asked. Eight months of rescue work, four months of relaxation. To be handed a couple of thousand credits for rescuing a wealthy traveller would only upset his quiet routine of life.

Most likely, he thought, somebody was going to offer him a reward this time. The *James P. Drew* had been, so he was told, the ultimate in pleasure liners. The fare from Earth to the gaming-world of Darrinoor was eighteen thousand credits for the two-week cruise, and from what he had heard the trip was worth the price in every way, if you cared for that sort of luxury.

Foods from the most remote parts of the galaxy, costly entertainers, party-girls supplied on the house if you wanted one, a constant flow of rare wines and liquors—yes, two weeks of that might be worth eighteen thousand credits for those who liked the high life.

Halderson didn't. But he imagined that there would be at least one survivor who wanted to give him a reward.

"Contribute it to the Disaster Patrol pension fund," Halderson would have to tell him. "I'm forbidden by law to accept it."

As his tiny ship glided through the blank sleek grayness of nospace toward the planet from which the S.O.S. had emanated, Halderson thought back over his previous missions. Most of the time it was simply a matter of rescuing some cargo ship that had crashed on an alien world; and though that had its difficult points, it was usually simple work.

Twice before, superliners had been destroyed in space. At least a few survivors man-

aged to get free in each case. But a lifeship is a small spaceship, and it can travel great distances if necessary. It was not always easy to locate the escapees. In this particular case, the planet from which the message had come was more than sixty parsecs from the last reported position of the liner *James P. Drew.*

He wondered whether there would be any trouble with this rescue. He hoped not. In four weeks more he was due for his annual leave.

The planet came into view twenty-two hours after Halderson had notified Headquarters about the S.O.S. He locked his ship into the standard reconnaisance orbit, five hundred miles above the surface of the planet, and began setting up his detecting equipment.

There were four continents, plus ice-masses at each pole. The planet was within the temperate zone of climate, which meant that the temperature varied between a hundred below zero and a hundred above, but that most of the planet was in the forty-to-eighty above zone. No sign of civilization was visible.

The planet had the usual distribution of climatic areas; in his first sweep around, Halderson saw bleak deserts, thick jungles, frozen tundra, grassy plains. Like most planets, this one had a pretty fair mixture of geography.

It was the fourth planet of a brightish yellow sun. Halderson saw three moons circling the planet: two reasonably big ones in wide orbits, and one close-to hunk of cosmic debris that was moving in a perversely retrograde direction.

The first quick sweep gave no indication of the whereabouts of the stranded lifeship. Halderson taped a message of greeting, looping the ends of the tape together so the message would be repeated infinitely, and sent it out over the known wavelength of the lifeship's communicator. He doubted that they would be able to reply, but at least they would know he had arrived.

Then he got to work with the lifeship detector. It was geared to react to any large

metallic mass on the surface of the planet, and it was particularly useful in finding ships that had crashed on unhibited worlds. On an inhabited planet, of course, the detector was completely useless, since it would react to all sorts of stimuli. But here, if the lifeship really were here, the detector could locate it quickly.

It took fifteen orbital sweeps of the planet before Halderson heard the first chittering sounds out of the mass detector. It took ten sweeps more before he had established the approximate location of the wrecked ship. Five sweeps later, he was leaving his fixed orbit and heading down for a landing.

It was just twenty-nine hours since the S.O.S. had been received.

Pretty fast work, Halderson thought with some satisfaction.

THE lifeship had come to rest in a valley situated in the middle of the planet's biggest continent, Halderson discovered. Whoever had landed the lifeship had done a pretty fair job, all things considered, but he had cut the jets a moment too soon. The ship had fallen from a goodly height without power—perhaps as much as two hundred feet—and the landing had not only smashed up the tail jet assembly but probably banged the occupants around severely.

Halderson landed his own ship, which was half the size of the lifeship, with professional ease, about a hundred yards from the wrecked ship. There was no sign of life either in or around the other vessel.

The Disaster Patrol scout ran the standard atmospheric checks before opening his locks. True, Lang had told him the planet was Earthlike to three decimals, but there was always the possibility of error. Halderson was determined to live to a ripe old age, and the best way to do that was to avoid taking unnecessary risks. Necessary risks were something else entirely.

However, his instruments checked the planet out as Earthlike and therefore safe for him, and he threw his air-

locks open, strapped on his weapons, and stepped out of his ship.

The air was pleasantly mild and had a touch of springlike fragrance in it. According to the gauges embedded in his uniform's wristband, the temperature was a cheerful 72.

The valley was very quiet.

Halderson strolled over to the lifeship and surveyed it from the outside. It stood reasonably upright, considering the crumpled nature of the tail assembly, and the main airlocks were open. He walked around the ship, checking on the extent of the damage. The lifeship was definitely beyond repair. It would never blast off again.

He had room for two or three passengers in his own ship, if necessary, but if there were more survivors than that he would have to radio for a Patrol pickup ship.

The silence of the valley oppressed him. He saw brightly-colored birds nestling in the trees, and in the distance a huge mountain-peak vaulted toward the clouds.

The survivors, if there were any, were lucky to have crash-landed here. There were plenty of other worlds they might have picked that were a lot less congenial.

Indeed, there were plenty of other places on this very planet that would have been nasty for an extended stay, as Halderson had learned while making his preliminary inspection of the world.

Standing outside the crashed ship, Halderson cupped his hands and shouted three times, each time in a different direction.

"Halloo! Halloo! Halloo!"

He waited. He heard the dying echo of his own voice resounding from the distance, but there was no other sound to break the alien silence. He shrugged; maybe the survivors had picked up and moved on elsewhere. But that was a funny thing to do after you had sent out a rescue call. Perhaps they were all lying within the ship, dying or dead. But in that case, why were the airlocks open? For ventilation?

He shrugged and climbed up the catwalk and into the open airlock, to have a look around the lifeship and see what was

inside. The silence of this planet was beginning to irritate him. This particular rescue mission was turning out quite unlike any other he had been involved in.

A lifeship is built for efficiency, not for comfort. It consists of a control panel in front, a drive unit in the rear, and passenger cradles in between. There were twelve cradles in this ship, each of them capable of holding two normal-sized people or three small-sized ones. But a quick look around told Halderson that only nine of the twelve cradles in this ship had been occupied at all—which meant that the lifeship had departed with even less than the intended minimum of passengers, let alone taking an extra load.

That was extremely odd too. The scene aboard the *James P. Drew* in its final moments of life must have been a terrifying one. But if all the lifeships had taken off with only nine or ten people aboard, then hundreds must have been stranded aboard the doomed liner with no means of escape.

Halderson moved up through the passenger compartment to the control section in the nose of the ship. What he found there was even more curious.

There was a man lying sprawled out face down in the cramped control section. He was wearing the blue and red uniform that Halderson instantly recognized as the garb of a crewman aboard an Earth Line ship. Someone had clubbed him in the back of the head with one of the portable fire extinguishers. He was dead.

But his assailant had not let the job end there. Still wielding the fire extinguisher, he had proceeded to smash the radio equipment and the entire control dashboard of the lifeship. That explained why the S.O.S. had died out so abruptly. The man who was sending it had been interrupted by death.

Halderson scratched the side of his jaw in complete perplexity. This *James P. Drew* lifeship seemed full of unanswered and knotty questions.

In the first place, why was a crewman aboard at all, even a dead one? Earth Line crewmen knew the regulations.

They were not supposed to enter the lifeships until every passenger aboard ship was safely taken care of. Had this man become panicky and tried to save his own life despite the stern regulation?

And who had killed him? Why?

Why was the radio shattered and the dashboard controls ruined?

Where were the other survivors who had occupied the lifeship?

Halderson revolved the questions in his mind without coming to any conclusion. He decided finally that he would have to explore the vicinity of the wreck before any of this made sense.

He turned to make his way down to the airlock and out of the lifeship.

His way was blocked. A girl stood downship, with her arms folded. She was holding a Kesterton blaster, nestling in the crook of her folded left arm. It was pointed straight at his head.

"Who are you?" she asked. "And where did you come from?"

HALDERSON didn't know which was more surprising, the fact that the girl was there at all or the way she was dressed. She looked about twenty or twenty-one, a tall, willowy blonde. All she was wearing was a mostly-transparent tunic-like affair that clung tightly from breasts to thighs. She was wearing it strictly for ornamental purposes, it seemed, because it concealed about as much as a pane of glass.

Halderson moistened his lips and said, "Are you one of the *James P. Drew* survivors?"

"Yes."

"I'm Lieutenant Halderson of the Disaster Patrol. I'm here to rescue the *Drew* survivors. And I'd appreciate it if you'd put that gun down, or at least point it somewhere else. It makes me nervous."

The gun stayed where it was. The girl said, "You come on out of the ship. We didn't send for any rescuers, and we don't want to be rescued."

"I picked up an S.O.S.," Halderson argued.

The girl shrugged lightly and pointed with the gunbarrel to the corpse of the crewman

lying crumpled near the battered control panel. "Maybe *he* sent that S.O.S. out. That's why he's dead now. We don't want none of it, none at all."

"I don't know what you mean. You want to *stay* here, marooned on this planet?"

"Maybe we do," the girl said. "Come on. Outside with you."

Halderson didn't intend to start a quarrel with that Kesterton blaster. He knew the gun could eat a good-sized hole in him before he could move two steps, and so he simply followed her meekly out of the airlock, down the catwalk, and to the ground.

The other survivors were outside. Seven others. Five women, two men.

A couple of the women were prowling suspiciously around Halderson's nearby ship. The rest were grouped together between the two ships, watching Halderson with care. He eyed them. One of the men was young and slick-looking; the other, older, looked like a successful businessman. Two of the women seemed elderly, one middle-aged. The other two, like the girl with the blaster, seemed to be in their twenties.

"What do you want with us?" snapped the oldest of the women—a formidable bristling dowager with three strings of black Hethlian pearls still round her withered throat. Her voice was a harsh croak. "What do you want with us, young man?" she demanded.

Halderson frowned. "I'm here in response to an S.O.S., to rescue you. And this is one hell of a reception for a rescuer, let me tell you!"

"To rescue us?" the old woman thundered. "Why, whatever would we need rescuing for?" She laughed boomingly. "We're perfectly happy here!"

