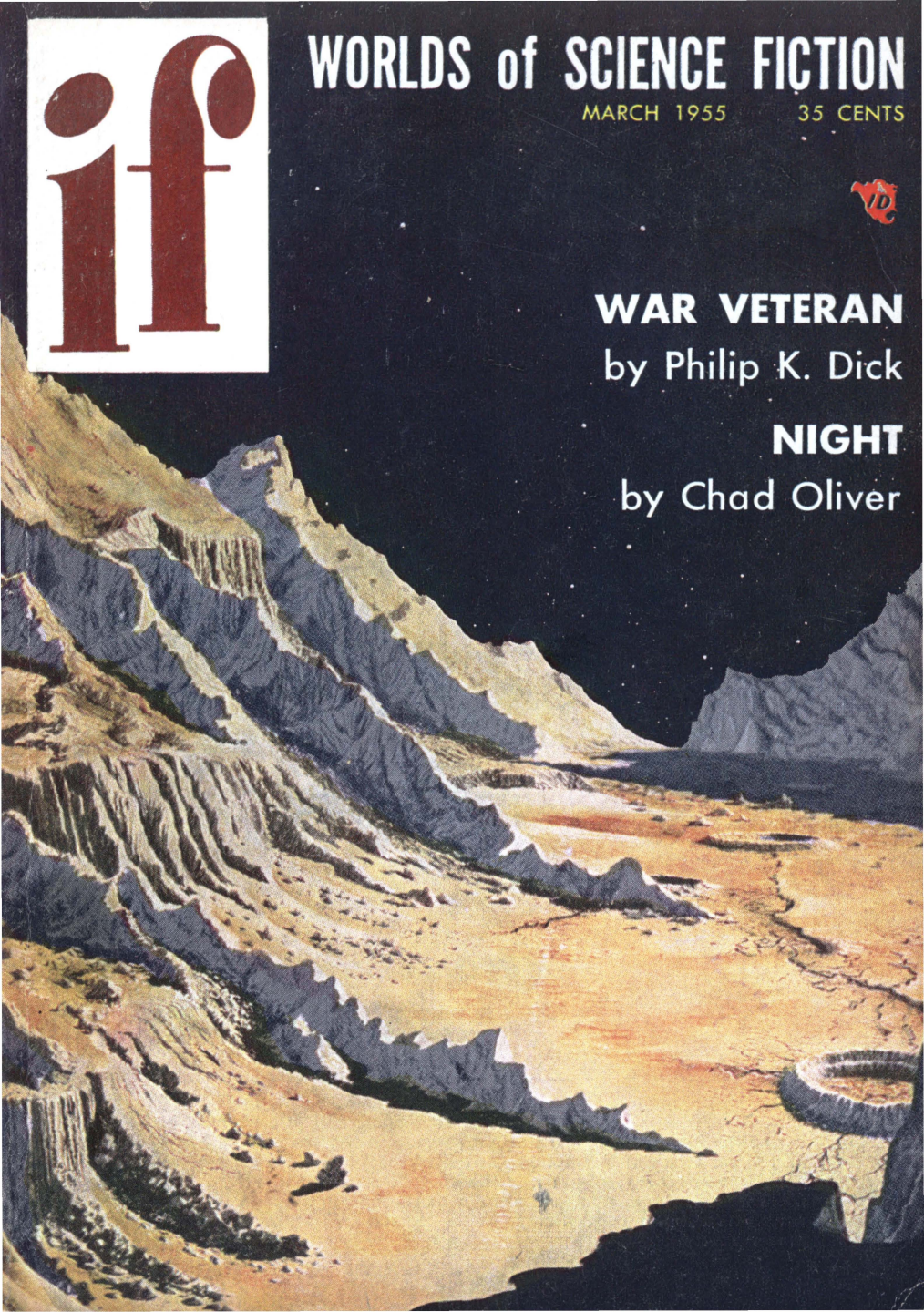
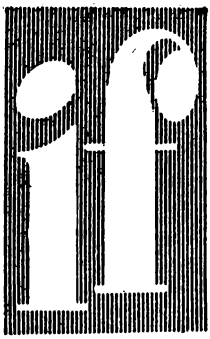

if
WORLDS of SCIENCE FICTION
MARCH 1955
35 CENTS
WAR VETERAN
by Philip K. Dick
NIGHT
by Chad Oliver

TOMORROW'S AUTOMOBILE—The small powerful jets which speed this car of the future through the air also drive it along the surface by transferring power to wheel locomotion. On the surface, the wings collapse and fold back into the body, giving it a "teardrop", streamlined effect. There are three wheels, two in front and a single drive-wheel in the rear, with the three wheels forming a wide triangle. The "run-about" shown here holds two passengers.



WORLDS of SCIENCE FICTION

MARCH 1955

All Stories New and Complete

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SHORT STORIES

FEATURES

COVER PICTORIAL:

Automobiles of the Future

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A CHAT WITH THE EDITOR

BY NOW you have probably read the first two winning stories in IF's recent College Science Fiction Contest with the theme: "What Will America Be Like 100 Years From Now?" The first-prize story "And Gone Tomorrow" (December issue), by a student at the University of Louisville, prophesied a world dictatorship, with a caesar akin to the old style Roman emperors. And there were several other manuscripts based on the same premise —that the United States would some day be a dictatorship itself, or part of one.

These youngsters were extrapolating on present day events, and to do this one must be keenly aware of political and economic trends. And their prediction of a dictatorship for the U.S.A. comes uncannily close to the mark, for dictatorship—and there is no good or benevolent one—is looming all too closely on the horizon. It won't even be 100 years from now. It could be in your time and in my time.

The first step in this all too possible autocracy will take place this year—for this is the year the heads of the A.F.L. and the C.I.O. will decide whether or not to merge their strength and become one gigantic union. From their point of view this would be an ideal set-up, and it is likely that the merger will go through unless something is done to stop it.

The influence which unions all over the country now have in our state and national governments is blatantly obvious. Political candidates curry favor with unions and union members for their votes and for their contributions to the coffers of the election funds. This wedge of votes and money has opened the way for pro-union legislation which puts these huge groups in the driver's seat in both government and industry.

Mind you, this state of affairs exists *now,* when there is decentralization of union power; imagine what it will be like when *one* organization can control the votes, labor and lives of millions of members who directly or indirectly affect the lives and living of every human person in the nation!

If a merger such as this goes through, it would involve something like 14,000,000 C.I.O. and A.F.L. members alone, and affect practically every industry in the United States. With such influence as this in operation, it is reasonable to assume that independent unions, with millions of additional members, will jump on the bandwagon. The whole movement will become

a huge free-rolling steamroller with one man, or a small group of men, holding the wheel.

I believe in unionism, when there is honesty and integrity; I also believe in good government. But there can't be sound, unhampered government when a union is so large that it can bring the industrial might of a nation the size of the United States to a standstill. For example, smaller organizations have been able to cripple shipping on both the Atlantic and Pacific coasts with dock strikes; the steel industry, and all the industries that depend on steel such as aircraft, automotive, and ship building plants, were brought to a halt by a strike of steel workers not too long ago. Textile mills, electronic laboratories, coal mines, transportation, even the atomic laboratories at Oak Ridge have come to a standstill at one time or another through the medium of strikes. The pressure that can be brought to bear when such a strike affects something as vital as the national defense (as in the case of the atomic workers strike) is so great that even the decentralized set-up we have now is too powerful for the good of the nation. It isn't too difficult to imagine then, how a vast octopus-like union, able to pull a strike in all industries at once, could wreck the Ship of State. The heads of such a union would have more power than the President of the United States; such all-powerful men could demand anything they wished—*and get it;* they could get the men of their choice elected to the senate and congress and the White House. Not only could they control the reins of government with their voting blocs, but they could also physically control the country's industries and thus the actual livelihood of the entire population of the United States.

There is another factor to consider. Labor unions have had a tough fight to gain recognition, and the leaders of these unions have been trained in hard schools. But such training hasn't lessened the fact that men who have emerged as leaders may very easily have feet of clay . . . and that personal ideology and whim may sometimes have a far reaching effect. For such is the nature of man when he has unlimited power.

A dictatorship is the next easy step.

The power of unions is so great already that the President of the United States, the members of Congress and the Senate may even now find that their political lives are in jeopardy if they voice opposition to the proposed merger. Let us hope, however, that political leaders will realize what this merger means, and put the welfare of the nation before their own and see to it that *immediate* legislation is passed to break up this centralization of union power. Let us hope that the union members themselves have the insight to realize what an uncontrollable monster they may be hatching, and that they will have the guts to place their country before their jobs and fight to preserve the democratic form of government under which this nation has prospered.

I would be the last to deny that unions have done more good than evil, that the working man needed

(Continued on page 53)

WAR VETERAN

Problem: The future must *be changed! . . .*

For he was a throwback from the future, this old man, veteran of war yet to come; war in which Earth was annihilated. . .

Illustrated by Kelly Freas

THE OLD man sat on the park bench in the bright hot sunlight and watched the people moving back and forth.

The park was neat and clean; the lawns glittered wetly in the spray piped from a hundred shiny copper tubes. A polished robot gardner crawled here and there, weeding and plucking and gathering waste debris in its disposal slot. Children scampered and shouted. Young couples sat basking sleepily and holding hands. Groups of handsome soldiers strolled lazily along, hands in their pockets, admiring the tanned, naked girls sunbathing around the pool. Beyond the park the roaring cars and towering needle-spires of New York sparkled and gleamed.

The old man cleared his throat and spat sullenly into the bushes. The bright hot sun annoyed him; it was too yellow and it made perspiration steam through his seedy,

BY PHILIP K. DICK

ragged coat. It made him conscious of his grizzled chin and missing left eye. And the deep ugly burn-scar that had seared away the flesh of one cheek. He pawed fretfully at the h-loop around his scrawny neck. He unbuttoned his coat and pulled himself upright against the glowing metal slats of the bench. Bored, lonely, bitter, he twisted around and tried to interest himself in the pastoral scene of trees and grass and happily playing children.

Three blond-faced young soldiers sat down on the bench opposite him and began unrolling picnic lunch-cartons.

The old man's thin rancid breath caught in his throat. Painfully, his ancient heart thudded, and for the first time in hours he came fully alive. He struggled up from his lethargy and focussed his dim sight on the soldiers. The old man got out his handkerchief, mopped his sweat-oozing face, and then spoke to them.

"Nice afternoon."

The soldiers glanced up briefly. "Yeah," one said.

"They done a good job." The old man indicated the yellow sun and the spires of the city. "Looks perfect."

The soldiers said nothing. They concentrated on their cups of boiling black coffee and apple pie.

"Almost fools you," the old man went on plaintively. "You boys with the seed teams?" he hazarded.

"No," one of them said. "We're rocketeers."

The old man gripped his aluminum cane and said, "I was in demolition. Back in the old Ba-3 Squad."

None of the soldiers responded. They were whispering among themselves. The girls on a bench farther down had noticed them.

The old man reached into his coat pocket and brought out something wrapped in gray torn tissue-paper. He unfolded it with shaking fingers and then got to his feet. Unsteadily, he crossed the gravel path to the soldiers. "See this?" He held out the object, a small square of glittering metal. "I won that back in '87. That was before your time, I guess."

A flicker of interest momentarily roused the young soldiers. "Hey," one whistled appreciatively. "That's a Crystal Disc—first class." He raised his eyes questioningly. "You won that?"

The old man cackled proudly, as he wrapped up the medal and restored it to his coat pocket. "I served under Nathan West, in the *Wind Giant*. It wasn't until the final jump they took against us I got mine. But I was out there with my d-squad. You probably remember the day we set off our network, rigged all the way from—"

"Sorry," one of the soldiers said vaguely. "We don't go back that far. That must have been before our time."

"Sure," the old man agreed eagerly. "That was more than sixty years ago. You heard of Major Perati, haven't you? How he rammed their covering fleet into a meteor cloud as they were converging for their final attack? And how the Ba-3 was able to hold them back months before they finally slammed us?" He swore bitterly. "We held them off. Until there wasn't more'n a couple of us left.

And then they came in like vultures. And what they found they—"

"Sorry, Pop." The soldiers had got lithely up, collected their lunches, and were moving toward the bench of girls. The girls glanced at them shyly and giggled in anticipation. "We'll see you some other time."

The old man turned and hobbled furiously back to his own bench. Disappointed, muttering under his breath and spitting into the wet bushes, he tried to make himself comfortable. But the sun irritated him; and the noises of people and cars made him sick.

He sat on the park bench, eye half shut, wasted lips twisted in a snarl of bitterness and defeat. Nobody was interested in a decrepit half-blind old man. Nobody wanted to hear his garbled, rambling tales of the battles he had fought and strategies he had witnessed. Nobody seemed to remember the war that still burned like a twisting, corroding fire in the decaying old man's brain. A war he longed to speak of, if he could only find listeners.

RACHEL PATTERSON jerked his car to a halt and slammed on the emergency brake. "That's that," he said over his shoulder. "Make yourselves comfortable. We're going to have a short wait."

The scene was familiar. A thousand Earthmen in gray caps and armbands streamed along the street, chanting slogans, waving immense crude banners that were visible for blocks.

NO NEGOTIATION! TALK IS FOR TRAITORS ACTION IS FOR MEN! DON'T TELL THEM SHOW THEM! A STRONG EARTH IS THE BEST GUARANTEE OF PEACE!

In the back seat of the car Edwin LeMarr put aside his report tapes with a grunt of near-sighted surprise. "Why have we stopped? What is it?"

"Another demonstration," Evelyn Cutter said distantly. She leaned back and disgustedly lit a cigarette. "Same as all of them."

The demonstration was in full swing. Men, women, youths out of school for the afternoon, marched wild-faced, excited and intense, some with signs, some with crude weapons and in partial uniform. Along the sidewalks more and more watching spectators were being tugged along. Blue-clad policemen had halted surface traffic; they stood watching indifferently, waiting for somebody to try to interfere. Nobody did, of course. Nobody was that foolish.

"Why doesn't the Directorate put a stop to this?" LeMarr demanded. "A couple of armored columns would finish this once and for all."

Beside him, John V-Stephens laughed coldly. "The Directorate finances it, organizes it, gives it free time on the vidnet, even beats up people who complain. Look at those cops standing over there. Waiting for somebody to beat up."

LeMarr blinked. "Patterson, is that true?"

Rage-distorted faces loomed up beyond the hood of the sleek '64 Buick. The tramp of feet made the chrome dashboard rattle; Doctor LeMarr tugged his tapes nervously into their metal case and peered around like a frightened turtle.

"What are you worried about?" V-Stephens said harshly. "They wouldn't touch you—you're an Earthman. I'm the one who should be sweating."

"They're crazy," LeMarr muttered. "All those morons chanting and marching—"

"They're not morons," Patterson answered mildly. "They're just too trusting. They believe what they're told, like the rest of us. The only trouble is, what *they're* told isn't true." He indicated one of the gigantic banners, a vast 3-D photograph that twisted and turned as it was carried forward. "Blame *him.* He's the one who thinks up the lies. He's the one who puts the pressure on the Directorate, fabricates the hate and violence—and has the funds to sell it."

The banner showed a stern-browed white-haired gentleman, clean-shaven and dignified. A scholarly man, heavy-set, in his late fifties. Kindly blue eyes, firm jawline, an impressive and respected dignitary. Under his handsome portrait was his personal slogan, coined in a moment of inspiration.

ONLY TRAITORS COMPROMISE!

"That's Francis Gannet," V-Stephens said to LeMarr. "Fine figure of a man, isn't he?" He corrected himself. "Of an *Earth*man."

"He looks so genteel," Evelyn Cutter protested. "How could an intelligent-looking man like that have anything to do with this?"

V-Stephens bellowed with taut laughter. "His nice clean white hands are a lot filthier than any of those plumbers and carpenters marching out there."

"But why—"

"Gannet and his group own Transplan Industries, a holding company that controls most of the export-import business of the inner worlds. If my people and the Martian people are given their independence they'll start cutting into his trade. They'll be competition. But as it stands, they're bottled up in a cold-decked mercantile system."

The demonstrators had reached an intersection. A group of them dropped their banners and sprouted clubs and rocks. They shouted orders, waved the others on, and then headed grimly for a small modern building that blinked the word COLOR-AD in neon lights.

"Oh, God," Patterson said. "They're after the Color-Ad office." He grabbed at the door handle, but V-Stephens stopped him.

"You can't do anything," V-Stephens said. "Anyhow, nobody's in there. They usually get advance warning."

The rioters smashed the plate-plastic windows and poured into the swank little store. The police sauntered over, arms folded, enjoying the spectacle. From the ruined front office, smashed furniture was tossed out onto the sidewalk. Files, desks, chairs, vidscreens, ashtrays, even gay posters of happy life on the inner worlds. Acrid black fingers of smoke curled up as the store room was ignited by a hot-beam. Presently the rioters came streaming back out, satiated and happy.

Along the sidewalks, people watched with a variety of emotions. Some showed delight. Some a vague curiosity. But most showed fear and dismay. They backed hur-

riedly away as the wild-faced rioters pushed brutally past them, loaded down with stolen goods.

"See?" Patterson said. "This stuff is done by a few thousand, a Committee Gannet's financing. Those in front are employees of Gannet's factories, goon squads on extra-curricular duty. They try to sound like Mankind, but they aren't. They're a noisy minority, a small bunch of hard-working fanatics."

The demonstration was breaking up. The Color-Ad office was a dismal fire-gutted ruin; traffic had been stopped; most of downtown New York had seen the lurid slogans and heard the tramp of feet and shouted hate. People began drifting back into offices and shops, back to their daily routine.

And then the rioters saw the Venusian girl, crouched in the locked and bolted doorway.

PATTERSON gunned the car forward. Bucking and grinding savagely, it hurtled across the street and up on the sidewalk, toward the running knot of dark-faced hoods. The nose of the car caught the first wave of them and tossed them like leaves. The rest collided with the metal hull and tumbled down in a shapeless mass of struggling arms and legs.

The Venusian girl saw the car sliding toward her—and the Earthpeople in the front seat. For a moment she crouched in paralyzed terror. Then she turned and scurried off in panic, down the sidewalk and into the milling throng that filled up the street. The rioters regrouped themselves and in an instant were after her in full cry.

"Get the webfoot!"

"Webfoots back to their own planet!"

"Earth for Earthmen!"

And beneath the chanted slogans, the ugly undercurrent of unverbalized lust and hate.

Patterson backed the car up and onto the street. His fist clamped savagely over the horn, he gunned the car after the girl, abreast with the loping rioters and then past them. A rock crashed off the rear-view window and for an instant a hail of rubbish banged and clattered. Ahead, the crowd separated aimlessly, leaving an open path for the car and the rioters. No hand was lifted against the desperately running girl as she raced sobbing and panting between parked cars and groups of people. And nobody made a move to help her. Everybody watched dull-eyed and detached. Remote spectators viewing an event in which they had no part.

"I'll get her," V-Stephens said. "Pull up in front of her and I'll head her off."

Patterson passed the girl and jammed on the brakes. The girl doubled off the street like a terrified hare. V-Stephens was out of the car in a single bound. He sprinted after her as she darted mindlessly back toward the rioters. He swept her up and then plunged back to the car. LeMarr and Evelyn Cutter dragged the two of them in; and Patterson sent the car bucking ahead.

A moment later he turned a corner, snapped a police rope, and passed beyond the danger zone. The roar of people, the flap-flap of feet against the pavement, died

down behind them.

"It's all right," V-Stephens was saying gently and repeatedly to the girl. "We're friends. Look, I'm a webfoot, too."

The girl was huddled against the door of the car, green eyes wide with terror, thin face convulsed, knees pulled up against her stomach. She was perhaps seventeen years old. Her webbed fingers scrabbled aimlessly with the torn collar of her blouse. One shoe was missing. Her face was scratched, dark hair dishevelled. From her trembling mouth only vague sounds came.

LeMarr took her pulse. "Her heart's about to pop out of her," he muttered. From his coat he took an emergency capsule and shot a narcotic into the girl's trembling forearm. "That'll relax her. She's not harmed—they didn't get to her."

"It's all right," V-Stephens murmured. "We're doctors from the City Hospital, all but Miss Cutter who manages the files and records. Dr. LeMarr is a neurologist, Dr. Patterson is a cancer specialist, I'm a surgeon—see my hand?" He traced the girl's forehead with his surgeon's hand. "And I'm a Venusian, like you. We'll take you to the hospital and keep you there for awhile."

"Did you see them?" LeMarr sputtered. "Nobody lifted a finger to help her. They just stood there."

"They were afraid," Patterson said. "They want to avoid trouble."

"They can't," Evelyn Cutter said flatly. "Nobody can avoid this kind of trouble. They can't keep standing on the sidelines watching. This isn't a football game."

"What's going to happen?" the girl quavered.

"You better get off Earth," V-Stephens said gently. "No Venusian is safe here. Get back to your own planet and stay there until this thing dies down."

"Will it?" the girl gasped.

"Eventually." V-Stephens reached down and passed her Evelyn's cigarette. "It can't go on like this. We have to be free."

"Take it easy," Evelyn said in a dangerous voice. Her eyes faded to hostile coals. "I thought you were above all this."

V-Stephens dark green face flushed. "You think I can stand idly by while my people are killed and insulted, and our interests passed over, ignored so paste-faces like Gannet can get rich on blood squeezed from—"

"Paste-face," LeMarr echoed wonderingly. "What's that mean, Vachel?"

"That's their word for Earthmen," Patterson answered. "Can it, V-Stephens. As far as we're concerned it's not your people and our people. We're all the same race. Your ancestors were Earthmen who settled Venus back in the late twentieth century."

"The changes are only minor adaptive alterations," LeMarr assured V-Stephens. "We can still interbreed—that proves we're the same race."

"We can," Evelyn Cutter said thinly. "But who wants to marry a webfoot or a crow?"

Nobody said anything for awhile. The air in the car was tense with hostility as Patterson sped toward the hospital. The Venusian girl sat

crouched, smoking silently, her terrified eyes on the vibrating floor.

Patterson slowed down at the check-point and showed his i.d. tab. The hospital guard signalled the car ahead and he picked up speed. As he put his tab away his fingers touched something clipped to the inside of his pocket. Sudden memory returned.

"Here's something to take your mind off your troubles," he said to V-Stephens. He tossed the sealed tube back to the webfoot. "Military fired it back this morning. Clerical error. When you're through with it hand it over to Evelyn. It's supposed to go to her, but I got interested."

V-Stephens slit open the tube and spilled out the contents. It was a routine application for admission to a Government hospital, stamped with the number of a war-veteran. Old sweat-grimed tapes, papers torn and mutilated throughout the years. Greasy bits of metal foil that had been folded and refolded, stuffed in a shirt pocket, carried next to some filthy, hair-matted chest. "Is this important?" V-Stephens asked impatiently. "Do we have to worry over clerical trifles?"

Patterson halted the car in the hospital parking lot and turned off the motor. "Look at the number on the application," he said, as he pushed open the car door. "When you have time to examine it you'll find something unusual. The applicant is carrying around an old veteran's i.d. card—with a number that hasn't been issued yet."

LeMarr, hopelessly baffled, looked from Evelyn Cutter to V-Stephens, but got no explanation.

THE OLD man's h-loop awoke him from a fitful slumber. "David Unger," the tinny female voice repeated. "You are wanted back at the hospital. It is requested that you return to the hospital immediately."

The old man grunted and pulled himself up with an effort. Grabbing his aluminum cane he hobbled away from his sweat-shiny bench, toward the escape ramp of the park. Just when he was getting to sleep, shutting out the too-bright sun and the shrill laughter of children and girls and young soldiers. . .

At the edge of the park two shapes crept furtively into the bushes. David Unger halted and stood in disbelief, as the shapes glided past him along the path.

His voice surprised him. He was screaming at the top of his lungs, shrieks of rage and revulsion that echoed through the park, among the quiet trees and lawns. *"Webfoots!"* he wailed. He began to run clumsily after them. "Webfoots and crows! Help! Somebody help!"

Waving his aluminum cane, he hobbled after the Martian and Venusian, panting wildly. People appeared, blank-faced with astonishment. A crowd formed, as the old man hurried after the terrified pair. Exhausted, he stumbled against a drinking fountain and half-fell, his cane sliding from his fingers. His shrunken face was livid; the burn-scar stood out sick and ugly against the mottled skin. His good eye was red with hate and fury. From his wasted lips saliva drooled. He waved his skinny claw-like hands futilely, as the two altereds crept into the grove of

cedars toward the far end of the park.

"Stop them!" David Unger slobbered. "Don't let them get away! What's the matter with you? You bunch of lily-white cowards. What kind of men are you?"

"Take it easy, Pop," a young soldier said good-naturedly. "They're not hurting anybody."

Unger retrieved his cane and whooshed it past the soldier's head. "You—*talker,*" he snapped. "What kind of a soldier are you?" A fit of coughing choked off his words; he bent double, struggling to breathe. "In my day," he managed to gasp, "we poured rocket fuel on them and strung them up. We mutilated them. We cut up the dirty webfoots and crows. We showed them."

A looming cop had stopped the pair of altereds. "Get going," he ordered ominously. "You things got no right here."

The two altereds scuttled past him. The cop leisurely raised his stick and cracked the Martian across the eyes. The brittle, thin-shelled head splintered, and the Martian careened on, blinded and in agony.

"That's more like it," David Unger gasped, in weak satisfaction.

"You evil dirty old man," a woman muttered at him, face white with horror. "It's people like you that make all this trouble."

"What are you?" Unger snapped. "A crow-lover?"

The crowd melted and broke. Unger, grasping his cane, stumbled toward the exit ramp, muttering curses and abuse, spitting violently into the bushes and shaking his head.

He arrived at the hospital grounds still trembling with rage and resentment. "What do you want?" he demanded, as he came up to the big receiving desk in the center of the main lobby. "I don't know what's going on around here. First you wake me out of the first real sleep I've had since I got here, and then what do I see but two webfoots walking around in broad daylight, sassy as—"

"Doctor Patterson wants you," the nurse said patiently. "Room 301." She nodded to a robot. "Take Mr. Unger down to 301."

The old man hobbled sullenly after the smoothly-gliding robot. "I thought all you tinmen were used up in the Europa battle of '88," he complained. "It don't make sense, all these lily-white boys in uniforms. Everybody wandering around having a good time, laughing and diddling girls with nothing better to do than lie around on the grass naked. Something's the matter. Something must be—"

"In here, sir," the robot said, and the door of 301 slid away.

Vachel Patterson rose slightly as the old man entered and stood fuming and gripping his aluminum cane in front of the work-desk. It was the first time he had seen David Unger face to face. Each of them sized the other up intently; the thin hawk-faced old soldier and the well-dressed young doctor, black thinning hair, horn-rimmed glasses and good-natured face. Beside his desk Evelyn Cutter stood watching and listening impassively, a cigarette between her red lips, blonde hair swept back.