She shut her eyes and lapsed into what looked like a sort of trance. The Disaster Patrol man looked around bewilderedly at the others. The younger of the two men said. "Don't pay any attention to her. She's off the deep end."

"I suppose she is," Halderson agreed. "The shock of the accident, I guess."

"No, it isn't that at all," said the girl with the blaster. "But we don't want to be res-

cued, hear? Get back into your ship and get going off this planet, and don't come back!"

"We can't do that," said the other old woman. "If we let him go we'll be endangering ourselves. He'll come back with others and take us away. And we don't want to leave, do we?"

"Of course not," came an answering chorus.

"You're right," the girl with the blaster agreed. In the sunlight her tunic was utterly transparent, revealing firm, high breasts and a flat tawny belly. Halderson suddenly realized what she must be: one of the party-girls from the staff of the *James P. Drew*. "We can't let him go back. We'd better smash the controls of his ship before he makes trouble for us."

Halderson began to sweat. Were they all insane? It looked that way.

He glanced across the valley to his own ship, which stood undefended, its airlock open. Then he glanced at the half-naked party-girl with the Kesterton blaster. She gestured to the younger of the two men and said, "Merrick—go over to his ship and fix it so it can't take off again and so he can't call for help."

The sleek-haired young man nodded and detached himself from the group. Halderson watched him jogging toward the ship. If Merrick ever got inside that airlock, it meant the Disaster Patrol scout was stranded on this planet for life.

Halderson had only one way to save himself. He hoped these castaways didn't know about it.

A spaceship's airlock can be opened from outside, with the proper equipment—the equipment being a radio transmitter keyed to the operating frequency of the airlock door. Every Patrol uniform carried such a minute transmitter; they were handy in those rare cases when a lone pilot has accidentally locked himself out of his ship, and wants to get back in.

But the transmitter could also be used to *close* the airlock door from outside.

Gently, so that the motion was barely perceptible, Halderson let his dangling arms meet behind his back. He had

to move a fraction of an inch at a time, in order not to alarm the girl with the gun. And in the meantime Merrick was getting closer and closer to the open airlock....

Halderson reached out with his thumb and flipped the actuator on the airlock control just a moment before Merrick had succeeded in scaling the catwalk. The airlock door clanged shut in his face. He cursed and pounded angrily on the unyielding metal.

"What kind of a trick was that?" the party-girl demanded hotly. "Why did the door close?"

"It was an automatic reaction," Halderson said. "Just before I got out of the ship I set the lock to close in case anyone unauthorized came near the door. It's a precaution I like to take on strange planets."

"Open the lock!"

Halderson smiled. "I can't, even if I want to," he said untruthfully. "Once the door closes that way, it stays closed for twenty-four hours. Not even I can open it now."

The girl frowned, but she seemed to accept the statement. "Very well," she said. "You can't do any harm while your ship is sealed, anyway. But understand this: we don't want to be meddled with. We like it here."

Halderson looked around in total confusion. Two old dowagers, one potbellied businessman, three good-looking young girls and a handsome playboy. All castaways. And they had murdered the man who had sent out the S.O.S. signal. They liked it here.

It made no sense at all.

THEY took his guns away from him, which he didn't like but which couldn't be helped. He knew he would simply have to bide his time now. Whenever he got his chance, he would have to make a break for his ship, open the airlock, and try to get away. Later, he could call for a pickup ship that would come to get these obviously crazed castaways.

It seemed that the whole tribe of them was going on a short migration, and Halderson was forced to accompany them. They ambled away from the ships, heading up the winding stream that ran through

the valley, until they came to a grassy area where, Halderson saw, they had pitched the bubbletents carried in the lifeship's cargo hold. Four tents had been pitched; each held two people. Halderson wondered who was coupled up with whom.

The party-girl never relaxed her aim, keeping Halderson in check all the time. He noticed a clear blue spring running past the tent area. He touched his dry tongue to his lips. The water was clear, sparkling, probably ice-cold, and he was thirsty.

"How's the drinking-water?" he asked.

"Fine," said the party-girl. As if to illustrate her statement, several of the others knelt by the spring's banks and lifted cupped handfuls of water greedily to their lips.

Halderson said, "Mind if I get a drink? I'm pretty thirsty right now."

"Go right ahead," the party-girl said. "Just don't try anything tricky."

"No—don't," said a tense voice.

Halderson looked around. The person who had spoken was one of the other young women of the group. Her face was pale and lean, her eyes a little wild.

"What's that?" he asked.

"If you value your sanity—don't drink that water! Don't go near it!"

"She's out of her head," scoffed the party-girl. "Don't pay any attention to her ravings. If you want a drink, go ahead—drink hearty!"

But something in the other girl's tone of voice made Halderson hesitate, thirsty as he was. "Why shouldn't I drink?" he asked. "Who are you?"

"I'm Marian Chase. Daughter of Raymond Chase, if that name means anything to you."

"The Governor-General of the Somilak Colony-world?" Halderson asked.

"Yes. He—he was killed in the explosion on the ship. We were on vacation, you see, Father and I." Her lips firmed bitterly. "But you mustn't drink that water. I'm the only one who hasn't—and you see what's become of all the others!"

"You mean, not wanting to leave this planet?"

Marian Chase nodded. She

was a slim girl, dark of complexion, with large eyes made even larger by the pallor of her face. She wore expensive clothes, but they were tattered and filthy now. Her skirt was ripped to the thigh, her blouse torn in half a dozen places. "Each day they forget a little more," she said. "It's like a drug, the water on this planet. We tested it—Mr. Chivers did, before they killed him—and chemically it seems pure enough. But there's something in it that attacks the nerve fibers. Weakens them; blots out the mind. One of those old women hardly knows what's happening around her now; the others will be like that soon enough. Like a drug, washing away their minds! And of course they don't want to leave this world now. They want to stay here, drinking from that spring, until their minds are gone completely and they're just i d i o t s." She paused. "Maybe that's a good thing. Blotting out all our memories, all our fears and agonies."

Halderson stared at her. "You m e a n you haven't touched any of the water of this planet?"

"Not a drop."

"How long have you people been here?"

"This is the fifth day."

"And you've gone without water for five consecutive days?"

Marian Chase smiled weakly. "Oh, no. There was a small water supply aboard the lifeship. Not much, but I've been rationing myself, just a few cupfulls a day. The others drink from the spring, you see, which leaves the entire ship supply, such that it is, for me. There's not much left, though. And when that's gone—"

"Don't think about that," Halderson said. "Maybe I'll be able to get away in the ship with you before that happens."

"Do you think there's a chance?"

"What are you two jabbering about?" demanded the party-girl, who squatted about fifteen feet away from them with the gun trained steadily on Halderson.

"The spaceman is thirsty," Marian Chase said.

The party-girl tossed her head contemptuously toward

the spring. "Plenty of water down there, if he's thirsty."

"No. I'll bring him a drink from the ship."

Halderson looked up. "There isn't much of that water left. You'd better keep it all for yourself."

She shook her head. "Please —I couldn't do a thing like that. Let me bring you a cup."

Before he could answer, she was gone, trotting across the field down to the lifeship. Halderson frowned. The other members of the survivor party were still busily slaking their thirst at the spring. He shuddered as he watched them splash the water into their mouths.

Then Marian Chase returned, bearing a half-full cup of water. Halderson smiled thankfully at her and took the cup. The water was warmish and stale, but at least he knew it was pure. He drank slowly, savoring it.

"I checked the tank," the girl said. "If we each have three cups of water a day, we have enough left for three more days."

"Two cups a day, almost five days," he said.

"And one cup a day, enough for more than a week. But no matter how thrifty we are, it's all going to be gone soon. And then we either die of thirst or become like them."

HALDERSON wondered if they planned to keep him under guard permanently. It would make sense, he thought, simply to shoot him down and blast the airlock of his ship open with that Kesterton, if all they were afraid of was his getting word back to Headquarters about them.

That was the sensible thing to do. But, Halderson reflected, these people were not rational. According to Marian Chase, their minds were rapidly ebbing away. And probably within each of them was some residual decency that kept them from taking the obvious way of disposing of him.

So they would sit around with a gun pointed at him until he died of thirst, it seemed. It wasn't a pretty way to die.

During the next hour Marian Chase told him about the events that had occurred between the destruction of the *James P. Drew* and the present

moment. The trouble had begun with a sudden explosion in the *Drew's* drive compartment, and from there the flames and smoke had spread rapidly. There were other explosions. Within minutes, the great ship was crippled and the alarm bells were sounding.

Marian Chase and her father, the famous statesman Raymond Chase, had been in their cabin on the upper deck when the first explosion came. The ship had seemed to shudder, and then the wall of the cabin had buckled and split, crushing and killing the elder Chase. Marian had fled out into the companionway. A passing crewman had paused to tell her to head for the nearest lifeship. Then the alarms began to sound, and the abandon-ship order, with the traditional cry: *"Women and children first! Women and children first!"*

Somehow Marian had found her way through the turmoil and the smoke to one of the lifeships. Four people were in it when she entered: Mrs. Dugan and Mrs. Lumley, the two venerable dowagers who were travelling together; a hysterical young woman who had seen her husband killed before her eyes; and a fourth woman, dowdy and middle-aged, who said she had been travelling with her sister. The sister was somewhere outside, but the woman was afraid to go out to look.

In the next few minutes four more people entered the lifeship. The first was Ronald Merrick, a 29-year-old playboy who was on his third honeymoon; his wife was somewhere in the confused and panicky mob on deck, but he didn't care. He was only interested in saving himself. Behind Merrick came an odd threesome. Lora Ryne was the party-girl, half-nude and disheveled. She came in with the fat businessman she had been entertaining, Max Dominick. Dominick, it seemed, was determined to have female companionship in case they were cast away on some lonely planet, and had brought the not unwilling party-girl with him.

Dominick had also brought someone else with him, at the point of a Kesterton blaster. He was a crewman named

Chivers, who insisted that he had no right aboard a lifeship until all the passengers were safely aboard the ships.

"Nonsense," Dominick rumbled. "Do you think we know how to operate this ship? You're going to pilot it for us, my good man!"

"But there's an instruction manual on board—"

"Never you mind that," Dominick told him, brandishing the deadly blaster. "Get this ship out of here, and do it fast."