"I'm Doctor Patterson, and this is Miss Cutter." Patterson toyed with the dog-eared, eroded tape

strewn across his desk. "Sit down, Mr. Unger. I want to ask you a couple of questions. Some uncertainty has come up regarding one of your papers. A routine error, probably, but they've come back to me."

Unger seated himself warily. "Questions and red tape. I've been here a week and every day it's something. Maybe I should have just laid there in the street and died."

"You've been here eight days, according to this."

"I suppose so. If it says so there, must be true." The old man's thin sarcasm boiled out viciously. "Couldn't put it down if it wasn't true."

"You were admitted as a war veteran. All costs of care and maintenance are covered by the Directorate."

Unger bristled. "What's wrong with that? I earned a little care." He leaned toward Patterson and jabbed a crabbed finger at him. "I was in the Service when I was sixteen. Fought and worked for Earth all my life. Would be there yet, if I hadn't been half killed by that dirty mop-up attack of theirs. Lucky to be alive at all." He self-consciously rubbed the livid ruin of his face. "Looks like you weren't even in it. Didn't know there *was* any place got by."

Patterson and Evelyn Cutter looked at each other. "How old are you?" Evelyn asked suddenly.

"Don't it say?" Unger muttered furiously. "Eighty-nine."

"And the year of your birth?"

"2154. Can't you figure that?"

Patterson made a faint notation on the metal foil reports. "And your unit?"

At that, Unger broke loose. "The Ba-3, if maybe you've heard of it. Although the way things are around here, I wonder if you know there was ever a war."

"The Ba-3," Patterson repeated. "And you served with them how long?"

"Fifty years. Then I retired. The first time, I mean. I was sixty-six years old. Usual age. Got my pension and bit of land."

"And they called you back?"

"Of course they called me back! Don't you remember how the Ba-3 went back into the line, all us old guys, and damn near stopped them, that last time? You must have been just a kid, but everybody knows what we did." Unger fumbled out his Crystal Disc first class and slammed it on the desk. "I got *that*. All us survivors did. All ten of us, out of thirty thousand." He gathered the medal up with shaking fingers. "I was hurt bad. You see my face. Burned, when Nathan West's battleship blew up. I was in the military hospital for a couple years. That was when they cracked Earth wide open." The ancient hands clenched into futile fists. "We had to sit there, watching them turn Earth into a smoking ruin. Nothing but slag and ash, miles of death. No towns, no cities. We sat there, while their C-missiles whizzed by. Finally they got finished—and got us on Luna, too."

Evelyn Cutter tried to speak, but no words came. At his work-desk Patterson's face had turned chalk-white. "Continue," he managed to mutter. "Go on talking."

"We hung on there, subsurface, down under the Copernicus crater,

while they slammed their C-missiles into us. We held out maybe five years. Then they started landing. Me and those still left took off in high-speed attack torpedoes. Set up pirate bases among the outer planets." Unger twitched restlessly. "I hate to talk about that part. Defeat, the end of everything. Why do you ask me? I helped build 3-4-9-5, the best artibase of the lot. Between Uranus and Neptune. Then I retired again. Until the dirty rats slid in and *leisurely* blew it to bits. Fifty thousand men, women, kids. The whole colony."

"You escaped?" Evelyn Cutter whispered.

"Of course I escaped! I was on patrol. I got one of those webfoot ships. Shot it down and watched them die. It made me feel a little better. I moved over to 3-6-7-7 for a few years. Until it was attacked. That was early this month. I was fighting with my back to the wall." The dirty yellow teeth glinted in agony. "No place to escape to, that time. None that I knew of." The red-rimmed eye surveyed the luxurious office. "Didn't know about this. You people sure done a good job fixing up your artibase. Looks almost like I remember the real Earth. A little too fast and bright; not so peaceful as Earth really was. But you even got the smell of the air the same."

There was silence.

"Then you came here after—that colony was destroyed?" Patterson asked hoarsely.

"I guess." Unger shrugged wearily. "Last I remember was the bubble shattering and the air and heat and grav leaking out. Crow and webfoot ships landing everywhere. Men dying around me. I was knocked out by the concussion. The next thing I knew I was lying out in the street here, and some people were getting me to my feet. A tinman and one of your doctors took me here."

Patterson let out a deep shuddering breath. "I see." His fingers plucked aimlessly at the eroded, sweat-grimed i.d. papers. "Well, that explains this irregularity."

"Ain't it all there? Is something missing?"

"All your papers are here. Your tube was hanging around your wrist when they brought you in."

"Naturally." Unger's bird-like chest swelled with pride. "I learned that when I was sixteen. Even when you're dead you have to have that tube with you. Important to keep the records straight."

"The records are straight," Patterson admitted thickly. "You can go back to your room. Or the park. Anywhere." He waved and the robot calmly escorted the withered old man from the office and out into the hall.

As the door slid shut Evelyn Cutter began swearing slowly and monotonously. She crushed out her cigarette with her sharp heel and paced wildly back and forth. "Good God what have we got ourselves into?"

Patterson snatched up the intervid, dialed outside, and said to the supraplan monitor, "Get me military headquarters. Right away."

"At Luna, sir?"

"That's right," Patterson said. "At the main base on Luna."

On the wall of the office, past the taut, pacing figure of Evelyn Cutter, the calendar read August 4,

2169. If David Unger was born in 2154 he would be a boy of fifteen. And he *had* been born in 2154. It said so on his battered, yellowed, sweat-stained cards. On the i.d. papers carried through a war that hadn't yet happened.

HE'S A VETERAN, all right," Patterson said to V-Stephens. "Of a war that won't begin for another month. No wonder his application was turned back by the IBM machines."

V-Stephens licked his dark green lips. "This war will be between Earth and the two colony planets. And Earth will lose?"

"Unger fought through the whole war. He saw it from the start to finish—to the total destruction of Earth." Patterson paced over to the window and gazed out. "Earth lost the war and the race of Earthmen was wiped out."

From the window of V-Stephens' office, Patterson could see the city spread out. Miles of buildings, white and gleaming in the late-afternoon sun. Eleven million people. A gigantic center of commerce and industry, the economic hub of the system. And beyond it, a world of cities and farms and highways, three billion men and women. A thriving, healthy planet, the mother world from which the altereds had originally sprung, the ambitious settlers of Venus and Mars. Endless cargo carriers lumbered between Earth and the colonies, weighed down with minerals and ores and produce. And already, survey teams were poking around the outer planets, laying claim in the Directorate's name to new sources of raw-materials.

"He saw all this go up in radioactive dust," Patterson said. "He saw the final attack on Earth that broke our defenses. And then they wiped out the Lunar base."

"You say some brass hats are on their way here from Luna?"

"I gave them enough of the story to start them moving. It usually takes weeks to stir up those fellows."

"I'd like to see this Unger," V-Stephens said thoughtfully. "Is there some way I can—"

"You've seen him. You revived him, remember? When he was originally found and brought in."

"Oh," V-Stephens said softly. "That filthy old man?" His dark eyes flickered. "So that's Unger. . . The veteran of the war we're going to fight."

"The war you're going to win. The war Earth is going to lose." Patterson abruptly left the window. "Unger thinks this is an artificial satellite someplace between Uranus and Neptune. A reconstruction of a small part of New York—a few thousand people and machines under a plastic dome. He has no conception of what's actually happened to him. Somehow, he must have been hurled back along his time-track."

"I suppose the release of energy . . . And maybe his frantic desire to escape. But even so, the whole thing is fantastic. It has a sort of —" V-Stephens groped for the word, "a sort of mystic ring to it. What the hell is this, a visitation? A prophet from heaven?"

The door opened and V-Rafia slid in. "Oh," she said, as she saw Patterson. "I didn't know—"

"That's all right." V-Stephens nodded her inside his office. "You remember Patterson. He was with us in the car when we picked you up."

V-Rafia looked much better than she had a few hours before. Her face was no longer scratched, her hair was back in place, and she had changed to a crisp gray sweater and skirt. Her green skin sparkled as she moved over beside V-Stephens, still nervous and apprehensive. "I'm staying here," she said defensively to Patterson. "I can't go back out there, not for awhile." She darted a quick glance of appeal at V-Stephens.

"She has no family on Earth," V-Stephens explained. "She came here as a Class-2 biochemist. She's been working over at a Westinghouse lab outside Chicago. She came to New York on a shopping trip, which was a mistake."

"Can't she join the V-colony at Denver?" Patterson asked.

V-Stephens flushed. "You don't want another webfoot around here?"

"What can she do? We're not an embattled fortress. There's no reason why we can't shoot her to Denver in a fast freight rocket. Nobody'll interfere with that."

"We can discuss it later," V-Stephens said irritably. "We've got more important things to talk about. You've made a check of Unger's papers? You're certain they're not forgeries? I suppose it's possible this is on the level, but we have to be certain."

"This has to be kept quiet," Patterson said urgently, with a glance at V-Rafia. "Nobody on the outside should be brought in."

"You mean me?" V-Rafia asked hesitantly. "I guess I better leave."

"Don't leave," V-Stephens said, grabbing hold of her arm roughly. "Patterson, you can't keep this quiet. Unger's probably told it to fifty people; he sits out there on his park bench all day, buttonholing everybody who passes."

"What is this?" V-Rafia asked curiously.

"Nothing important," Patterson said warningly.

"Nothing important?" V-Stephens echoed. "Just a little war. Programs for sale in advance." Across his face a spasm of emotion passed, excitement and yearning hunger pouring up from inside him. "Place your bets *now*. Don't take chances. Bet on a sure thing, sweetheart. After all, it's history. Isn't that right?" He turned toward Patterson, his expression demanding confirmation. "What do you say? I can't stop it—you can't stop it. Right?"

Patterson nodded slowly. "I guess you're right," he said unhappily. And swung with all his strength.

He caught V-Stephens slightly to one side, as the Venusian scrambled away. V-Stephens' cold-beam came out; he aimed with shaky fingers. Patterson kicked it from his hands and dragged him to his feet. "It was a mistake, John," he panted. "I shouldn't have showed you Unger's i.d. tube. I shouldn't have let you know."

"That's right," V-Stephens managed to whisper. His eyes were blank with sorrow as he focussed on Patterson. "Now I know. Now we both know. *You're going to lose the war.* Even if you lock Unger up

in a box and sink him to the center of the Earth it's too late. Color-Ad will know as soon as I'm out of here."

"They burned down the Color-Ad office in New York."

"Then I'll find the one in Chicago. Or Baltimore. I'll fly back to Venus, if I have to. I'm going to spread the good news. It'll be hard and long, but we'll win. And you can't do anything about it."

"I can kill you," Patterson said. His mind was racing frantically. It wasn't too late. If V-Stephens were contained, and David Unger turned over to the Military—

"I know what you're thinking," V-Stephens gasped. "If Earth doesn't fight, if you avoid war, you may still have a chance." His green lips twisted savagely. "You think we'd *let* you avoid war? Not now! Only traitors compromise, according to you. Now it's too late!"

"Only too late," Patterson said, "if you get out of here." His hand groped on the desk and found a steel paper weight. He drew it to him—and felt the smooth tip of the cold-beam in his ribs.

"I'm not sure how this thing works," V-Rafia said slowly, "but I guess there's only this one button to press."

"That's right," V-Stephens said, with relief. "But don't press it yet. I want to talk to him a few minutes more. Maybe he can be brought around to rationality." He pulled himself gratefully out of Patterson's grip and moved back a few paces, exploring his cut lip and broken front teeth. "You brought this on yourself, Vachel."

"This is insane," Patterson snapped, his eyes on the snout of the cold-beam as it wavered in V-Rafia's uncertain fingers. "You expect us to fight a war we know we're going to lose?"

"You won't have a choice." V-Stephens' eyes gleamed. "We'll make you fight. When we attack your cities you'll come back at us. It's—human nature."

The first blast of the cold-beam missed Patterson. He floundered to one side and grabbed for the girl's slim wrist. His fingers caught air, and then he was down, as the beam hissed again. V-Rafia retreated, eyes wide with fright and dismay, aiming blindly for his rising body. He leaped up, hands extended for the terrified girl. He saw her fingers twist, saw the snout of the tube darken as the field clicked on. And that was all.

From the kicked-open door, the blue-clad soldiers caught V-Rafia in a crossfire of death. A chill breath mushroomed in Patterson's face. He collapsed back, arms up frantically, as the frigid whisper glided past him.

V-Rafia's trembling body danced briefly, as the cloud of absolute cold glowed around her. Then abruptly she halted as rigid as if the tape-track of her life had stopped in the projector. All color drained from her body. The bizarre imitation of a still-standing human figure stood silently, one arm raised, caught in the act of futile defense.

Then the frozen pillar burst. The expanded cells ruptured in a shower of crystalline particles that were hurled sickeningly into every part of the office.

Francis Gannet moved cautiously in behind the troops, red-faced and perspiring. "You're Patter-

son?" he demanded. He held out his heavy hand, but Patterson didn't take it. "The Military people notified me as a matter of course. Where's this old man?"

"Somewhere around," Patterson muttered. "Under guard." He turned toward V-Stephens and briefly their eyes met. "You see?" he said huskily. "This is what happens. Is this what you really want?"

"Come on, Mr. Patterson," Francis Gannet boomed impatiently. "I don't have much time to waste. From your description this sounds like something important."

"It is," V-Stephens answered calmly. He wiped at the trickle of mouth-blood with his pocket handkerchief. "It's worth the trip from Luna. Take my word for it—*I know.*"

THE MAN who sat on Gannet's right was a lieutenant. He gazed in mute awe at the vidscreen. His young, handsome blond face was alive with amazement as from the bank of gray haze a huge battleship lumbered, one reactor smashed, its forward turrets crumpled, hull twisted open.

"Good God," Lieutenant Nathan West said faintly. "That's the *Wind Giant.* The biggest battleship we have. Look at it—it's out of commission. Totally disabled."

"That will be your ship," Patterson said. "You'll be Commander of it in '87 when it's destroyed by the combined Venusian and Martian fleets. David Unger will be serving under you. You'll be killed, but Unger will escape. The few survivors of your ship will watch from Luna as Earth is systematically demolished by C-missiles from Venus and Mars."

On the screen, the figures leaped and swirled like fish in the bottom of a dirt-saturated tank. A violent maelstrom surged in the center, a vortex of energy that lashed the ships in vast spasms of motion. The silver Earth ships hesitated, then broke. Flashing black Mars battleships swept through the wide breach—and the Earth flank was turned simultaneously by the waiting Venusians. Together, they caught the remnants of the Earth ships in a steel pincers and crunched them out of existence. Brief puffs of light, as the ships winked out of being. In the distance, the solemn blue and green orb that was Earth slowly and majestically revolved.

Already, it showed ugly pocks. Bomb craters from the C-missiles that had penetrated the defense network.

LeMarr snapped off the projector and the screen died. "That ends that brain-sequence. All we can get are visual fragments like this, brief instants that left strong impressions on him. We can't get continuity. The next one takes up years later, on one of the artificial satellites."

The lights came on, and the group of spectators moved stiffly to their feet. Gannet's face was a sickly putty-gray. "Doctor LeMarr, I want to see that shot again. That one of Earth." He gestured helplessly. "You know which one I mean."

The lights dimmed and again the screen came to life. This time it showed only Earth, a receding orb that fell behind as the high-

velocity torpedo on which David Unger rode hurtled toward outer space. Unger had placed himself so his dead world would be visible to the last.

Earth was a ruin. Involuntarily, a gasp rose from the group of watching officers. Nothing lived. Nothing moved. Only dead clouds of radioactive ash billowed aimlessly over the crater-pocked surface. What had been a living planet of three billion people was a charred cinder of ash. Nothing remained but heaps of debris, dispersed and blown dismally across vacant seas by the howling, ceaseless wind.

"I suppose some kind of vegetable life will take over," Evelyn Cutter said harshly, as the screen faded and the overhead lights returned. She shuddered violently and turned away.

"Weeds, maybe," LeMarr said. "Dark dry weeds poking up through the slag. Maybe some insects, later on. Bacteria, of course. I suppose in time bacterial action will transform the ash into usable soil. And it'll rain for a billion years."

"Let's face it," Gannet said. "The webfoots and crows will resettle it. They'll be living here on Earth after we're all dead."

"Sleeping in our beds?" LeMarr inquired mildly. "Using our bathrooms and sitting in the public waiting rooms and transports?"

"I don't understand you," Gannet answered impatiently. He waved Patterson over. "You're sure nobody knows but we here in this room?"

"V-Stephens knows," Patterson said. "But he's locked up in the psychotic ward. V-Rafia knew. She's dead."

Lieutenant West came over to Patterson. "Could we interview him?"

"Yes, where's Unger?" Gannet demanded. "My staff is eager to meet him face to face."

"You have all the essential facts," Patterson answered. "You know how the war is going to come out. You know what's going to happen to Earth."

"What do you suggest?" Gannet asked warily.

"Avoid the war."

Gannet shrugged his plump well-fed body. "After all, you can't change history. And this is future history. We have no choice but to go ahead and fight."

"At least we'll get our share of them," Evelyn Cutter said icily.

"What are you talking about?" LeMarr stuttered excitedly. "You work in a hospital and you talk like that?"

The woman's eyes blazed. "You saw what they did to Earth. You saw them cut us to ribbons."

"We have to stand above this," LeMarr protested. "If we allow ourselves to get dragged into this hate and violence—" He appealed to Patterson. "Why is V-Stephens locked up? He's no crazier than she is."

"True," Patterson agreed. "But she's crazy on *our* side. We don't lock up that kind of lunatic."

LeMarr moved away from him. "Are you going out and fight, too? Alongside Gannet and his soldiers?"

"I want to avoid the war," Patterson said dully.

"Can it be done?" Gannet demanded. An avid glow winked

briefly behind his pale, blue eyes and then faded out.

"Maybe it can be done. Why not? Unger coming back here adds a new element."

"If the future can be changed," Gannet said slowly, "then maybe we have a choice of various possibilities. If there're two possible futures there may be an infinite number. Each branching off at a different point." A granite mask slid over his face. "We can use Unger's knowledge of the battles."

"Let me talk to him," Lieutenant West interrupted excitedly. "Maybe we can get a clear idea of the webfoot battle-strategy. He's probably gone over the battles in his mind a thousand times."

"He'd recognize you," Gannet said. "After all, he served under your command."

Patterson was deep in thought. "I don't think so," he said to West. "You're a lot older than David Unger."

West blinked. "What do you mean? He's a broken-down old man and I'm still in my twenties."

"David Unger is fifteen," Patterson answered. "At this point you're almost twice his age. You're already a commissioned officer on the Lunar policy-level staff. Unger isn't even in the Military Service. He'll volunteer when war breaks out, as a buck private without experience or training. When you're an old man commanding the *Wind Giant,* David Unger will be a middle-aged nonentity working one of the gun turrets, a name you won't even know."

"Then Unger is already alive?" Gannet said, puzzled.

"Unger is someplace around, waiting to step onto the stage." Patterson filed the thought away for future study; it might have valuable possibilities. "I don't think he'll recognize you, West. He may never even have seen you. The *Wing Giant* is a big ship."

West quickly agreed. "Put a bug-system on me, Gannet. So the command staff can have the aud and vid images of what Unger says."

IN THE bright mid-morning sunlight, David Unger sat moodily on his park bench, gnarled fingers gripping his aluminum cane, gazing dully at the passers-by.

To his right a robot gardener worked over the same patch of grass again and again, its metallic eye-lenses intently fastened on the wizened, hunched-over figure of the old man. Down the gravel path a group of loitering men sent random comments to the various monitors scattered through the park, keeping the relay system open. A bare-bosomed young woman sunbathing by the pool nodded faintly to a pair of soldiers pacing around the park, within constant sight of David Unger.

That morning there were a hundred people in the park. All were integrated elements of the screen surrounding the half-dozing, resentful old man.

"All right," Patterson said. His car was parked at the edge of the plot of green trees and lawns. "Remember not to overexcite him. V-Stephens revived him originally. If something goes wrong with his heart we can't get V-Stephens to pump him back."

The blond young lieutenant

nodded, straightened his immaculate blue tunic and slid onto the sidewalk. He pushed his helmet back and briskly strode down the gravel path, toward the center of the park. As he approached, the lounging figures moved imperceptibly. One by one they took up positions on the lawns, on the benches, in groups here and there around the pool.

Lieutenant West stopped at a drinking fountain and allowed the robot water-brain to find his mouth with a jet of ice-cold spray. He wandered slowly away and stood for a moment, arms loose at his sides, vacantly watching a young woman as she removed her clothes and stretched out languidly on a multi-colored blanket. Her eyes shut, red lips parted, the woman relaxed with a grateful sigh.

"Let him speak to you first," she said faintly, to the lieutenant standing a few feet from her, one black boot on the edge of a bench. "Don't start the conversation."

Lieutenant West watched her a moment longer and then continued along the path. A passing heavy-set man said swiftly in his ear, "Not so fast. Take your time and don't appear to hurry."

"You want to give the impression you have all day," a hatchet-faced nurse grated, as she passed him wheeling a baby carriage.

Lieutenant West slowed almost to a halt. He aimlessly kicked a bit of gravel from the path into the wet bushes. Hands deep in his pockets he wandered over to the central pool and stood gazing absently into its depths. He lit a cigarette, then bought an ice cream bar from a passing robot salesman.

"Spill some on your tunic, sir," the robot's speaker instructed faintly. "Swear and start dabbing at it."

Lieutenant West let the ice cream melt in the warm summer sun. When some had dripped down his wrist onto his starched blue tunic he scowled, dug out his handkerchief, dipped it in the pool, and began clumsily to wipe the ice cream away.

On his bench, the scar-faced old man watched with his one good eye, gripping his aluminum cane and cackling happily. "Watch out," he wheezed. "Look out there!"

Lieutenant West glanced up in annoyance.

"You're dripping more," the old man cackled, and lay back in weak amusement, toothless mouth slack with pleasure.

Lieutenant West grinned goodnaturedly. "I guess so," he admitted. He dropped the melting half-eaten ice cream bar into a disposal slot and finished cleaning his tunic. "Sure is warm," he observed, wandering vaguely over.

"They do a good job," Unger agreed, nodding his bird-like head. He peered and craned his neck, trying to make out the insignia markings on the young soldier's shoulder. "You with the rock-eteers?"

"Demolition," Lieutenant West said. As of that morning his insignia had been changed. "Ba-3."

The old man shuddered. He hawked and spat feverishly into the nearby bushes. "That so?" He half-rose, excited and fearful, as the lieutenant started to move away. "Say, you know, I was in the Ba-3 years ago." He tried to make his voice sound calm and

casual. "Long before your time."

Amazement and disbelief slid over Lieutenant West's handsome blond face. "Don't kid me. Only a couple guys from the old group are still alive. You're pulling my leg."

"I was, I was," Unger wheezed, fumbling with trembling haste at his coat pocket. "Say, look at this. Stop a minute and I'll show you something." Reverent and awed, he held out his Crystal Disc. "See? You know what this is?"

Lieutenant West gazed down at the medal a long time. Real emotion welled up inside him; he didn't have to counterfeit it. "Can I examine it?" he asked finally.

Unger hesitated. "Sure," he said. "Take it."

Lieutenant West took the medal and held it for a long moment, weighing it and feeling its cold surface against his smooth skin. Finally he returned it. "You got that back in '87?"

"That's right," Unger said. "You remember?" He returned it to his pocket. "No, you weren't even alive, then. But you heard about it, haven't you?"

"Yes," West said. "I've heard about it many times."

"And you haven't forgotten? A lot of people forgot that, what we did there."

"I guess we took a beating that day," West said. He sat down slowly on the bench beside the old man. "That was a bad day for Earth."

"We lost," Unger agreed. "Only a few of us got out of there. I got to Luna. I saw Earth go, piece by piece, until there was nothing left. It broke my heart. I cried until I lay like a dead thing. We were all weeping, soldiers, workmen, standing there helpless. And then they turned their missiles on us."

The lieutenant licked his dry lips. "Your Commander didn't get out, did he?"

"Nathan West died on his ship," Unger said. "He was the finest Commander in the line. They didn't give him the *Wind Giant* for nothing." His ancient, withered features dimmed in recollection. "There'll never be another man like West. I saw him, once. Big stern-faced man, wide-shouldered. A giant himself. He was a great old man. Nobody could have done better."

West hesitated. "You think if somebody else had been in command—"

"No!" Unger shrieked. "Nobody could have done better! I've heard it said—I know what some of those fat-bottomed armchair strategists say. But they're wrong! Nobody could have won that battle. We didn't have a chance. We were outnumbered five to one—two huge fleets, one straight at our middle and the other waiting there like a hungry beast to chew us up and swallow us."

"I see," West said thickly. Reluctantly he continued, in an agony of turmoil, "These armchair men, what the hell is it they say? I never listen to the brass." He tried to grin but his face refused to respond. "I know they're always saying we could have won the battle and maybe even saved the *Wind Giant,* but I—"

"Look here," Unger said fervently, his sunken eye wild and glittering. With the point of his aluminum cane he began gouging harsh, violent ditches in the gravel by his

feet. "This line is our fleet. Remember how West had it drawn up? It was a mastermind arranged our fleet, that day. A genius. We held them off for twelve hours before they busted through. Nobody thought we'd have a chance of even doing that." Savagely, Unger gouged another line. "That's the crow fleet."

"I see," West muttered. He leaned over so his chest-lens would vid the rough lines in the gravel back to the scanning center in the mobile unit circling lazily overhead. And from there to main headquarters on Luna. "And the webfoot fleet?"

Unger glanced cagily at him, suddenly shy. "I'm not boring you, am I? I guess an old man likes to talk. Sometimes I bother people, trying to take up their time."

"Go on," West answered. He meant what he said. "Keep drawing—I'm watching."

EVELYN CUTTER paced restlessly around her softly-lit apartment, arms folded, red lips tight with anger. "I don't understand you!" She paused to lower the heavy drapes. "You were willing to kill V-Stephens a little while ago. Now you won't even help block LeMarr. You know LeMarr doesn't grasp what's happening. He dislikes Gannet and he prattles about the interplan community of scientists, our duty to all mankind and that sort of stuff. Can't you see if V-Stephens gets hold of him—"

"Maybe LeMarr is right," Patterson said. "I don't like Gannet either."

Evelyn exploded. "They'll destroy us! We can't fight a war with them—we don't have a chance." She halted in front of him, eyes blazing. "But they don't know that yet. We've got to neutralize LeMarr, at least for awhile. Every minute he's walking around free puts our world in jeopardy. Three billion lives depend on keeping this suppressed."