"We're not full up," the crewman protested.

"Would you wait around until the ship explodes?" Dominick bellowed. "Come on, now —blast off!"

And so the lifeship took off, bearing only nine passengers instead of the maximum complement of more than thirty. Marian had no idea whether any other lifeships made successful departures from the ship. All she knew was that minutes after they had left, a ferocious brilliance radiated through the portholes—the light, not of a sun going nova, but of the explosion of the *James P. Drew.*

The crewman, Chivers, did some quick astrogating and piloted them to the planet of their landing. The trip took two days. It was a faulty landing, and they were all fairly well knocked around as the ship touched down. Marian was thrown against a wall and made unconscious. When she woke, the ship stood open; there was no one in it but Chivers, who was unconscious.

She went to the open lock and looked out. The others had wandered upstream to the little spring and were drinking. Chivers woke, and he and Marian went to join them. The crewman had berated them for doing something as risky as drinking untested water on an alien planet, and he had tested it for them. He had pronounced it pure.

Then he had returned to the ship, saying he would compute their position and flash out an S.O.S. signal. Marian, who was thirsty, had been about to join the others at the spring when she noticed curious changes coming over them. They seemed dreamy and strange—and they were apparently

alarmed at the idea of an S.O.S.

Before she could do anything, Merrick was racing back to the lifeship. She followed, hoping to warn Chivers. The crewman had just begun to send the S.O.S signal when Merrick, snatching up the portable fire extinguisher, crushed Chivers' skull and smashed the radio equipment.

They were marooned.

And for the next five days Marian watched the gradual deterioration of her fellow survivors and the gradual depletion of her own water supply, until the day Halderson arrived.

THE afternoon wore along. Halderson knew that if he could only get back to his ship and activate the radio transmitter that would open the airlock to let him in, he could use the ship's subradio to call Headquarters and explain his predicament. They would send out a pickup ship and bring these people back to civilization, and, if it could be done, they would attempt to undo the damage to their minds.

But Halderson was guarded constantly.

His mind thought of half a dozen tricks he could use to get back into his ship. But none of them seemed even nearly adequate. All he could do was wait, and hope that the others would relax their guard before the supply of drinkable water ran out.

Late that afternoon Lora Ryne, who had been tirelessly guarding him all day, called to Merrick to take over. She handed him the gun and, rising languidly, stripped off her single flimsy garment and strolled to the river for a swim. The two dowagers were lying in a stupor near the spring. Halderson had a theory that the older a person was, the quicker he was affected by the action of the water. Merrick and the two younger women still seemed able to carry on a coherent conversation, even though their thoughts and actions were not sane ones.

Mrs. Dugan, Mrs. Lumley, and fat Max Dominick were all well along in years, and they seemed to have little contact with reality any more. It was as if they had drifted

back into earliest childhood. They sat by the edge of the spring and smiled cheerfully, and from time to time they helped themselves to another drink.

It would not be long, he thought, before Merrick and Lora and the young widow, Lucy Clay, began to undergo the full mind-blurring. Already he could see that the other woman, Mrs. Brewster, who was in her forties or fifties, was starting to show the same dreaminess demonstrated by the three oldest survivors.

But how soon would it happen? he wondered. How soon would it be before Merrick and Lora and Lucy Clay slipped back to childish idiocy? Would he and Marian Chase be dead of thirst by that time?

Night fell. Marian had brought Halderson a sort of a meal, a few cabbage-like leaves and a yellow waxy fruit plucked from a nearby tree.

"It's the best I can do," she said. "Without the gun there's no way we can get meat. We'll just have to live off foraging."

"How about the others? What do they eat?"

Marian shrugged. "The oldest ones don't seem to bother eating at all, the last couple of days. They just drink the spring-water. It's almost as if they've forgotten the very fact that they need food to stay alive. As for the others, they eat whatever they can find—the sort of stuff I've brought you."

Overhead the two big moons were bright and clear, the smaller one whirling dizzily past and eclipsing the other every hour or so. It was growing darker rapidly.

Mrs. Dugan and Mrs. Lumley, the two ancient battleaxes, had crawled off to one of the plastic bubbletents to sleep. Halderson could hear their loud snoring from here, fifty feet away.

Max Dominick sat propped against a tree like a fat sleepy Buddha, his hands folded over his belly. He looked sloppy, with his week-old growth of stubbly gray beard. Mrs. Brewster, the woman who had saved for years and years to be able to take a voyage on the *James P. Drew,* wandered

blankfaced around the camp area for a few hours and finally, after a long draught of the spring-water, disappeared into one of the other tents.

Halderson figured that those four would be finished soon. They had hardly spoken a word in the last half day, and what they had spoken was largely incoherent. The drug in the water was at work, corroding their tired brains, lulling them into forgetfulness.

The other three, though—they still were troublesome. They sat facing Halderson, debating insanely what to do with him, while he and Marian Chase listened quietly and in numb fear.

Merrick said, "I think we ought to break his head open the way we did to that other one."

"Which other one?" asked Lucy Clay sleepily. She was a good-looking woman in her middle twenties, whose husband, killed aboard the *Drew,* had been on his way to Darrinoor to serve in the administrative corps there.

"The other one in the ship," said Lora Ryne acidly. The party-girl still had a fairly sharp mind. "The one who tried to warn the rescue men. We broke his head open."

"We ought to break that one's head open too," Merrick said thickly, pointing to Halderson.

"And the girl, too," added Lora Ryne. "She might be dangerous."

"Kill them all," muttered Lucy Clay.

"We'll do it tomorrow," Merrick said. "Let's tied them up and go to bed."

Halderson tensed. Tie them up! With what?

He got his answer quick enough. Merrick tottered down to the lifeship, which was hidden behind the slight rise in the valley floor. He returned a few moments later carrying two lengths of rope. With a cleverness surprising in him, considering the effect the water had taken, he tied Halderson and Marian together, back to back, with a tight twist around their wrists, and then hobbled their feet.

"That ought to keep them till morning," Merrick said, surveying his handiwork. "Sure. They won't move till

morning. Morning, we decide what to do with them."

Merrick, Lora, and Lucy disappeared into one of the unoccupied bubbletents. Minutes later, Halderson heard animal-like cries of pleasure coming from the tent.

"It's been that way the last two nights," Marian said in a low voice. "When we first got here, old Dominick kept Lora as his private concubine, and Merrick went around propositioning everyone else except the two old women. He didn't get anywhere. But the spring-water breaks down inhibitions."

Fierce cries of joy were coming from the tent now.

"For the last few days Dominick hasn't shown much interest in Lora, so Merrick took her over. Two nights ago he got the bright idea of going after Lucy too. He takes turns with them in there, I guess."

Halderson tightened his lips. He strained at the rope that bound them.

"Getting anywhere?" Marian asked.

"Not at all. The devil did a good job of tying us, all right!"

"And what will we do now?"

"Nothing, I guess. Just go to sleep. Maybe in the morning they'll be so far gone we can escape."

She leaned back against him. Halderson closed his eyes. But the ground was hard, and a chill wind was blowing down out of the trees at them. It was nearly morning before sleep came.

THE fiercely blazing morning sun woke Halderson. His head felt swollen like a balloon, his skin was dry and itchy, his throat parched, irritated. His wrists and ankles ached from the pressure of the rope with which they had been tied, and every muscle in his body felt cramped and mistreated. He realized that Marian Chase was already awake.

"I've been up since dawn," she told him. "I didn't want to move till you woke."

Merrick freed them, keeping the blaster trained on them with care. Halderson and the girl rubbed their sore limbs.

"I could use a bath," she said. "I feel filthy. But I don't

dare go near that deadly water."

Halderson shaded his eyes to see the surrounding area. Dominick lay flat on his back, in a stupor. The others were cavorting in the water.

Merrick said, "Your spaceship door is still closed. You said it would be open."

"Let's go down and have a look," Halderson suggested. Perhaps he could open the lock and get inside before Merrick could cause any trouble.

"Yes," Marian said. "Let's go down to the ships. We're thirsty, anyway. We'd like to get some water out of the lifeship supply."

Merrick began to giggle. After a moment Lora Ryne came up from the water and joined the giggling. The party-girl had not bothered to dress. Her body was lovely—but her eyes were the eyes of a little girl, and they belied the full breasts and curved thighs.

"She wants water!" Merrick roared. He slapped his side in amusement.

"Water!" Lora echoed.

Halderson glanced at Marian in alarm. He said crisply, "What's so damned funny?"

"Water!" Merrick chortled.

"Water!" Lora repeated.

"You want water?" Merrick asked. "Are you thirsty, spaceman?" He pointed toward the spring. "Go drink down there where we do." And he dissolved into gales of laughter once again. *Like little children,* Halderson thought. He wondered what the joke was. Then he saw the plastic water-container.

It was lying on its side near them, with its top off. Marian uttered a little cry and ran over to it. She snatched it off the ground, peered inside, shook her head mournfully.

"It's—it was—the lifeship's water supply," she said in a quiet voice. "This was the last container there was. They must have found it and emptied it out this morning."

"For a joke," Halderson said. "A real funny joke, too."

Merrick and Lora were laughing wildly—though Merrick still took good care that the blaster remained aimed. From where he lay under the tree in the shade, old Dominick joined the general merriment,

adding his high-pitched wailing chuckle to the noise.

Halderson said, "That cuts off our safety margin neatly. We'll have to get that blaster away from them and get back into the ship. And we'll have to do it fast, or else—"

He left the sentence unfinished.

HALDERSON had no clear idea of how long a human being could survive without fresh water, but he knew it was an extremely limited time. A man could get along without food for a month, if he had to, and still live to talk about it. But water was something else again. Certainly he would need water within a few days, or he would be dead.

There was a water supply in his spaceship. There was a radio in his spaceship as well. But his ship was sealed closed, and he had no chance to perform the operation necessary to open it.

Another day passed. It was obviously summer in this part of the planet, and the heat was increasing—or was it only his thirst that gave the illusion? He stared for long hours at the shimmering, sparkling, tempting water of the spring, and then he looked at the shambling, vacant-eyed things the others had become, and the temptation vanished.

Next to him, he saw Marian Chase, her face drawn, her skin yellowish, her eyes sunken from thirst. He knew what she must be going through. It could not be very long before she cracked.

Halderson watched the others intently. Lora and Merrick seemed to be the only ones interested in guarding them, now, and both Lora and Merrick appeared to have forgotten just why the guarding was necessary. They took turns holding the gun. Halderson waited for the moment when the gun would slip from loosening fingers, when he could leap forward. But the moment never came.

The effect of the water seemed to increase from hour to hour. Max Dominick had lost all sense of humanity now; the plump oldster sat by the water's edge, drooling, crooning some long-forgotten lullaby to himself. Near him lay Mrs. Dugan, playing in the

sand. Her eyes were slack and glazed.

That afternoon the other old woman, Mrs. Lumley, died. Either the process had reached completion in her, obliterating her mind completely, or she had simply come to the end of her time. Halderson saw her collapse suddenly on her staggering way from her tent to the spring.

Merrick saw it too. He went over to investigate, nudged the dead woman with his toe, and burst into laughing. Within minutes, the other survivors who could still walk—Lora, Lucy Clay, and Mrs. Brewster—had gathered around and were giggling in chorus over the corpse.

"Horrible," Halderson said, half to himself. He turned to look at Marian Chase. The girl's face looked almost like a skull. She said nothing. Neither of them had had a drink for two and a half days now, and the torment was intense.

Still later that afternoon, the final remnants of Mrs. Brewster's mind went, and she joined Dominick and Mrs. Dugan on the beach, a complete imbecile now. The remaining three continued to drink copiously. Halderson could see them weakening visibly from hour to hour. Lucy Clay wandered round the camp area wearing only lace-trimmed briefs, singing wildly to herself. Lora and Merrick swam and laughed and danced, one guarding the two prisoners at all times.

Night was beginning to descend when Halderson reached his decision.

He turned to look at Marian and said, "We can't sit here any longer. We'll have to take our chances with them."

"What do you mean?" Marian's voice was dry and thin, like the voice of a skeleton.

"Maybe they can't aim that gun any more. Maybe if we jumped them they'd drop the gun. We have to get into my ship!"

"Why?" she asked tonelessly. "What does it matter now? We'll be dead soon. We'll all be dead soon."

"No! Don't give up, Marian! Can't you see, they're all weakening fast! We'll get away!"

"They're not weakening fast

enough. So thirsty....so dry.... Halderson, let's go down to the water. Take our clothes off, swim in the cool water. The clear cool sparkling water. I want a drink."

"No. Don't give up yet," he repeated. But he saw he had little time. The girl could no longer stand the torment of thirst. His own strength was diminishing. If they were going to escape at all, now was the time for action.

MERRICK, Lora, and Lucy were sitting together not far away, singing. The sun seemed to be burning down with special malevolence, but Halderson knew that the heat was mostly in his own thirst-sharpened imagination. It was late in the afternoon, and the temperature was probably in the pleasant sixties. But it felt like a blistering ninety.

Halderson murmured, "Just stay here. Don't get mixed up in this."

He elbowed himself unsteadily to his feet and started to walk toward the three others. He went more than ten feet before any of them noticed him. It was Lucy Clay who first saw him approaching.

She looked up, giggling and pointing. "Hahaha! Hahah! Look!"

Halderson forced his exhausted body into a trot. At the moment, Merrick was holding the Kesterton blaster, letting it dangle in his lap. The one-time playboy was not even looking.

But Lora was. She snatched the gun away from Merrick just as Halderson arrived. The Disaster Patrol scout saw her raise the gun to fire.

But her aim was poor. The girl's hand wobbled as she depressed the firing stud, and a burst of energy shot past Halderson's shoulder, searing him slightly but doing no serious harm. Before she could fire again, he was clutching her arm.

She twisted lithely, her long nails raking Halderson's face, as he struggled to pry the blaster from her grip. Merrick dimly perceived that something improper was going on, and he rose to his feet and staggered toward the struggling pair.

Halderson drew the party-girl to him, feeling her warm

bare body against his—and abruptly she stopped struggling. It was as if she had forgotten totally that Halderson was her prisoner. All she could remember now, in her largely blank mind, was the set of responses she was supposed to make when a man held her tight in his arms.

To Halderson's surprise she pressed her body against him, stroking his shoulders with her free arm, lifting her lips to his for a kiss.

He stared into her empty eyes for a moment. Then he wrenched the gun free just as Merrick crashed into both of them.

Merrick and Lora went toppling to the ground in a tangle of arms and legs. The blaster skittered loose, and Merrick's leg kicked it some ten feet down the grassy slope, where Lucy Clay picked it up.

Halderson turned and headed toward the girl, hoping to get the gun away from her. He was not prepared for what happened next. Giggling and screaming wildly, Lucy hurled the gun high into the air, far down toward the water. The blaster landed in the middle of the spring and sank immediately. Then the girl rushed to the edge of the water, nearly trampling over the slumbering form of old Dominick, and began to drink.

Halderson shrugged. The blaster would do no harm now. Water destroyed its power unit. He would have preferred to keep the gun for his own use in case of further trouble, but at least this way he would be in no danger from it.

Lora and Merrick had disengaged themselves and now were sitting staring dumbly at Halderson. They made no attempt to get up. Halderson tried to chuckle, but his throat was too dry; nothing but a hoarse rasping sound came out.

He grinned at Marian with sun-baked lips. "Okay. I'm going down to the ship to radio for help."

THE girl made no response. She seemed to have no strength left at all. Halderson decided to leave her, for the time being, and bring her water after he had sent out the call for the pickup ship. He walked past her and down to his own ship.

He activated the transmitter and the airlock door slid open. It took nearly all of Halderson's strength just to climb the ten-foot catwalk and enter the ship. He hung over the lip of the airlock, regaining his strength, before he could proceed.

His first stop inside the ship was the water supplier. He allowed himself just enough to wet the inside of his mouth, and then quickly cut off the faucet before the overwhelming temptation to drink until he could hold no more assailed him. There was not much of a water supply left. He would have to be sparing of it until help came.

Crossing upward to the control panel of the ship, he jacked in the subradio contacts and called his home base on Skaldek.

"Disaster Patrol HQ," came the reply. "Come in, scoutship. Come in. Major Lang speaking."

"Lieutenant Halderson reporting, sir."

"Halderson? Speak up! We can hardly hear you! What's been happening since we last heard from you?"

"How long has it been?"

"Three days!"

"Oh," Halderson said. "Well— I've found *James P. Drew* survivors here. Eight of them."

"Then why didn't you report earlier? We'd have sent out a pickup ship!"

"I couldn't, sir. They were holding me prisoner."

"Prisoner?"

"That's right. Something in the water on this planet, causes human beings to lose their minds. They become—like children, sir. Irresponsible. They don't know what they're doing. They held me at blaster-point and tied up here. I finally managed to get back into the ship and call. Nearly died of thirst first—didn't dare touch any of the local water, of course, and mine was locked up in my ship—"

He paused. Major Lang said, "We'll have a hospital ship right out to pick you up!"

"Good. One of the other survivors is still sane, but very weak. Six of the drugged ones are alive. An old woman died. Hurry it up, Major. This world is hellish."

He broke the contact. Got

to get another drink, he thought dimly. And then bring some up the hill for Marian. Got to get another drink.

He rose from the pilot chair. Vaguely he became aware that there was someone else in the cabin with him. Then he heard a loud giggle, and saw Merrick standing behind him, with a wooden club upraised.

Merrick laughed and brought the club down. Caught by surprise, all Halderson could do was raise one hand to protect himself. The first blow caught Halderson on the arm, numbing him. The second cracked into the side of his head and he toppled forward, clawing futilely at the insane Merrick, and lost consciousness.

WHEN Halderson woke, he had no idea how much time had passed. His head felt as if a fusion bomb had gone off inside it. He was being held tenderly by someone soft and warm and feminine.

Slowly he opened his eyes. He looked up and saw Marian Chase above him. He was too weak to move. The sun was enormous above him.

He saw his ship behind him. Merrick was lying in front of the ship, dead or unconscious.

"Here," Marian said. "Drink this. You'll feel better. Much better."

She was holding a cup of water under his chin. He put one trembling hand on it to bring it to his lips. His face felt bruised and sore where Merrick had clubbed him. He touched the water to his lips. It was cool and fresh, and Marian was right—it did make him feel much better.

"I sent the S.O.S.," he muttered weakly. "And then that idiot Merrick got into the ship and clubbed me down."

"I know," Marian said softly. "And then he must have collapsed. That was the way I found you. You were unconscious, and he was dead. I dragged you both out of the ship and watched you all night. Go on—have more water. It's good for you."

Halderson smiled and raised the cup to his lips again. He thought of something, laughed, then drained the cup. The sparkling water caressed his swollen tongue and bathed his parched throat.

"Why did you laugh?" Marian asked.

"When I lifted the cup, I thought to myself, *you better go easy, there isn't much of this stuff left.* And then I remembered that the rescue ship is on its way. We don't need to be cautious with the water supply any more." He leaned back against her bosom, relaxing, wishing the throbbing in his skull would stop. "Be a good girl, Marian. Go into my ship and get me another drink. It makes me feel better."

"But this isn't from the ship," she said sweetly.

For a moment the meaning of her words did not penetrate. Halderson heard them, but without really understanding. Then he realized what she had said, and he shook with terror.

"Where did—where did this water come from, Marian?"

"From the spring." She said it innocently, gently. "I waited hours for you to come out of your ship, but you didn't come out. And then I went to the spring to have a drink, because the water was so good, and I was so thirsty. I drank and drank till I couldn't hold any more. Then I went up to the ship to find you, and I thought it would be nice to bring you some water too."

"You're joking, aren't you?" he said in a rough voice. "It's all a nice little joke?"

But then he twisted around to look into her eyes, and he saw that it was no joke. The blankness had begun to creep into her eyes. The water was taking its effect on her.

And he had swallowed a cupful of it. Was that enough to begin the deadly dissolution? He was still thirsty, terribly thirsty. He had to have a drink.

He pulled away from her and rose to his feet. The ground seemed to rock underneath him; he probably had a concussion from the clubbing, he realized.

Thirsty....so thirsty....

"Where are you going?" she asked.