Patterson was brooding. "I suppose Gannet briefed you on the initial exploration West conducted today."

"No results so far. The old man knows every battle by heart, and we lost them all." She rubbed her forehead wearily. "I mean, we *will* lose them all." With numb fingers she gathered up the empty coffee cups. "Want some more coffee?"

Patterson didn't hear her; he was intent on his own thoughts. He crossed over to the window and stood gazing out until she returned with fresh coffee, hot and black and steaming.

"You didn't see Gannet kill that girl," Patterson said.

"What girl? That webfoot?" Evelyn stirred sugar and cream into her coffee. "She was going to kill you. V-Stephens would have lit out for Color-Ad and the war would begin." Impatiently, she pushed his coffee cup to him. "Anyhow, that was the girl we saved."

"I know," Patterson said. "That's why it bothers me." He took the coffee automatically and sipped without tasting. "What was the point of dragging her from the mob? Gannet's mob. We're doing Gannet's work. We're employees of Gannet."

"So?"

"You know what kind of game

he's playing!"

Evelyn shrugged. "I'm just being practical. I don't want Earth destroyed. Neither does Gannet—he wants to avoid the war."

"He wanted war a few days ago. When he expected to win."

Evelyn laughed sharply. "Of course! Who'd fight a war they knew they'd lose? That's irrational."

"Now Gannet will hold off the war," Patterson admitted slowly. "He'll let the colony planets have their independence. He'll recognize Color-Ad. He'll destroy David Unger and everybody who knows. He'll pose as a benevolent peacemaker."

"Of course. He's already making plans for a dramatic trip to Venus. A last-minute conference with Color-Ad officials, to prevent war. He'll put pressure on the Directorate to back down and let Mars and Venus sever. He'll be the idol of the system. But isn't that better than Earth destroyed and our race wiped out?"

"Now the big machine turns around and roars *against* war." Patterson's lips twisted ironically. "Peace and compromise instead of hate and destructive violence."

Evelyn perched on the arm of a chair and made rapid calculations. "How old was David Unger when he joined the Military?"

"Fifteen or sixteen."

"When a man joins the Service he gets his i.d. number, doesn't he?"

"That's right. So?"

"Maybe I'm wrong, but according to my figures—" She glanced up. "Unger should appear and claim his number, soon. That num-

ber will be coming up any day, according to how fast the enlistments pour in."

A strange expression crossed Patterson's face. "Unger is already alive. . . A fifteen year old kid. Unger the youth and Unger the senile old war veteran. Both alive at once."

Evelyn shuddered. "It's weird. Suppose they ran into each other? There'd be a lot of difference between them."

In Patterson's mind a picture of a bright-eyed youth of fifteen formed. Eager to get into the fight. Ready to leap in and kill webfoots and crows with idealistic enthusiasm. At this moment, Unger was moving inexorably toward the recruiting office. . . And the half-blind, cripped old relic of eighty-nine wretched years was creeping hesitantly from his hospital room to his park bench, hugging his aluminum cane, whispering in his raspy, pathetic voice to anyone who would listen.

"We'll have to keep our eyes open," Patterson said. "You better have somebody at Military notify you when that number comes up. When Unger appears to claim it."

Evelyn nodded. "It might be a good idea. Maybe we should request the Census Department to make a check for us. Maybe we can locate—"

She broke off. The door of the apartment had swung silently open. Edwin LeMarr stood gripping the knob, blinking red-eyed in the half-light. Breathing harshly, he came into the room. "Vachel, I have to talk to you."

"What is it?" Patterson demanded. "What's going on?"

LeMarr shot Evelyn a look of pure hate. "He found it. I knew he would. As soon as he can get it analyzed and the whole thing down on tape—"

"Gannet?" Cold fear knifed down Patterson's spine. "Gannet found what?"

"The moment of crisis. The old man's babbling about a five-ship convoy. Fuel for the crow warfleet. Unescorted and moving toward the battle line. Unger says our scouts will miss it." LeMarr's breathing was hoarse and frenzied. "He says if we knew in advance—" He pulled himself together with a violent effort. "Then we could destroy it."

"I see," Patterson said. "And throw the balance in Earth's favor."

"If West can plot the convoy route," LeMarr finished, "Earth will win the war. That means Gannet will fight—as soon as he gets the exact information."

V-STEPHENS sat crouched on the single-piece bench that served as chair and table and bed for the psychotic ward. A cigarette dangled between his dark green lips. The cube-like room was ascetic, barren. The walls glittered dully. From time to time V-Stephens examined his wristwatch and then turned his attention back to the object crawling up and down the sealed edges of the entrance-lock.

The object moved slowly and cautiously. It had been exploring the lock for twenty-nine hours straight; it had traced down the power leads that kept the heavy

plate fused in place. It had located the terminals at which the leads joined the magnetic rind of the door. During the last hour it had cut its way through the rexeroid surface to within an inch of the terminals. The crawling, exploring object was V-Stephens' surgeon-hand, a self-contained robot of precision quality usually joined to his right wrist.

It wasn't joined there now. He had detached it and sent it up the face of the cube to find a way out. The metal fingers clung precariously to the smooth dull surface, as the cutting-thumb laboriously dug its way in. It was a big job for the surgeon-hand; after this it wouldn't be of much use at the operating table. But V-Stephens could easily get another—they were for sale at any medical supply house on Venus.

The forefinger of the surgeon-hand reached the anode terminal and paused questioningly. All four fingers rose erect and waved like insect antennae. One by one they fitted themselves into the cut slot and probed for the nearby cathode lead.

Abruptly there was a blinding flash. A white acrid cloud billowed out, and then came a sharp *pop*. The entrance-lock remained motionless as the hand dropped to the floor, its work done. V-Stephens put out his cigarette, got leisurely to his feet, and crossed the cube to collect it.

With the hand in place and acting as part of his own neuromuscular system again, V-Stephens gingerly grasped the lock by its perimeter and after a moment pulled inward. The lock came without resistance and he found himself facing a deserted corridor. There was no sound or motion. No guards. No check-system on the psych patients. V-Stephens loped quickly ahead, around a turn, and through a series of connecting passages.

In a moment he was at a wide view-window, overlooking the street, the surrounding buildings, and the hospital grounds.

He assembled his wristwatch, cigarette lighter, fountain pen, keys and coins. From them his agile flesh and metal fingers rapidly formed an intricate gestalt of wiring and plates. He snapped off the cutting-thumb and screwed a heat-element in its place. In a brief flurry he had fused the mechanism to the underside of the window ledge, invisible from the hall, too far from ground level to be noticed.

He was starting back down the corridor when a sound stopped him rigid. Voices, a routine hospital guard and somebody else. A familiar somebody else.

He raced back to the psych ward and into his sealed cube. The magnetic lock fitted reluctantly in place; the heat generated by the short had sprung its clamps. He got it shut as footsteps halted outside. The magnetic field of the lock was dead, but of course the visitor didn't know that. V-Stephens listened with amusement as the visitor carefully negated the supposed magnetic field and then pushed the lock open.

"Come in," V-Stephens said.

Doctor LeMarr entered, briefcase in one hand, cold-beam in the other. "Come along with me. I

have everything arranged. Money, fake identification, passport, tickets and clearance. You'll go as a web-foot commercial agent. By the time Gannet finds out you'll be past the Military monitor and out of Earth jurisdiction."

V-Stephens was astounded. "But—"

"Hurry up!" LeMarr waved him into the corridor with his cold-beam. "As a staff member of the hospital I have authority over psych prisoners. Technically, you're listed as a mental patient. As far as I'm concerned you're no more crazy than the rest of them. If not less. That's why I'm here."

V-Stephens eyed him doubtfully. "You sure you know what you're doing?" He followed LeMarr down the corridor, past the blank-faced guard and into the elevator. "They'll destroy you as a traitor, if they catch you. That guard saw you—how are you going to keep this quiet?"

"I don't expect to keep this quiet. Gannet is here, you know. He and his staff have been working over the old man."

"Why are you telling me this?" The two of them strode down the descent ramp to the subsurface garage. An attendant rolled out LeMarr's car and they climbed into it, LeMarr behind the wheel. "You know why I was thrown in the psych-cube in the first place."

"Take this." LeMarr tossed V-Stephens the cold-beam and steered up the tunnel to the surface, into the bright mid-day New York traffic. "You were going to contact Color-Ad and inform them Earth will absolutely lose the war." He spun the car from the main-stream of traffic and onto a side lane, toward the interplan space-field. "Tell them to stop working for compromise and strike hard—immediately. Full scale war. Right?"

"Right," V-Stephens said. "After all, if we're certain to win—"

"You're not certain."

V-Stephens raised a green eyebrow. "Oh? I thought Unger was a veteran of total defeat."

"Gannet is going to change the course of the war. He's found a critical point. As soon as he gets the exact information he'll pressure the Directorate into an all-out attack on Venus and Mars. War can't be avoided, not now." LeMarr slammed his car to a halt at the edge of the interplan field. "If there has to be war at least nobody's going to be taken by a sneak attack. You can tell your Colonial Organization and Administration our warfleet is on its way. Tell them to get ready. Tell them—"

LeMarr's voice trailed off. Like an unwound toy he sagged against the seat, slid silently down, and lay quietly with his head against the steering wheel. His glasses dropped from his nose onto the floor and after a moment V-Stephens replaced them. "I'm sorry," he said softly. "You meant well, but you sure fouled everything up."

He briefly examined the surface of LeMarr's skull. The impulse from the cold-beam had not penetrated into brain tissue; LeMarr would regain consciousness in a few hours with nothing worse than a severe headache. V-Stephens pocketed the cold-beam, grabbed up the briefcase, and pushed the limp body of LeMarr away from

the wheel. A moment later he was turning on the motor and backing the car around.

As he sped back to the hospital he examined his watch. It wasn't too late. He leaned forward and dropped a quarter in the pay vidphone mounted on the dashboard. After a mechanical dialing process the Color-Ad receptionist flickered into view.

"This is V-Stephens," he said. "Something went wrong. I was taken out of the hospital building. I'm heading back there now. I can make it in time, I think."

"Is the vibrator-pack assembled?"

"Assembled, yes. But not with me. I had already fused it into polarization with the magnetic flux. It's ready to go—if I can get back there and at it."

"There's a hitch at this end," the green-skinned girl said. "Is this a closed circuit?"

"It's open," V-Stephens admitted. "But it's public and probably random. They couldn't very well have a bug on it." He checked the power meter on the guarantee seal fastened to the unit. "It shows no drain. Go ahead."

"The ship won't be able to pick you up in the city."

"Hell," V-Stephens said.

"You'll have to get out of New York on your own power; we can't help you there. Mobs destroyed our New York port facilities. You'll have to go by surface car to Denver. That's the nearest place the ship can land. That's our last protected spot on Earth."

V-Stephens groaned. "Just my luck. You know what'll happen if they catch me?"

The girl smiled faintly. "All webfoots look alike to Earthmen. They'll be stringing us up indiscriminately. We're in this together. Good luck; we'll be waiting for you."

V-Stephens angrily broke the circuit and slowed the car. He parked in a public lot on a dingy side street and got quickly out. He was at the edge of the green expanse of park. Beyond it, the hospital buildings rose. Gripping the briefcase tightly he ran toward the main entrance.

DAVID UNGER wiped his mouth on his sleeve, then lay back weakly against his chair. "I don't know," he repeated, his voice faint and dry. "I told you I don't remember any more. It was so long ago."

Gannet signalled, and the officers moved away from the old man. "It's coming," he said wearily. He mopped his perspiring forehead. "Slowly and surely. We should have what we want inside another half hour."

One side of the therapy house had been turned into a Military table-map. Counters had been laid out across the surface to represent units of the webfoot and crow fleets. White luminous chips represented Earth ships lined up against them in a tight ring around the third planet.

"It's someplace near here," Lieutenant West said to Patterson. Red-eyed, stubble-chinned, hands shaking with fatigue and tension, he indicated a section of the map. "Unger remembers hearing officers talking about this convoy. The

convoy took off from a supply base on Ganymede. It disappeared on some kind of deliberate random course." His hand swept the area. "At the time, nobody on Earth paid any attention to it. Later, they realized what they'd lost. Some military expert charted the thing in retrospect and it was taped and passed around. Officers got together and analyzed the incident. Unger *thinks* the convoy route took it close to Europa. But maybe it was Callisto."

"That's not good enough," Gannet snapped. "So far we don't have any more route data than Earth tacticians had at the time. We need to add exact knowledge, material released after the event."

David Unger fumbled with a glass of water. "Thanks," he muttered gratefully, as one of the young officers handed it to him. "I sure wish I could help you fellows out better," he said plaintively. "I'm trying to remember. But I don't seem able to think clear, like I used to." His wizened face twisted with futile concentration. "You know, it seems to me that convoy was stopped near Mars by some kind of meteor swarm."

Gannet moved forward. "Go on."

Unger appealed to him pathetically. "I want to help you all I can, mister. Most people go to write a book about a war, they just scan stuff from other books." There was pitiful gratitude on the eroded face. "I guess you'll mention my name in your book, someplace."

So that was it. Patterson turned away, sickened. Gannet was posing as a military historian. Writing a book on the lost war, gleaning memories from the old man for his "treatise".

"Sure," Gannet said expansively. "Your name'll be on the first page. Maybe we could even get in a picture of you."

"I know all about the war," Unger muttered. "Give me time and I'll have it straight. *Just give me time.* I'm trying as best I can."

The old man was deteriorating rapidly. His wrinkled face was an unhealthy gray. Like drying putty, his flesh clung to his brittle, yellowed bones. His breath rattled in his throat. It was obvious to everyone present that David Unger was going to die—and soon.

"If he croaks before he remembers," Gannet said softly to Lieutenant West, "I'll—"

"What's that?" Unger asked sharply. His one good eye was suddenly keen and wary. "I can't hear so good."

"Just fill in the missing elements," Gannet said wearily. He jerked his head. "Get him over to the map where he can see the setup. Maybe that'll help."

The old man was yanked to his feet and propelled to the table. Technicians and brass hats closed in around him and the dim-eyed stumbling figure was lost from sight.

"He won't last long," Patterson said savagely. "If you don't let him rest his heart's going to give out."

"We must have the information," Gannet retorted. He eyed Patterson. "Where's the other doctor? LeMarr, I think he's called."

Patterson glanced briefly around. "I don't see him. He probably couldn't stand it."

"LeMarr never came," Gannet

said, without emotion. "I wonder if we should have somebody round him up." He indicated Evelyn Cutter, who had just arrived, white-faced, her black eyes wide, breathing quickly. "She suggests—"

"It doesn't matter now," Evelyn said frigidly. She shot a quick, urgent glance at Patterson. "I want nothing to do with you and your war."

Gannet shrugged. "I'll send out a routine net, in any case. Just to be on the safe side." He moved off, leaving Evelyn and Patterson standing alone together.

"Listen to me," Evelyn said harshly, her lips hot and close to his ear. *"Unger's number has come up."*

They looked at each other.

"When did they notify you?" Patterson demanded.

"I was on my way here. I did what you said—I fixed it up with a clerk at Military."

"How long ago?"

"Just now." Evelyn's face trembled. "Vachel, *he's here.*"

It was a moment before Patterson understood. "You mean they sent him over here? To the hospital?"

"I told them to. I told them when he came to volunteer, when his number came to the top—"

Patterson grabbed her and hurried her from the therapy house, outside into the bright sunlight. He pushed her onto an ascent ramp and crowded in after her. "Where are they holding him?"

"In the public reception room. They told him it was a routine physical check. A minor test of some kind." Evelyn was terrified. "What are we going to do? *Can* we do something?"

"Gannet thinks so."

"Suppose we—stopped him? Maybe we could turn him aside." She shook her head, dazed. "What would happen? What would the future be like if we stopped him here? You could keep him out of the Service—you're a doctor. A little red check on his health card." She began to laugh wildly. "I see them all the time. A little red check, and no more David Unger. Gannet never sees him, Gannet never knows Earth can't win and then Earth will win, and V-Stephens doesn't get locked up as a psychotic and that webfoot girl—"

Patterson's open hand smashed across the woman's face. "Shut up and snap out of it! We don't have time for that!"

Evelyn shuddered; he caught hold of her and held on tight to her until finally she raised her face. A red welt was rising slowly on her cheek. "I'm sorry," she managed to murmur. "Thanks. I'll be all right."

The lift had reached the main floor. The door slid back and Patterson led her out into the hall. "You haven't seen him?"

"No. When they told me the number had come up and he was on his way," Evelyn hurried breathlessly after Patterson, "I came as quickly as I could. Maybe it's too late. Maybe he got tired of waiting and left. He's a fifteen year old boy. He wants to get into the fight. Maybe he's gone!"

Patterson halted a robot attendant. "Are you busy?"

"No sir," the robot answered.

Patterson gave the robot David

Unger's i.d. number. "Get this man from the main reception room. Send him out here and then close off this hall. Seal it at both ends so nobody can enter or leave."

The robot clicked uncertainly. "Will there be further orders? This syndrome doesn't complete a—"

"I'll instruct you later. Make sure nobody comes out with him. I want to meet him here alone."

The robot scanned the number and then disappeared into the reception room.

Patterson gripped Evelyn's arm. "Scared?"

"I'm terrified."

"I'll handle it. You just stand there." He passed her his cigarettes. "Light one for both of us."

"Three, maybe. One for Unger."

Patterson grinned. "He's too young, remember? He's not old enough to smoke."

The robot returned. With it was a blond boy, plump and blue-eyed, his face wrinkled with perplexity. "You wanted me, Doc?" He came uncertainly up to Patterson. "Is there something wrong with me? They told me to come here, but they didn't say what for." His anxiety increased with a tidal rush. "There's nothing to keep me out of the Service, is there?"

Patterson grabbed the boy's newly stamped i.d. card, glanced at it, and then passed it to Evelyn. She accepted it with paralyzed fingers, her eyes on the blond youth.

He was not David Unger.

WHAT'S your name?" Patterson demanded.

The boy stammered out his name shyly. "Bert Robinson. Doesn't it say there on my card?"

Patterson turned to Evelyn. "It's the right number. But this isn't Unger. Something's happened."

"Say, Doc," Robinson asked plaintively, "is there something going to keep me out of the Service or not? Give me the word."

Patterson signalled the robot. "Open up the hall. It's all over with. You can go back to what you were doing."

"I don't understand," Evelyn murmured. "It doesn't make sense."

"You're all right," Patterson said to the youth. "You can report for induction."

The boy's face sagged with relief. "Thanks a lot, Doc." He edged toward the descent ramp. "I sure appreciate it. I'm dying to get a crack at those webfoots."

"Now what?" Evelyn said tightly, when the youth's broad back had disappeared. "Where do we go from here?"

Patterson shook himself alive. "We'll get the Census Department to make their check. *We've got to locate Unger.*"

The transmission room was a humming blur of vid and aud reports. Patterson elbowed his way to an open circuit and placed the call.

"That information will take a short time, sir," the girl at Census told him. "Will you wait, or shall we return your call?"

Patterson grabbed up an h-loop and clipped it around his neck. "As soon as you have any information on Unger let me know. Break into this loop immediately."

"Yes sir," the girl said dutifully, and broke the circuit.

Patterson headed out of the room and down the corridor. Evelyn hurried after him. "Where are we going?" she asked.

"To the therapy house. I want to talk to the old man. I want to ask him some things."

"Gannet's doing that," Evelyn gasped, as they descended to ground level. "Why do you—"

"I want to ask him about the present, not the future." They emerged in the blinding afternoon sunlight. "I want to ask him about things going on right now."

Evelyn stopped him. "Can't you explain it to me?"

"I have a theory." Patterson pushed urgently past her. "Come on, before it's too late."

They entered the therapy house. Technicians and officers were standing around the huge map table, examining the counters and indicator lines. "Where's Unger?" Patterson demanded.

"He's gone," one of the officers answered. "Gannet gave up for today."

"Gone where?" Patterson began to swear savagely. "What happened?"

"Gannet and West took him back to the main building. He was too worn out to continue. We almost had it. Gannet's ready to burst a blood vessel, but we'll have to wait."

Patterson grabbed Evelyn Cutter. "I want you to set off a general emergency alarm. Have the buildings surrounded. And *hurry.*"

Evelyn gaped at him. "But—"

Patterson ignored her and raced out of the therapy house, toward the main hospital building. Ahead of him were three slowly-moving figures. Lieutenant West and Gannet walked on each side of the old man, supporting him as he crept feebly forward.

"Get away!" Patterson shouted at them.

Gannet turned. "What's going on?"

"Get him away!" Patterson dived for the old man—but it was too late.

The burst of energy seared past him; an ignited circle of blinding white flame lapped everywhere. The hunched-over figure of the old man wavered, then charred. The aluminum cane fused and ran down in a molten mass. What had been the old man began to smoke. The body cracked open and shriveled. Then very slowly the dried, dehydrated fragment of ash crumpled in a weightless heap. Gradually the circle of energy faded out.

GANNET kicked aimlessly at it, his heavy face numb with shock and disbelief. "He's dead. And we didn't get it."

Lieutenant West stared at the still-smoking ash. His lips twisted into words. "We'll never find out. We can't change it. We can't win." Suddenly his fingers grabbed at his coat. He tore the insignia from it and hurled the square of cloth savagely away. "I'll be damned if I'm going to give up my life so you can corner the system. I'm not getting into that death trap. Count me out!"

The wail of the general emergency alarm dinned from the hospital building. Scampering figures raced toward Gannet, soldiers and hospital guards scurrying in con-

fusion. Patterson paid no attention to them; his eyes were on the window directly above.

Someone was standing there. A man, his hands deftly at work removing an object that flashed in the afternoon sun. The man was V-Stephens. He got the object of metal and plastic loose and disappeared with it, away from the window.

Evelyn hurried up beside Patterson. "What—" She saw the remains and screamed. "Oh, God. Who did it? *Who?*"

"V-Stephens."

"LeMarr must have let him out. I knew it would happen." Tears filled her eyes and her voice rose in shrill hysteria. "I told you he'd do it! I warned you!"

Gannet appealed childishly to Patterson. "What are we going to do? He's been murdered." Rage suddenly swept away the big man's fear. "I'll kill every webfoot on the planet. I'll burn down their homes and string them up. I'll—" He broke off raggedly. "But it's too late, isn't it? There's nothing we can do. We've lost. We're beaten, and the war hasn't even begun."

"That's right," Patterson said. "It's too late. Your chance is gone."

"If we could have got him to talk—" Gannet snarled helplessly.

"You couldn't. It wasn't possible."

Gannet blinked. "Why not?" Some of his innate animal cunning filtered back. "Why do you say that?"

Around Patterson's neck his h-loop buzzed loudly. "Doctor Patterson," the monitor's voice came, "there is a rush call for you from Census."

"Put it through," Patterson said.

The voice of the Census clerk came tinnily in his ears. "Doctor Patterson, I have the information you requested."

"What is it?" Patterson demanded. But he already knew the answer.

"We have cross-checked our results to be certain. There is no person such as you described. There is no individual at this time or in our past records named David L. Unger with the identifying characteristics you outlined. The brain, teeth, and fingerprints do not refer to anything extant in our files. Do you wish us to—"

"No," Patterson said. "That answers my question. Let it go." He cut off the h-loop switch.

Gannet was listening dully. "This is completely over my head, Patterson. Explain it to me."

Patterson ignored him. He squatted down and poked at the ash that had been David Unger. After a moment he snapped the h-loop on again. "I want this taken upstairs to the analytical labs," he ordered quietly. "Get a team out here at once." He got slowly to his feet and added even more softly, "Then I'm going to find V-Stephens—if I can."

"He's undoubtedly on his way to Venus by now," Evelyn Cutter said bitterly. "Well, that's that. There's nothing we can do about it."

"We're going to have war," Gannet admitted. He came slowly back to reality. With a violent effort he focussed on the people around him. He smoothed down his mane of white hair and adjusted his coat. A semblance of dignity was restored to his once-impressive frame.

"We might as well meet it like men. There's no use trying to escape it."

Patterson moved aside as a group of hospital robots approached the charred remains and began gingerly to collect them in a single heap. "Make a complete analysis," he said to the technician in charge of the work-detail. "Break down the basic cell-units, especially the neurological apparatus. Report what you find to me as soon as you possibly can."

It took just about an hour.

"Look for yourself," the lab technician said. "Here, take hold of some of the material. It doesn't even *feel* right."

Patterson accepted a sample of dry, brittle organic matter. It might have been the smoked skin of some sea creature. It broke apart easily in his hands; as he put it down among the test equipment it crumbled into powdery fragments. "I see," he said slowly.

"It's good, considering. But it's weak. Probably it wouldn't have stood up another couple of days. It was deteriorating rapidly; sun, air, everything was breaking it down. There was no innate repair-system involved. Our cells are constantly reprocessed, cleaned and maintained. This thing was set up and then pushed into motion. Obviously, somebody's a long way ahead of us in biosynthetics. This is a masterpiece."

"Yes, it's a good job," Patterson admitted. He took another sample of what had been the body of David Unger and thoughtfully broke it into small dry pieces. "It fooled us completely."

"You knew, didn't you?"

"Not at first."

"As you can see we're reconstructing the whole system, getting the ash back into one piece. Parts are missing, of course, but we can get the general outlines. I'd like to meet the manufacturers of this thing. This really worked. This was no machine."

Patterson located the charred ash that had been reconstructed into the android's face. Withered, blackened paper-thin flesh. The dead eye gazed out lusterless and blind. Census had been right. There was never a David Unger. Such a person had never lived on Earth or anywhere else. What they had called "David Unger" was a man-made synthetic.

"We were really taken in," Patterson admitted. "How many people know, beside the two of us?"

"Nobody else." The lab technician indicated his squad of work-robots. "I'm the only human on this detail."

"Can you keep it quiet?"

"Sure. You're my boss, you know."

"Thanks," Patterson said. "But if you want, this information would get you another boss any time."

"Gannet?" The lab technician laughed. "I don't think I'd like to work for him."

"He'd pay you pretty well."

"True," said the lab technician. "But one of these days I'd be in the front lines. I like it better here in the hospital."

Patterson started toward the door. "If anybody asks, tell them there wasn't enough left to analyze. Can you dispose of these remains?"

"I'd hate to, but I guess I can."

The technician eyed him curiously. "You have any idea who put this thing together? I'd like to shake hands with them."

"I'm interested in only one thing right now," Patterson said obliquely. "V-Stephens has to be found."

LEMARR blinked, as dull late-afternoon sunlight filtered into his brain. He pulled himself upright—and banged his head sharply on the dashboard of the car. Pain swirled around him and for a time he sank back down into agonized darkness. Then slowly, gradually, he emerged. And peered around him.