"Into my ship. Got to get a drink."

"But there's water out here. Good water!"

He shuddered and started to climb the catwalk, but his muscles would not obey his brain's command, and he real-

ized it had begun with him too.

Marian came up to him and gently led him away from the ship, up the path to the little bubbling spring by the side of the lake. Dimly he saw bodies lying here and there, and not far away a girl he recognized as Lora Ryne, moving feebly like a stranded fish.

Halderson made no attempt to resist as Marian stripped away his tattered uniform, and then her own clothes. She took him by the hand and together they walked to the edge of the water. They knelt and drank, and then she led him into the lake and splashed him. He grinned. All the fear and pain was leaving him. He felt good, as if he were growing younger, as if everything were all right and all his worries had been foolish.

They splashed each other playfully in the water, and drank till they were full. When the rescue ship finally located them, a day and a half later, they were squatting stark naked by the edge of the sparkling water, making castles out of mud and giggling like the children they had become.

THE END

RE-CONDITIONED HUMAN

by ROBERT SILVERBERG

illustrated by ORBAN

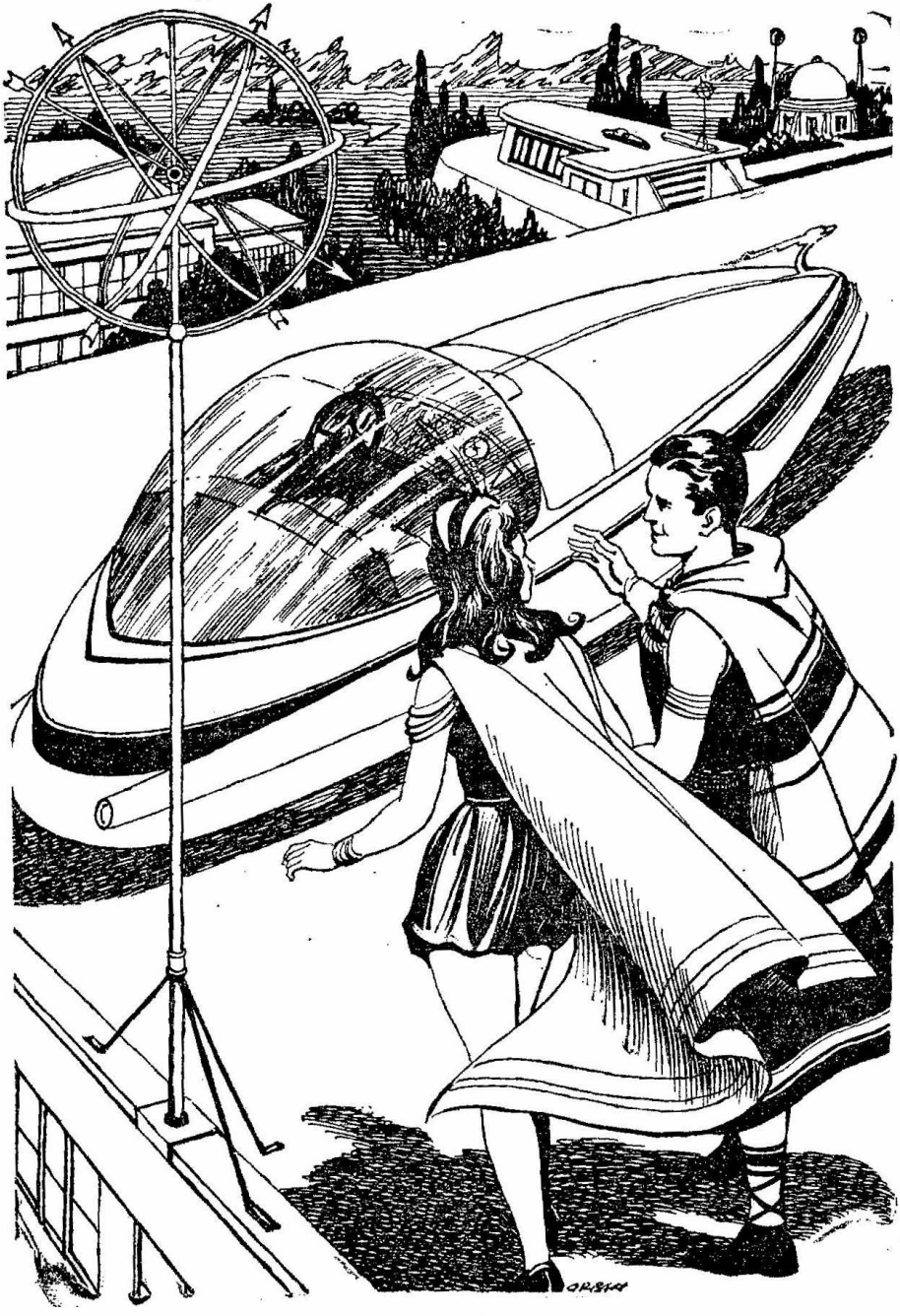
I had been taken apart and put back together again. I would never be the same again, which was a good thing because for many reasons I preferred the way I was now

THE name they gave me at the Rehabilitation Center on Earth was Paul Macy. It was as good as any other I guess. The name I was born with was Nat Hamlin, but when you become a Rehab you have to give up your name.

I didn't mind that. What I did mind was the idea of having my face changed, since I was pretty well content with my looks the way they were. They gave me the option of choosing either a refacing job or else getting outside the Four Parsec Zone and staying there, and I opted to keep my face and leave Earth. This was how I happened to settle on Palmyra, which is Lambda Scropii IX, 205 light-years from Earth. I met Ellen on Palmyra. And Dan Helgerson met me. I didn't figure to run into Helgerson there, but it's a smaller universe than you think.

Helgerson was a sometime business associate of Nat Hamlin's—the *late* Nat Hamlin, because that was the way I thought of my former identity. Hamlin had been in the jewel-trading business. Also the jewel-stealing business, the jewel-fencing business, and the jewel-smuggling business, and toward the end of his varied career, after he had made contact with an enterprising Sirian who owned a fusion forge, the jewel-making business.

Hamlin was quite a guy. If



it had to do with pretty pebbles, and if it happened to be illegal, you could bet Hamlin was mixed up in it. That was why the Galactic Crime Commission finally had to crack down, grab Hamlin, and feed him through the psychic meat-grinder that is the Rehabilitation Center. What came out on the other end, purged of his anti-social impulses and stuff like that, was Paul Macy.

Me.

Naturally they confiscated Hamlin's wealth, which included a cache of gold in Chicago, a cache of pure iron on Grammas VI. a cache of tungsten on Sirius XIX, and a cache here and there of whatever was most precious to a particular planet. Hamlin had been a smart operator. He had been worth a couple of billions when they caught him. After they finished turning him into me, they gave me five thousand bucks in Galactic scrip—not a hell of a lot of money by Nat Hamlin's standards—he used to carry that much as pocket-change for tips—but more than enough for Paul Macy to use in starting his new life.

The Rehab people found me a good job on Palmyra, as a minor executive in a canning factory. It was the sort of job where I could make use of Nat Hamlin's organizational abilities, channelling them constructively into the cause of faster and more efficient squid-canning. Canned squid is Palmyra's big industry. The fishermen bring them in from the wine-colored sea in the billions, and we ship them all over the universe.

I got good pay from the canning people and I found a nice bachelor home on the outskirts of Palmyra City. I found a nice girl, too—Ellen Bryce was her name, Earth-born, 24, soft violet hair and softer green eyes. She worked in the shipping department of our place. I started dating her, and then before I knew it I was starting to think of getting married.

But then one night after I left my office I stopped into the bar on the corner for a vraffa martini as a bracer, and I saw Dan Helgerson sitting at one of the tables.

I tried to pretend I didn't

see him. I hunched down at the bar and sipped at my cocktail.

But out of the corner of my eye I saw him get up and start sauntering over to me. Wildly I hoped I was mistaken, that this was not Helgerson but someone else.

It was Helgerson, all right. And when he slid in next to me, clapped me on the back, and said, "Hello, Nat. Long time no see," I knew I was in trouble.

MY hand tightened on the stem of my cocktail glass. I looked up at Helgerson and tried to keep my face blank, unrecognizing.

"There must be some mistake. My name isn't Nat."

"Come off it, pal. You're Nat Hamlin or I'm drunker than I think I am. And I don't get that drunk on one shot of booril."

"My name is Paul Macy," I said in a tight voice. "I don't know you."

Helgerson chuckled thickly. "You're a damn good actor, Nat. Always were. But don't push a joke too far. I've been looking for you for weeks."

"Looking for me?"

"There's a privacy booth over there, Nat. Suppose we go over and talk in there. I've got a proposition you might want to hear."

I felt a muscle twanging in my cheek. I said, "Look, fellow, my name is Macy, not Nat Hamlin. I'm not interested in any propositions you might have."

"But Nat—"

I shook my head. "No, Helgerson. Just keep away and leave me alone."

A slow smile rippled out over Helgerson's face. "If your name is Macy and you don't know me, how come you know my name? I don't remember introducing myself."

It was like a kick in the ribs. I had blundered; it had been an accident. But it happened before I could stop it. The Rehab treatment had altered Hamlin's personality, but it hadn't wiped out his old memories. As Paul Macy, I had no business knowing Helgerson's name—but I did.

I scowled and said, "Okay. Let's go over to the privacy

booth and I'll fill you in on the news."

Scooping up my half-finished drink, I followed Helgerson across the room to the privacy booth. On the way I glanced at my watch. It was quarter after five. Ellen was expecting me at half past six at her place, for dinner. I had been figuring on a leisurely shower and shave first, but if it took too long to get rid of Helgerson I would probably have to skip everything and go straight out to Ellen's.

He slipped a coin into the slot and the crackling blue privacy field built up around us, shielding our little booth in an electronic curtain impervious to spybeams and eavesdroppers. He said, "Okay, Nat. What's this Paul Macy bit? Some new dodge?"

"No. No dodge."

I reached into my breast pocket, and Helgerson's jowly face twitched in momentary alarm, as if he half expected me to yank out a blaster. Instead I drew out my wallet and silently handed him my identity card—not the blue one that everyone has to carry, but the other one, the yellow card they had given me when I left the Rehabilitation Center.

He read both sides of it and when he handed it back to me his face was a lot different.

"So they got Nat Hamlin. Whaddya know. And they left your face alone?"

"I took the Four Parsec option. As long as I keep away from Earth I can wear my old face. I figured it was safe, on Palmyra. Nobody in our line operated on Palmyra."

"We do now."

It was my turn to twitch in alarm. "How?"

"We're setting up an import chain. The Palmyrans are getting interested in owning pretty jewelry. They weren't before, but we've been working on them. It's a virgin market here, Nat."

"The name is Macy."

"Sorry. Anyway, we're setting up a pipeline. And you're the key man."

The muscle in my cheek twanged again. "I'm not in the business any more, Helgerson."

"Listen to me, Nat—Macy, whatever you call yourself. I've checked up on you ever

since I heard you were here. You got a good position—you're respected—trusted. I figured you were setting something up for yourself. But I guess it was just because you were a Rehab. Well, anyway, it's a natural. We could send those stones wrapped up in those squid-cans—call them market returns, code the wrappers. All you have to do is grab the loaded cans and turn them over to me. I'll guarantee you three quarters of a million a year for it."

I felt sick. I wanted to get out of that booth fast. "I'm not in the business," I said bleakly.

"Eight hundred thousand. Nat, this setup is a peach!"

"I told you—"

"I'll go as high as a million."

"Look," I said. "I'm a Rehab. That means I've been through the Center, analyzed, monkeyed-with, headshrunk, rearranged. There isn't a criminal molecule left in me. I can't do it even if I wanted to. And I don't want to."

He smiled pityingly. "Don't give me that crap, Nat. If you wanted to bad enough, you could break your conditioning. It's been done before."

"Maybe it has. But I don't want to. Not even for a billion a year."

"Nat—"

"The name is Macy. And I'm not interested." I looked at my watch. It was getting late. I didn't want to talk to Helgerson any more. Ellen was expecting me. I reached out and yanked the shutoff lever, and the privacy field died away with a faint whuffling sound. Helgerson was glaring at me and I glared back. "The answer is no. Finally and absolutely. And don't bother me any more, Helgerson. I'll run you in for violating the Rehab Code if you do."

I got up and strode toward the door. Helgerson yelled something after me, but I was too angry to listen.

IT was quarter of seven when I got to Ellen's, which meant I was fifteen minutes late, and I hadn't had time for that shower and shave, either. But Ellen didn't make any acid remarks. That was how she differed from most of the

women I knew; she could forgive and forget, and without making a fuss about it.

She was wearing a sprayed-on strylon dress that covered her body with a layer of plastic two molecules thick—enough to keep her within the bounds of maidenly decency, but also revealing enough to make her quite an eyeful. I held her against me for a minute or two, as if her nearness could drain away the inner tension Helgerson had provoked in me. It didn't, but it was pleasant anyway.

Then she broke away, with the excuse that dinner would be spoiled. She had made roast seafowl with a garnishment of starflower sprouts, and cool white wine from Mellibor to wash it all down. We ate quietly; I was troubled over the Helgerson business. If a bunch of my old pals set up the trade on Palmyra, it was going to make life very hard for me here. Bitterly I asked myself why they had had to come here; I had had eight months of peace, but now it was to be shattered.

We dumped the dishes into the autowash. Ellen nuzzled against me playfully and said, "You're quiet tonight, Paul. Worried. What's bothering you?"

I tried to wear a cheerful grin. "Nothing much."

"There is. What?"

I shrugged. "Plant business," I lied. Telling even a small lie like that gave me a twinge of remorse, thanks to the built-in conscience the Rehab Center had given me. My conditioning didn't prevent me from telling lies, but it made sure that I felt the effects of even a small one. "We had some trouble come up today. Nothing serious."

"Shake it off, then! Let's go for a drive, yes?"

We rode to the roof, where I had parked my aircar, and for the next two hours we soared through the Palmyran night. I drove out over the ocean, glittering with the reflection of a million stars and a quartet of bright moons, and then swooped down over the coastal plains, still mostly untouched by man's hand. We said little, satisfied just to have each other near. When I was with Ellen I was glad I had been R e h a b b e d; Nat

Hamlin had never trusted another human being, and so Nat Hamlin had never been in love. I had not only a different name but a different set of emotions, and that made all the difference in the universe.

It was nearly eleven when I brought the aircar lightly to rest on the roof of Ellen's building. Our goodnights took half an hour, but they weren't the sort of goodnights Nat Hamlin would have appreciated because Paul Macy didn't play the game as close as his predecessor in our body did. Ellen was passionate within bounds; she wanted to be my wife, not my mistress, and she knew the best way of achieving that goal. Which was all right with me. I could be patient a while longer.

I left her at half past eleven and drove home in a pleasantly euphoric state, having nearly forgotten about the ominous popping-up of Dan Helgerson. But when I entered my place, a little after midnight, I saw the red light on my autosec lit up.

I nudged the acknowledger to let the machine know I was home, and it said, "Mr. Helgerson called while you were out, sir. He left his number. Shall I call him back?"

"No. I'm tired and I don't want to speak to him."

"He said it was urgent sir," the autosec protested gently. "He said, quote, it would be too bad for you if you didn't call him."

There was a sour taste in my mouth and a knot of tension formed in my chest. I sighed. "All right. Call him back."

HELGERSON'S fleshy face formed in the depths of the screen. He wore an ugly smile. "Glad you decided to call back, Nat. You ran out on me so fast before that I didn't have time to tell you all I wanted to tell you."

"Well, spill it out now. Quick. It's late and I don't want to waste any more time on you than I have to."

"I'll come right to the point," Helgerson said. "We want you to join our syndicate. You're the key man; the whole thing revolves around your coming in. And if—"

"I told you I'm playing it

straight. I'm not Nat Hamlin any more."

"And if you turn down the offer" Helgerson went on ignoring the interruption, "we're going to have to take steps to make you join us."

I was quiet for a moment. "What sort of steps?"

"You have a girlfriend, Hamlin. I hear you're pretty high on her. Plan to marry her, maybe. I've checked up a lot about you. How would your girlfriend react if she found out you were a Rehab?"

"She—I—" I closed my mouth and felt black anger ripple up through me. And with it came the sick feeling my conditioning supplied, to keep me from doing anything violent. I wanted to do something violent right then. I said instead, "People don't discriminate against Rehabs. The Code says they're to be treated as completely new individuals. Paul Macy didn't commit Nat Hamlin's crimes."

"That's what the Code says, yeah. But nobody really trusts a Rehab, deep down. There's always the lingering suspicion that he might backslide."

"Ellen would trust me even if she knew."

"Maybe she would, maybe she wouldn't. How about the people you work with? They don't know, either—only the top bosses. And your friends. What's going to happen if they suddenly find out you've been holding out on them, that you're really a Rehab?"

I knew what would happen, and I felt bitter-tasting fear. Legally a Rehab is an innocent man and should be subject to no prejudice—but in practice there's a certain coldness between most people and Rehabs, a lack of trust that goes deeper than the legal codes. My nice neat life on Palmyra would be smashed if Helgerson spread the word about.

But I *couldn't* go in with him on the deal.

I said, "You wouldn't pull a thing like that."

"Not if you wised up and let me go back into business with you, Nat. You can overcome your conditioning if you fight it hard enough. Think it over, Nat I'll phone you tomorrow night. If the answer's still no, the whole planet will

know about you the next morning."

The screen went blank.

I PACED up and down my room for three hours, cursing Helgerson out and getting my blood pressure up. I realized I was boxed in.

Sure, I could break my conditioning and go back to Helgerson. It probably would mean a total nervous breakdown inside of a month and a permanent case of the shakes, but I could do it. I didn't *want* to do it, though. They had fixed me so I *liked* being honest. Besides, a backsliding Rehab doesn't get a third chance. If I got caught, it would mean total personality demolition—the death sentence for Macy/Hamlin. They would wipe out my mind and build a wholly new identity into my body, one that would have to be taught how to read and write and tie his shoelaces all over again.

No. Joining Helgerson was impossible.

But the alternative was having word of my Rehab status spread all over the place. Maybe Ellen would stick with me after she knew, maybe not; but either way I could never be happy on Palmyra again. The rumor would spread, and I couldn't deny it, which would confirm it. And suddenly I would find myself persona non grata at a lot of places where I was welcomed right now.

I chewed it all out inside myself and saw the only thing I could do, under the circumstances. I couldn't let Ellen find out about me from Helgerson. I would have to tell her myself. I had been meaning to tell her for months but kept putting it off, postponing it, being afraid of her reaction. The time had come to let her know.

I activated the autosec and told it to phone Ellen. The time was past three in the morning, but I didn't care.

Her head and shoulders appeared on the screen, blinking, sleepfogged, lovely. "What is it, Paul?"

"I've got to see you, Ellen. Got to talk to you."

"Right now."

"Right now," I said.

I braced myself for the del-

uge, but it didn't come. She shrugged, smiled, and said, "You must have a good reason for it, darling. I'll have coffee ready when you get here."

THE trip took me twenty minutes. I was jittery and tense, and words rolled around crazily in my mind. ways of explaining. ways to tell what I had to tell. Ellen kissed me warmly as I came in. She was wearing a filmy sort of gown and she was still squint-eyed from sleep.

She put a cup of coffee in my hand and I sat down facing her and I said, "Ellen, what I'm going to tell you is something you should have known from the start. I want you to hear me out from beginning to end without interrupting."

I told her the whole thing: how Nat Hamlin had thrived for thirteen years as a top interstellar jewel smuggler, how he had been wanted by half the worlds of the galaxy. how he had finally been caught and Rehabbed into me. I explained why I had taken the Palmyra option, how I had rebuilt my life how I had begun with a fresh slate. I also told her how much I loved and needed her.

Then I went into the Helgerson episode, and his threat. "That's why I came here, Ellen. To tell you before he had the chance to. But everything's ruined for me here anyway. I can't stop him from exposing me. I'll leave Palmyra tomorrow, go back to Earth, tell them I've changed my mind and want a refacing job done. That way none of Hamlin's old pals can pop up this way again. And I'll find some other world somewhere and start over a second time. That's all, Ellen."