His car was parked in the rear of a small, dilapidated public lot. It was about five-thirty. Traffic swarmed noisily along the narrow street onto which the lot fed. LeMarr reached up and gingerly explored the side of his skull. There was a numb spot the size of a silver dollar, an area totally without sensation. The spot radiated a chill breath, the utter absence of heat, as if somehow he had bumped against a nexus of outer space.

He was still trying to collect himself and recollect the events that had preceded his period of unconsciousness, when the swift-moving form of Doctor V-Stephens appeared.

V-Stephens ran lithely between the parked surface cars, one hand in his coat pocket, eyes alert and wary. There was something strange about him, a difference that LeMarr in his befuddled state couldn't pin down. V-Stephens had almost reached the car before he realized what it was—and at the same time was lashed by the full surge of memory. He sank down and lay against the door, as limp and inert as possible. In spite of himself he started slightly, as V-Stephens yanked the door open and slid behind the wheel.

V-Stephens was no longer green.

The Venusian slammed the door, jabbed the car key in the lock, and started up the motor. He lit a cigarette, examined his pair of heavy gloves, glanced briefly at LeMarr, and pulled out of the lot into the early-evening traffic. For a moment he drove with one gloved hand on the wheel, the other still inside his coat. Then, as he gained full speed, he slid his cold-beam out, gripped it briefly, and dropped it on the seat beside him.

LeMarr pounced on it. From the corner of his eye, V-Stephens saw the limp body swing into life. He slammed on the emergency brake and forgot the wheel; the two of them struggled silently, furiously. The car shrieked to a halt and immediately became the center of an angry mass of honking car-horns. The two men fought with desperate intensity, neither of them breathing, locked almost immobile as momentarily all forces balanced. Then LeMarr yanked away, the cold-beam aimed at V-Stephens' colorless face.

"What happened?" he croaked hoarsely. "I'm missing five hours. *What did you do?*"

V-Stephens said nothing. He released the brake and began driving slowly with the swirl of traffic. Gray cigarette smoke dribbled from between his lips; his eyes were half-closed, filmed over and opaque.

"You're an Earthman," LeMarr

said, wonderingly. "You're not a webfoot after all."

"I'm a Venusian," V-Stephens answered indifferently. He showed his webbed fingers, then replaced his heavy driving gloves.

"But how—"

"You think we can't pass over the color line when we want to?" V-Stephens shrugged. "Dyes, chemical hormones, a few minor surgical operations. A half hour in the men's room with a hypodermic and salve. . . This is no planet for a man with green skin."

Across the street a hasty barricade had been erected. A group of sullen-faced men stood around with guns and crude hand-clubs, some of them wearing gray Home Guard caps. They were flagging down cars one by one and searching them. A beefy-faced man waved V-Stephens to a halt. He strolled over and gestured for the window to be rolled down.

"What's going on?" LeMarr demanded nervously.

"Looking for webfoots," the man growled, a thick odor of garlic and perspiration steaming from his heavy canvas shirt. He darted quick, suspicious glances into the car. "Seen any around?"

"No," V-Stephens said.

The man ripped open the luggage compartment and peered in. "We caught one a couple minutes ago." He jerked his thick thumb. "See him up there?"

The Venusian had been strung up to a street lamp. His green body dangled and swayed with the early-evening wind. His face was a mottled, ugly mask of pain. A crowd of people stood around the pole, grim, mean-looking. Waiting.

"There'll be more," the man said, as he slammed the luggage compartment. "Plenty more."

"What happened?" LeMarr managed to ask. He was nauseated and horrified; his voice came out almost inaudible. "Why all this?"

"A webfoot killed a man. An *Earth*man." The man pulled back and slapped the car. "Okay—you can go."

V-Stephens moved the car forward. Some of the loitering people had whole uniforms, combinations of the Home Guard gray and Terran blue. Boots, heavy belt-buckles, caps, pistols, and armbands. The armbands read D.C. in bold black letters against a red background.

"What's that?" LeMarr asked faintly.

"Defense Committee," V-Stephens answered. "Gannet's front outfit. To defend Earth against the webfoots and crows."

"But—" LeMarr gestured helplessly. "Is Earth being attacked?"

"Not that I know of."

"Turn the car around. Head back to the hospital."

V-Stephens hesitated, then did as he was told. In a moment the car was speeding back toward the center of New York. "What's this for?" V-Stephens asked. "Why do you want to go back?"

LeMarr didn't hear him; he was gazing with fixed horror at the people along the street. Men and women prowling like animals, looking for something to kill. "They've gone crazy," LeMarr muttered. "They're beasts."

"No," V-Stephens said. "This'll die down, soon. When the Committee gets its financial support

jerked out from under it. It's still going full blast, but pretty soon the gears will change around and the big engine will start grinding in reverse.

"Why?"

"Because Gannet doesn't want war, now. It takes awhile for the new line to trickle down. Gannet will probably finance a movement called P.C. Peace Committee."

The hospital was surrounded by a wall of tanks and trucks and heavy mobile guns. V-Stephens slowed the car to a halt and stubbed out his cigarette. No cars were being passed. Soldiers moved among the tanks with gleaming heavy-duty weapons that were still shiny with packing grease.

"Well?" V-Stephens said. "What now? You have the gun. It's your hot potato."

LeMarr dropped a coin in the vidphone mounted on the dashboard. He gave the hospital number, and when the monitor appeared, asked hoarsely for Vachel Patterson.

"Where are you?" Patterson demanded. He saw the cold-beam in LeMarr's hand, and then his eyes fastened on V-Stephens. "I see you got him."

"Yes," LeMarr agreed, "but I don't understand what's happening." He appealed helplessly to Patterson's miniature vidimage. "What'll I do? What is all this?"

"Give me your location," Patterson said tensely.

LeMarr did so. "You want me to bring him to the hospital? Maybe I should—"

"Just hold onto that cold-beam. I'll be right there." Patterson broke the connection and the screen died.

LeMarr shook his head in bewilderment. "I was trying to get you away," he said to V-Stephens. "Then you cold-beamed me. *Why?* Suddenly LeMarr shuddered violently. Full understanding came to him. "You killed David Unger!"

"That's right," V-Stephens answered.

The cold-beam trembled in LeMarr's hand. "Maybe I ought to kill you right now. Maybe I ought to roll down the window and yell to those madmen to come and get you. I don't know."

"Do whatever you think best," V-Stephens said.

LeMarr was still trying to decide, when Patterson appeared beside the car. He rapped on the window and LeMarr unlocked the door. Patterson climbed quickly in and slammed the door after him.

"Start up the car," he said to V-Stephens. "Keep moving, away from downtown."

V-Stephens glanced briefly at him, and then slowly started up the motor. "You might as well do it here," he said to Patterson. "Nobody'll interfere."

"I want to get out of the city," Patterson answered. He added in explanation, "My lab staff analyzed the remains of David Unger. They were able to reconstruct most of the synthetic."

V-Stephens' face registered a surge of frantic emotion. "Oh?"

Patterson reached out his hand. "Shake," he said grimly.

"Why?" V-Stephens asked, puzzled.

"Somebody told me to do this. Somebody who agrees you Venusians did one hell of a good job when you made that android."

THE CAR purred along the highway, through the evening gloom. "Denver is the last place left," V-Stephens explained to the two Earthmen. "There're too many of us, there. Color-Ad says a few Committee men started shelling our offices, but the Directorate put a sudden stop to it. Gannet's pressure, probably."

"I want to hear more," Patterson said. "Not about Gannet; I know where he stands. I want to know what you people are up to."

"Color-Ad engineered the synthetic," V-Stephens admitted. "We don't know any more about the future than you do—which is absolutely nothing. There never was a David Unger. We forged the i.d. papers, built up a whole false personality, history of a nonexistent war—everything."

"Why?" LeMarr demanded.

"To scare Gannet into calling off the dogs. To terrify him into letting Venus and Mars become independent. To keep him from fanning up a war to preserve his economic strangle-hold. The fake history we constructed in Unger's mind has Gannet's nine-world empire broken and destroyed. Gannet's a realist. He'd take a risk when he had odds—but our history put the odds one hundred percent against him."

"So Gannet pulls out," Patterson said slowly. "And you?"

"We were always out," V-Stephens said quietly. "We were never in this war game. All we want is our freedom and independence. I don't know what the war would really be like, but I can guess. Not very pleasant. Not worth it for either of us. And as things were going, war was in the cards."

"I want to get a few things straight," Patterson said. "You're a Color-Ad agent?"

"Right."

"And V-Rafia?"

"She was also Color-Ad. Actually, all Venusians and Martians are Color-Ad agents as soon as they hit Earth. We wanted to get V-Rafia into the hospital to help me out. There was a chance I'd be prevented from destroying the synthetic at the proper time. If I hadn't been able to do it, V-Rafia would have. But Gannet killed her."

"Why didn't you simply cold-beam Unger?"

"For one thing we wanted the synthetic body completely destroyed. That isn't possible, of course. Reduced to ash was the next best thing. Broken down small enough so a cursory examination wouldn't show anything." He glanced up at Patterson. "Why'd you order such a radical examination?"

"Unger's i.d. number had come up. And Unger didn't appear to claim it."

"Oh," V-Stephens said uneasily. "That's bad. We had no why to tell when it would appear. We tried to pick a number due in a few months—but enlistments rose sharply the last couple of weeks."

"Suppose you hadn't been able to destroy Unger?"

"We had the demolition machinery phased in such a way that the synthetic didn't have a chance. It was tuned to his body; all I had to do was activate it with Unger in the general area. If I had been killed, or I hadn't been able to set

off the mechanism, the synthetic would have died naturally before Gannet got the information he wanted. Preferably, I was to destroy it in plain view of Gannet and his staff. It was important they think we knew about the war. The psychological shock-value of seeing Unger murdered outweighs the risk of my capture."

"What happens next?" Patterson asked presently.

"I'm supposed to join with Color-Ad. Originally, I was to grab a ship at the New York office, but Gannet's mobs took care of that. Of course, this is assuming you won't stop me."

LeMarr had begun to sweat. "Suppose Gannet finds out he was tricked? If he discovers there never was a David Unger—"

"We're patching that up," V-Stephens said. "By the time Gannet checks, there will be a David Unger. Meanwhile—" He shrugged. "It's up to you two. You've got the gun."

"Let him go," LeMarr said fervently.

"That's not very patriotic," Patterson pointed out. "We're helping the webfoots put over something. Maybe we ought to call in one of those Committee men."

"The devil with them," LeMarr grated. "I wouldn't turn anybody over to those lynch-happy lunatics. Even a—"

"Even a webfoot?" V-Stephens asked.

Patterson was gazing up at the black, star-pocked sky. "What's finally going to happen?" he asked V-Stephens. "You think this stuff will end?"

"Sure," V-Stephens said promptly. "One of these days we'll be moving out into the stars. Into other systems. We'll bump into other races—and I mean *real* other races. Non-humans in the true sense of the word. Then people will see we're all off the same stem. It'll be obvious, when we've got something to compare ourselves to."

"Okay," Patterson said. He took the cold-beam and handed it to V-Stephens. "That was all that worried me. I'd hate to think this stuff might keep on going."

"It's won't," V-Stephens answered quietly. "Some of those non-human races ought to be pretty hideous. After a look at them, Earthmen will be *glad* to have their daughters marry men with green skin." He grinned briefly. "Some of the non-human races may not have any skin at all. . ." • • •

BY CHAD OLIVER

Can both right and wrong be the same? . . . To Wistert, the axes meant native trouble. To Thunderton, they guaranteed the natives a brighter hope for the future . . .

NIGHT

BOB WISTERT found the steel axes quite by accident.

He had been poking around in the station storehouse back of Thunderton's, looking for a replacement battery for his electric typer, when he had moved a crate and found the trapdoor. It pulled open easily, and there they were.

Steel axes.

Hundreds of them.

Their metallic heads gleamed in the white light.

"Good God," Bob Wistert breathed. Quickly, he slammed the trapdoor shut and shoved the crate back in position to hide it. He wiped his sweating hands on his trousers and stood very still. Listening.

A bird trilled cheerfully, digesting a worm. The twilight breeze rustled across the sand and lost itself in the tall trees beyond. The sea muttered and whispered insistently in its ancient conversation with the shore.

That was all.

He switched off the light in the storehouse and locked the door behind him. Soundlessly, he moved down the pathway. Both Sirius and her white dwarf companion were below the horizon now, but the

sky was still a blaze of blue-white, with sunset clouds laced with flame. Tony Thunderton's house was ahead of him, a bubble in the pinelike trees, and its plastic was clear. He searched the house with his eyes, but Tony wasn't there. He hurried on, anxious to get past the house.

"Hello, Bob," Tony said.

Bob Wistert stopped short. Tony was sitting in the yard, reading. He put aside his scanner and stood up. He was not a tall man and he was getting stout. His skin was bronze in the slowly fading light and his hair was black. He did not smile.

"Find what you were after?" Tony asked.

"Yes. Sure. Needed a battery."

"Good for you."

"Got to get back to Helen," Bob said. "Time to eat."

"Give her my regards."

He walked on, trying not to hurry. He could feel Tony's dark eyes following him down the path. When the trees screened him, he broke into a run. He entered his own house by the station wall and locked the door behind him.

"Helen! Where are you?"

She came out of the bedroom, straightening a clip in her brown hair. "What's wrong?" Her voice was taut, as though wound too tightly on a spring. "You look like Hamlet's old man filled you full of ectoplasm."