Her expression hadn't changed during the whole long narration. Now that she saw I was finished she said, "I wish you could find some way of avoiding the refacing, Paul. I like your face the way it is."

The implications of what she had said didn't register for a moment. Then I gaped foolishly and gasped. "You—you'll come with me?"

"Of course, silly. You should have told me before—but it doesn't make any difference. I love Paul Macy. Nat Hamlin's dead, so far as I'm concerned."

A floodtide of warmth and happiness swept over me. She trusted me! She—loved me! I had been an idiot not to see the depth of that love, to know that I could have told her the truth all along. "You—aren't like the others, Ellen. The fact that I'm a Rehab doesn't matter to you."

There was an odd expression on her face as she said, "Of course it doesn't matter."

She got up and took her purse from a dresser drawer. She fumbled through the purse, found something, brought it over and handed it to me. "You're not the only one with a past, darling."

I was holding a yellow identity card in my hand. It told me that the girl who was known as Ellen Bryce had been born Joan Gardner, until her sentence two years ago. The card didn't tell me what the sentence had been for, and I didn't want to know. But it did tell me that Ellen was a Rehab too.

The last barriers of mutual mistrust were down between us. Ellen cried, and maybe I cried a little too, and then we laughed at how silly we had both been to keep our big secrets from each other. I figure half the pain in this universe is brought about by people who hide things unnecessarily and then brood about what they've hidden. But we didn't have any more secrets from each other. Dan Helgerson couldn't hurt us now.

He couldn't do anything to what we had between us. If Rehabs don't trust each other, how can they expect the rest of the world to trust them.? I didn't care what Joan Gardner had done in her twenty-two years of life. Maybe she had chopped her parents into hamburger; maybe she had been the most active call-girl in the galaxy. What did that matter? Joan Gardner was dead, and Ellen Bryce was the girl I held in my arms that night.

It was ridiculous for me to go home that night, and I stayed till dawn and Ellen made breakfast for us. We talked and planned and wondered, and between us we not only set the date but figured out what I was going to do about Helgerson and his threat.

When Helgerson called me the next day to find out my answer, I said, "You win. I'll come in with you at a million a year."

"I knew you'd smarten up, Nat. We need you and you need us. It's a good deal. You always had an eye for a good deal."

"When do I begin?"

"Right away. Suppose you come on over here for lunch and a drink, and I'll give you a month's advance as a binder." He quoted an address on Palmyra City's swank South Side. "You won't regret doing this, Nat. We'll keep it quiet and the Rehab boys won't ever find out you're breaking your conditioning."

"Sure. I'll be right over."

I hung up and reeled dizzily against the wall while the shock of the conversation left me. Rehab conditioning is no joke. Not only do they erase the neuroses that led you to become a criminal in the first place, but they stick in a few mental blocks that make it tough to go back to your old ways. I was fighting those blocks now. Waves of pain rolled through me. It was double-edged pain too,—for not only was I fighting the Rehab conditioning, I was also going against an older, still-active block I had about turning stoolpigeon. Nat Hamlin had been vividly expressive on the subject of stoolies. Paul Macy still found the idea repugnant. But I didn't have any choice. And Helgerson was going to be in for a surprise.

When the pain spasms were gone, I picked up the phone again and asked for the Rehab desk of the local Crime Commission office. The face of Commissioner Blair, the man who had placed me on Palmyra, appeared on the screen: relaxed, pink-cheeked, smiling.

"Hello, there, Paul. What's up?"

"You know Dan Helgerson, Commissioner?"

His brows furrowed. "The name doesn't register."

I said, "You can check him against your master lists later. He's wanted for jewel swindles on fifty worlds or so. He was one of Nat Hamlin's old buddies."

"And what about him, Paul?"

I winced at the inner pain. I said, "Helgerson's on Palmyra, Commissioner. He's been in touch with me and he's trying to blackmail me into setting up a jewel-smuggling He says if I don't come across, he'll spread the word that I'm a Rehab." I saw the alarm and anger appear on Blair's face. "I told him I agreed to his terms, and he's expecting me for lunch today. But of course—I can't really go back into partnership with him—"

I was weak-kneed and sweat-soaked by the time I hung up. But I was smiling in satisfaction. Dan Helgerson was going to be awfully surprised when the police and not me showed up at his hotel.

Nat Hamlin had had two attributes for which he was admired throughout the galaxy by his fellow crooks. He never doublecrossed a buddy and he declared repeatedly that he would rather cut his throat than turn stoolie. Helgerson had given his address because he knew he could trust Nat Hamlin.

But Helgerson had made a big mistake. He underestimated the Rehab conditioning. He wasn't dealing with Nat Hamlin at all. He was dealing with a guy named Paul Macy, and Macy wasn't hampered by any of Hamlin's attributes.

THE trial was a closed-chamber affair that took eight hours. Helgerson sat across the room, glaring at me in anger and disbelief. Even then, he couldn't believe that Nat Hamlin had called copper on him.

The central office of the Galactic Crime Commission sent in a full dossier on Helgerson by ultrafax, and the judge read through it, heard my testimony, and quickly sentenced Helgerson to be remanded to Earth for Rehabilitation. The case didn't make the Palmyra papers, because my identity as a Rehab had to be kept quiet.

Ellen and I were married the next day; I got a leave of absence and we departed on our honeymoon. The first stop was Earth, where I visited the Rehab center and asked for a minor refacing—just enough to keep other buddies of Nat

Hamlin's from recognizing me too easily. They altered my hair color from black to reddish-brown, thinned out my nose, widened my mouth, shortened my jaw, and gave me a mustache. Ellen had designed the new face herself. It looked pretty much like the old me, but there were minor differences. When we got back to Palmyra, it wouldn't be hard for Ellen to explain that I had an aircar crackup and had needed some plastic surgery.

From Earth we went on to Durrinor, the playground-world, and our three months there were as close to Eden as I expect to get. The time came, finally, sadly, to return to Palmyra. We had a private cabin aboard the spaceship; we still thought of ourselves as honeymooners, and intended to keep on thinking of ourselves that way for the rest of our lives.

The first night on board the spaceliner we had just finished getting settled and unpacked in our stateroom when the doorchime sounded. I opened the door. My jaw slid down an inch or two.

Dan Helgerson was standing outside the door, and he was wearing the blue-and-gold uniform of a crewman. He smiled pleasantly. "Good evening, sir. Welcome aboard the *Queen of the Stars*. I hope you enjoy your trip, sir." Then his expression changed as he recognized me behind the minor changes. "Ah—you're Nat—Hamlin—"

"No," I said. "Paul Macy, just as it says on the doorplate, Dan."

He shook his head. "Not Dan. The name is Joseph, sir. Joseph Elson. I'm your purser, and it'll be my pleasure to serve you during this trip. If you need me, just ring. Thank you—Mr. Macy."

"Thank you—Joseph."

We smiled at each other, and he shut the door. Joseph Elson, eh? Well, Joseph Elson it was, then. I hoped I wouldn't accidentally call him Dan during the course of the trip. A Rehab deserves that much courtesy, after all.

THE END

EGO-TRANSFER MACHINE

by GEORGE H. SMITH

The machine was fantastic, and it worked. My ego was in another man's body, and his ego was in my body. Perhaps it was a fair exchange, but I was engaged to be married

AS I lay there in my bed the whispering that was slowly driving me mad came back, intruding its tendrils into my brain.

"I'm back, Calvin," it said. *"I'm back again.*

"Go away. Leave me alone," I said.

"I won't leave you alone. I'll never leave you alone until you listen to me."

"I've got to get some sleep ...I'm getting married tomorrow." It was true. Tomorrow I was going to marry the most wonderful girl in the world, a girl I had taken away from a half-dozen persistent suitors. "What do you want with me? What do you want?" I all but screamed.

"Why do you resist me? Why do you fight? You need only relax for a moment and it will all be over." With each word I felt burning pain within my brain.

"What will all be over? What do you mean?" I heard my voice asking and muttered to myself, "I'm crazy...I must be crazy."

"You are not insane, James Calvin. You have a good if somewhat primitive brain. That is why I have chosen you for my experiment." The burning pain brought a shriek from my lips.

"Why must you resist? Your life in my body would be much better than where it is. I am a rich man, a powerful man.

"If you're so blasted well off, what do you want with me?"

"Because I'm a scientist. I've invented this ego exchange machine by which a man's mind

can enter the body of another and I just want to prove it will work. As soon as the experiment is over you can return to your own body."

"I don't believe you. I've read about you crazy scientists in the Sunday supplements."

"Come on now, Calvin. Why would I want to keep your body? I have a perfectly good one of my own. I mean you no harm."

"If you really mean me no harm, why don't you get the blazes out of my brain?"

"Because I want to exchange bodies with you."

"I won't let you! You can't have my body!"

"I can force you, you know. I can make you do it." The red hot feet of pain increased in intensity.

"P l e a s e . . . please . . ." I couldn't stand much more of it. I had to give in or go mad. But I couldn't take a chance on never seeing Susan again. "My fiancee . . . will you promise me that I will see her again?"

There was something like a laugh in his mind. *"Yes, I promise that. You will see Susan Davenport again. Now, just let go of your mind for a moment or so . . . let go . . . let go . . ."*

I was sitting in a chair in a machine in an instrument-filled room that reminded me of a Hollywood director's idea of what a laboratory should look like. A small balding man was sitting there across from him smiling very proudly.

"So . . . the experiment it is a success, no?" the man said. "It is a success and you are here and unharmed."

I ran a hand over what I assumed was my new face. "Where am I? What is this place?"

"This, my dear friend, is my laboratory. I am Dr. Jacob Marshfield."

"But . . . I thought I was supposed to change places with you."

"Oh, not at all. You ex-exchanged places, but not with me. I had to be here to operate the rather complicated ego-transference equipment."

"T h e n who . . . who?" I asked feeling my new face and looking down at my rather short and plump new body and

wishing for a mirror. "Who did I change with?"

"With the man who was willing to put up the fifty thousand dollars that I needed to complete my work on the condition that his would be the first ego exchanged and that he could pick the other subject."

"Who is he? What is his name?"

"Baylor Mawson is our benefactor, young man."

"Mawson?" I saw it all now and I knew what lay behind it. Baylor Mawson had been one of Susan's most persistent and most unsuccessful suitors despite his wealth.

"He bought my body. . .he bought my body for fifty thousand dollars!" I cried leaping to my feet and lunging toward the scientist.

The little man backed away with a puzzled look on his face. "Bought your body?. I don't understand. He said that you were willing to exchange."

I grabbed hold of the white laboratory coat he wore. "He wanted my girl. She wouldn't have anything to do with him so he picked this way to get her. Can't you understand? He stole my body so that he could marry Susan today in my place."

I pushed him away and he fidgeted nervously with some of his equipment. "I'm sure that you must be mistaken."

"And I tell you I know Mawson and he'd stop at nothing to get Susan."

"But I really don't see what I can do about it," Marshfield said nervously trying to wire a panel on the side of the booth. "Mr. Mawson deceived me too, you know."

I grabbed the man's arm. "You've got to send me back. You've got to re-exchange Mawson and me. You've got to give me my body back."

"Really, Mr. Calvin, I don't know whether I can. The Ego-Transfer Machine is capable of making only one more exchange before it has to be completely rebuilt at a cost that approaches the original cost." The little man ran his hand nervously through his sparse hair. "I wouldn't feel that I had the right to operate it without the authorization of Mr. Mawson in writing."

"Why not? He stole my body, didn't he?"

"But he gave you his and

also quite a bit of money." Marshfield's voice changed when he mentioned the money. His small black eyes became quite bright.

"That's right. I have all of Mawson's money, haven't I?"

"No, not exactly. You see he had the greater part of his fortune transferred to your bank account this morning. He did, however, leave something like a million dollars in his own name for your use. A million dollars is a lot of money, Mr. Calvin. A lot of money to buy scientific equipment with."

"It's yours...it's all yours if you'll get me back to my body."

"Well, I don't know. It might not be that easy."

"Look, I'll write a check. I'll call Mawson's lawyer on the phone. You get the million and I get my body back, right?"

"And all the money that Mawson placed in your name?"

"I don't care about that. Just get me my body back. I can't let that louse marry Susan. My God, look what time it is! They must be at the church already."

"Very well, Mr. Calvin, if you'll just sign this bank draft that I had Mr. Mawson's secretary make out and call his lawyer and banker and confirm it..."

"What about the signature and my voice?"

"I assure you that they are as much a part of Mr. Mawson as your face is."

Signing away a million dollars wasn't easy, not easy at all, but I was willing to do anything to keep that louse Mawson from marrying Susan. And Marshfield it seemed was willing to do anything for a million bucks.

A short time later I was back in the telephone booth affair that he called the Ego-Transfer Machine. And the voices were back in my mind again, but this time I listened to them willingly.

"Hurry ... hurry ... release your mind," came the urgent whisper and I hastened to obey. I was going back, going back to my own body, going back to save Susan from marrying Baylor Mawson. It was then that it occurred to me that Marshfield had outsmarted himself. He wouldn't ever get that million bucks I had

signed over to him. As soon as Mawson got back into his own body he'd be sure to stop payment. Poor stupid Marshfield! As for the rest of the money ...well, that was in my name and it would make a nice little wedding present for Susan. Poor stupid Marshfield!

The laboratory faded, and a voice was saying, "I now pronounce you man and wife." I was in time! I had saved Susan from marrying Mawson!

I had saved Susan from marrying Mawson...but I WAS MARRIED TO MAWSON! I was Susan! Marshfield would keep his million and I... My God.. I... My God!

THE END

SCIENCE SHORTS

by EDGAR P. STRAUS

Eskimos or Buddhist monks may make the best spacemen, a psychologist declared at a recent meeting of the American Association for the Advancement of Science. Dr. Donald N. Micheal pointed out that isolation and lack of sensory stimulation in space travel will be heavy strains upon spaceship crews, and that perhaps crew members should be recruited from "cultures other than ours which are less time-oriented and more sedentary."

Among motivations to be expected in space-crew applicants, he said, are dedication to service, simple curiosity, attempts at psychological escape, hidden guilt feelings, and the urge to "prove something" to one's self or to others.

Shipboard friction in long voyages will be a major problem, and the conquest of space will be as much of a psychological challenge as an engineering one. Hence the selection of Eskimos or Orientals who regard the universe in a more patient manner than Westerners and who would be less likely to break under the pressure of confinement in a spaceship for many months.

A startling new concept of sunspots has been advanced by the director of the Harvard Observatory. Contradicting the established theory that sunspots indicate the existence of solar storms, Dr. Donald H. Menzel believes that the small, dark regions are "islands of intense calm floating in the otherwise turbulent sea of the sun's atmosphere."

The new concept is based on recent advances in solar astronomy and progress in the field of magnetohydrodynamics, which is the science of gaseous motion in magnetic fields.

MISSILE GUIDANCE PROBLEM

ARTICLE

by ROBERT DANIEL

Calling all inventors and research men! The man who makes the key discovery here will make his country the certain winner of any future war — cold or hot

WANTED: A missile guidance system which is different in concept from the eight presently known systems. Must be immune to electronic countermeasures, usable with either ballistic or aerodynamically supported missiles, and suitable for use against fixed or moving targets.

A guided missile, by definition, must possess within itself the means to alter its trajectory after it has been fired. Indeed, it is this characteristic which distinguishes a guided missile from an ordinary projectile or "free rocket". At this time there are only eight methods of guiding a missile. Most of these systems are susceptible to electronic countermeasures, the majority lack accuracy at long ranges, and *no* system is wholly satisfactory.

A brief examination of the eight systems reveals these various weaknesses and shortcomings.

1. *Preset.* This is probably the oldest of the guidance methods. In this type guidance a programmer or timer is used to cause predetermined trajectory changes in a fixed sequence. There is no feedback of missile response to the system nor is there a missile-target relationship maintained. The missile therefore carries

out its given orders faithfully but somewhat blindly. Preset guidance lacks accuracy. For example, the preset guided V-2, fired in thousands by the Germans in World War II, had an average miss distance of about 7 miles. Since no electromagnetic radiation link is involved the system is not susceptible to electronic countermeasures. It is usable only against fixed targets.

2. *Terrestrial Reference*. This guidance type utilizes some particular earth phenomena in order to reference missile trajectory changes. The variation in atmosphere pressure is used to establish trajectory height by means of an altimeter. Lateral trajectory control can be achieved by using the earth's magnetic field as a guide. Terrestrial reference is suitable only for use against stationary targets.

3. *Radio Navigation.* By suitable selection of received radio signals a missile can be made to adhere to a fixed trajectory. For example: Assume two radio transmitters which broadcast signals simultaneously. If a missile is caused to follow a trajectory such that the missile's receiver hears these two signals at the same time, then the missile must follow a straight line course. This course would be the perpendicular bisector of the line joining the two transmitters. If the missile follows a trajectory such that it hears the two simultaneously transmitted signals at a fixed time interval apart, then the missile describes an hyperbolic path. A radio navigation guidance system is susceptible to electronic countermeasures and its range is limited to operation above the radio horizon.

4. *Automatic Celestial Navigation* guidance systems compute actual missile course by measuring the altitude angles of known stars. The altitude angle of just one particular celestial body establishes position only on the circumference of a given circle. For, from any point on the circle, the same upward angle is measured to the reference star. (i.e. from any point on the base of right cone the identical altitude angle is measured to the apex).

Therefore, it is necessary to repeat this process in order to establish two intersecting position circles. As in the case of shipboard navigation there is no doubt as to which of the two points of intersection of the circles represents the actual position. The points of intersection can be made to occur far enough apart so that the choice between true and false position is obvious. The system cannot be employed against moving targets and is adversely effected by cloud cover.

5. *Inertial.* The method of inertial guidance depends upon accelerometers to detect changes in velocity and an elaborate computing system to doubly integrate these noted accelerations into distances. It is absolutely imperative that the acceleration meters be kept precisely aligned with critical axes of the trajectory. In other words, a gyroscopically stabilized plane must be provided so that the measuring devices remain exactly oriented in inertial space despite any yawing, pitching, or rolling of the missile about the mounting table. The inertial system, although self-contained and non-emanating, is limited to fixed target use.

6. *Command.* This system of guidance is designed for attacking both moving and stationary targets. Target position and missile position are supplied to a computing device which generates orders for the missile. These directions are sent to the missile by a signal from the computer. The command method has a limited rate of fire in that only one missile-target problem can be handled at any given time.

7. *Beam Rider* involves a missile-borne computing system which must keep the weapon centered in a radar beam. A beam riding missile is susceptible to electronic countermeasures. It requires considerable propulsive power to match the range and velocity of other guidance types because of the weighty computer it carries.

8. *Homing* utilizes some characteristic of the target itself to establish a basis for trajectory calculations. As an example, the target radar re-

flectivity supplies the vital steering information in both active and semi-active homing systems.

a. The active homing missile carries a radar transmitter and receiver. The missile's receiver listens for the reflected radar energy which its own transmitting radar has bounced off the target. The missile simply seeks out the strongest reflections and ultimately collides with the reflecting surface—the target.

b. The semi-active homing system is identical to the active type except that transmitting radar is removed from the missile. The radar energy echoed from the target emanates, in this case, from the ground, a ship, or an aircraft.

c. Passive homing missiles use no transmitter but rather seek out natural radiations from the target. Typical of the passive homer is the infra-red homer or heat-seeker.

These, described in very general terms, are the guidance systems in use today. There are no others. All missiles use either one of these types alone or a combination of two or more.

A review of the eight systems shows that numbers 1 through 5 are usable against fixed targets only. Numbers 2, 3, 4, 6, 7 and 8 are in one way or another liable to jamming or interference. In fact, since systems 6, 7 and 8 all involve the use of receivers aboard the missile, they are directly susceptible to electronic countermeasures. This, coupled with the fact that only these three systems can be used against moving targets, leads to a startling conclusion. Under the present state of the art a jam-proof missiles to attack a moving target *cannot be built!*

The ability of our nation to deter war is basically and deeply associated with the guided missile. Offensively and defensively our armed forces look to the missile as the chief weapon of the future. Is there a ninth guidance system to make our guided weapons more effective, more versatile?

It is said that the ninth ocean wave of a series is the giant of the nine—the rolling mammoth for which the surf-riders wait.

THE END

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