He took her hands, his tall, thin frame towering over his wife. "Honey, I've got some bad news."

"I can believe it. Are we in for a native uprising? Am I going to be burned at the stake like Jeanne d'Arc?"

Illustrated by Ed Emsh

"Dammit, I'm not kidding."

"Spill it, then. The suspense is killing me."

"Over in the storehouse," Bob said quickly. "I was looking for a battery. I pushed a crate out of the way and found a trapdoor. There's a cellar under there. It's full of steel axes."

Helen's face paled under her tan. She sat down.

"What are we going to do?" she whispered.

"You tell me," Bob said.

Together, moved by a common impulse, they turned and looked at the door.

Toward Anthony Thunderton's.

"He must be insane," Helen said.

Outside, the wind was gentle in the trees and an alien sun was lost beneath an old and lovely sea.

ALMOST imperceptibly, the twilight deepened. Night would not fall for ten Earth-days. When it did come, it would last for a long, long time.

There was no hurry.

"I knew there was something fishy about this place," Bob said. "I knew it the minute I got off that ship, the minute I spotted Thunderton."

"We've only been here a month. Maybe we ought to give Tony the benefit of the doubt."

"Look," he said. "When you see some joker coming at you with a lead pipe in his hand and blood in his eye, the only doubt you're entitled to is whether you can bash him before he bashes you." He hesitated and then spoke slowly. "It'll be over nineteen Earth-years before that ship comes back for us, Helen. We're the only people from Earth on this planet except for Tony—and Tony's been here for ten years. He's been alone here for five years, ever since his wife died. He's been a god—he's had absolute power if he wanted it. If he's flipped his wig out here, we've got to know about it—and fast."

Helen looked away. She looked at their home, at the soft blue chairs and the pictures on the walls and the lazy couch before the fireplace. Something died in her eyes. "We can't be *sure* he's using those axes," she said.

"He's using them all right, and he's not using them to shave himself with, either."

There was a long silence, broken only by the wind and the beat of the sea.

"I'll just have to go out and get some proof," Bob said finally. "We'll need photographs."

"He took you out to meet one group, didn't he? You didn't tell me about anything wrong there."

"I didn't see anything," Bob Wistert admitted. "That figures, though. He wouldn't show me the ones he'd been working on, not unless he's cracked more than I think he has. There's another band of them about twenty miles east of here according to the contact map. I can get to them before night. We've got to know."

"Take me with you, Bob. I don't want to stay here alone."

He kissed her lightly, ruffling her fragile brown hair with his hand. "No, lady. I can make better time alone, and you'll be all right here. Just keep the door locked and keep a gun handy. Don't let him in, Helen, no matter what happens."

She didn't argue. "You'll need some food," she said.

Packing was simple enough. He put his bed roll in his pocket and slipped the force field generator on his wrist. The food pills went into his belt slots. He pulled on his boots and was ready to go. Weapons were not permitted off the station, and it did not occur to him that he could smuggle one out in his pocket if he wanted to.

In any event, he wasn't worried about the natives.

"Don't worry, baby. Everything will be all right."

"Of course," she said.

He went out into the bright blue twilight, light-years from the planet Earth. When he had gone, Helen locked the door behind him and sat down in one of the blue chairs.

She began the wait that has never been measured.

She looked toward Anthony Thunderton's. "Damn you," she said in a flat, cold voice. "Damn you for killing the only thing we ever had. Damn your soul."

IT TOOK Bob Wistert five Earth-days to find the natives.

Through the tall green trees ahead of him, he saw a curl of blue woodsmoke in a grassy plain. He walked faster, his force field protecting him from the thorny brush that guarded the cool forest floor. Once, not long ago, the scene before him would have thrilled him with excitement.

Now, there was only a nameless dread.

The wind was in his face and he saw them before they saw him. They were few—perhaps thirty men, women, and children squatting around low orange fires. Their crude lean-tos with thatched grass tops were almost invisible against a soft backdrop of swaying grasses and incredible weeds and flowers.

The children were naked. The adults, however, were too sophisticated for nakedness. Their skin loin cloths were simple and unadorned, but both men and women were scarified and wore wooden ear plugs the size of half-dollars within their stretched ear lobes. Their teeth were filed and darkened. They were a small people, and their skins were faintly greenish.

All in all, they looked quite human.

Stones had been heated in the fire until they were good and hot, and had then been dumped into bark containers full of water. The water boiled and cooked a varied assortment of plants, insects, and meat. There was no pottery. The only visible weapons were stone-tipped spears and curved throwing sticks.

Bob Wistert made no attempt to hide himself. He walked straight toward the camp, his arms swinging easily at his sides. When the natives spotted him, they melted into the grass as though they had never been.

He stood by the bubbling bark basket and waited. These people knew Thunderton; they would soon recognize that he was of the same tribe.

Shortly, a young man stepped out of the grass, clapping his hard hands in greeting. A *young* man! Bob, even after only a month, knew how wrong that was.

He clapped his hands in return.

"I come in peace," he said, speaking the language he had learned before coming to the seventh world of Sirius. "I am called Robert. I am the brother of Anthony, who is your brother."

"My brother, you are welcome here with the Nwarkon, the people. I am called Entun." His voice was clear and liquid. Bob had no difficulty understanding him, although the dialect was different from what he had heard before.

The others came out of the grass and shyly resumed their cooking. He noticed that the old men—there were four of them—seemed hesitant and confused. He kept his eye peeled, and he soon saw what he had come to see.

Steel axes.

Six of them.

Five of them were in the possession of young men. One was being used by a woman to knock clumsy branches from firewood. Bob kept talking politely, but he got all the pictures he needed with his ring camera.

"It is ready," Entun said. "Eat with us."

He could not refuse. He sat with the young man and ate some of the stew from a bark bowl. It was just as bad as it looked. When he had eaten, he stayed a decent interval with the Nwarkton, making the small talk that is the same everywhere. He told lewd stories, but only to the proper relatives. He could not tell which of the girls might be his 'sisters', so he carefully avoided speaking to any of them.

He stayed for one sleep period, and then left, after a grim struggle with his breakfast.

No one had said anything about the steel axes.

He walked through the forest and the air was sweet and clean. It was darker now and the long shadows were less distinct. Sirius was only a glow of electric light in the west. It was strange, he thought. He, so close to that great star, could not see it. On Earth, light-years away across a sea of desolation, it was the Dog Star, the brightest in the heavens. And the light that could be seen on Earth, by some boy and girl in a hovering copter, had left the star almost nine years before Bob Wistert had set foot on the seventh world of Sirius. . .

He shivered in a growing twilight hush.

WHEN he got home, Helen was waiting for him.

"I got the pictures," he said, sinking down on the couch. "There's no doubt of it now; I guess there never was."

"Tony came to see me," she said.

He sat up straight. "What did he want?"

She fixed him a drink and put it in his hand. "He wanted us to come over for dinner when you got back. I didn't let him in."

He knows. He must have seen me go.

Helen moved about the room, giving a poor imitation of calm unconcern. "How now, Horatio? Do we ride into the valley of death, all two of us?"

"Well, there's only one of him."

"We're going to go, then?"

He hesitated. "First, I'm going to log a little sack time. Second, I'm going to take a bath. Third,

we'll go over and sample the cuisine at Tony's. Fair enough?"

"I'd just as soon get it over with."

He finished his drink and arranged himself on the couch, too tired to go to bed. He closed his eyes and waited for sleep.

Sleep was slow in coming.

Thoughts came instead.

What is Thunderton up to? Is he going to ruin everything for all the people here? Is he going to ruin everything for us? Did Helen and I make a mistake in coming here? So many years to go—and what can we do? What can we do?

He tossed restlessly on the couch. Impatiently, he tried to sleep, tried to relax his mind.

The thoughts kept coming, nagging at him.

Questions, memories, promises, fears—

And dreams seemed very far away. . .

In 1975, the first man set foot on the moon of Earth.

Mars had been reached by 1981, and a landing had been made in 1983. By the year 2000, the solar system had been pretty well explored. It had proved to be fascinating, in much the same way as the Grand Canyon is fascinating. It was wild and good to look at, but it was desperately empty.

Some fifty years later, in 2051, the first expedition got back from Centaurus. After that, a more practical interstellar drive was only a matter of time. In 2062, the first of the true starships was launched. It moved with a new kind of motion through a new kind of space. It was more than just a faster spaceship, just as an airplane is more than just a faster automobile.

The starships were *different.*

From 2062 until 2090 was the period of the initial investigation of the nearer star systems. Life had sought out life.

One hundred and three Earth-like planets were found and there were humanoid peoples on every one of them. No planet was located that had a culture higher than Earth's, at least in a technological sense. As might have been suspected from Earth's history, Earth had specialized in technological development. Out of the one hundred and three planets which had intelligent life, only seventeen had attained an agricultural, Neolithic culture—and none had passed beyond that stage.

It became very clear why Earth had never been contacted from space.

Earth *needed* a frontier, and now she had one. One hundred and three planets meant many things to many people, but first and foremost they meant a fantastic new market potential. They were a shot in the arm for a planet geared to production.

Potentially.

There were flies in the ointment.

Centuries are long, and they are full. No mere record of explorations and inventions can tell you much about a century. People live and work and die, and sometimes a single day is too much for the historians.

Earth had changed. It *had* to change, or there would have been no exploration of space. It *had* to change, or the first travelers to far Centaurus might have had no Earth to come back to.

Earth changed.

You can't sell a plow to a man who doesn't know what agriculture is. You can't sell a car to a man who has no roads. You can't take a man's money if he has never heard of money. You can't produce for a market unless the market's there.

The new planets could not be profitable markets until they were further developed. Outright exploitation, in the year 2100, was out of the question. Colonialism was a dead duck—and that was one duck nobody cared to dig up again.

Okay. Where do we go from here?

Socioculturology was a fairly well developed science; it was quite possible to predict mass developments under any given set of conditions. The scientists could deal with the situation—but the scientists didn't make the policy. A long wrangle broke out in the United World Council. What was ethical? What was practical? How could the job be financed?

Meantime, there the planets were. It was important to know more about the people who lived on them, and to maintain contact with them. Anthropologists went in for a year or so, and made their reports. But who was willing to go out in the middle of nowhere and stay there for twenty years, to establish squatter's rights for industry? It was economically unsound to rotate personnel; it took over a year to reach most of the planets, and it was expensive. Stations had to be maintained until teams could be lawfully sent into the area to develop markets.

Who would go? It took more than money to make a man leave his home for twenty years on an alien world. The man had to be qualified. It was no job for an adventurer.

His job was to 'really get to know' the natives. That meant, in practice, that he met as many of them as he could within a very restricted area; planets were big places. It was his job to maintain friendly relations. But *under no conditions* could he tamper with the native culture. He had to keep his hands off.

This was their world, and they must be permitted to live their lives undisturbed—for the present.

Bob Wistert turned on the couch. Why had he come, really? And Helen—what had she hoped to find here?

We were going to live a new life, close to the land. We were going to start over, just the two of us.

And now—

Exhausted, he slept. He dreamed that Anthony Thunderton was coming at him with a steel axe that glinted in iced moonlight.

When he awoke, it was dark enough to see faint stars in the sky, and there was no wind.

ANTHONY THUNDERTON met them at the door.

"Come in," he said.

They stepped inside. The living room was lean and spare with simple wooden furniture. It was not a cold room. There were bright rugs on the floor and the lights were soft gold. Over the fireplace was a painting of Thunderton's wife; her rather broad face, dark hair and black eyes closely resembled Thun-

derton himself.

"I'll put the dinner on," Thunderton said. "We'll eat in twenty minutes."

They sat silently, caught between anxiety and embarrassment. The house was neat and clean—surprisingly so, since Thunderton lived alone. He was back in three minutes, with Martinis on a polished wood tray. He handed them their drinks.

"Here's to continued good fellowship in our primitive wonderland," he said with a perfectly straight face.

He served them dinner on an open porch; the bugs were kept out by a miniature force screen. They had tender white meat from a rabbit-like animal, green salad, and ears of corn that Thunderton grew in a garden. When they had eaten, there was wine.

Bob Wistert was tense and nervous. There were a lot of years ahead of them. Sooner or later, they would have to get things straight. For his part, he wanted it to be sooner. Now. He watched Thunderton carefully, wondering. Despite his stoutness, Thunderton was not a big man—but he dominated the porch. He was not a man to fool with. Bob wasn't at all sure how to proceed.

Anthony Thunderton helped him.

"I guess you're wondering about the axes," he said quietly.

Bob hesitated, but Helen spoke up. "Yes," she said. "We were."

With great deliberation, Thunderton took out a cigar and lit it. His face was impassive. "There are many questions in the universe," he said. "For example, what brought you two all the way across space to this?"

He waved his hand and the night came closer. There was no moon yet and the station made a small circle of light in the darkness. The black trees were still. On the edge of the sand the cool sea drummed with long, even beats.

"Don't change the subject, Tony," Bob said.

"All questions are one in the end," Thunderton said. He smiled. "The hell with that, though. Suppose I tell you why you're here."

"Suppose you do," Bob said.

Thunderton folded his powerful hands and clamped the cigar more firmly in his mouth. "I don't know you very well, so you'll have to allow for errors. Still, I think I can hit it pretty close."

"We're waiting," Bob said, his irritation showing in his voice.

"I'll take you first, Mr. Wistert. I should hazard a guess that you are one of that strange breed known as the intense idealist. You probably write poetry or do something equally foolish in your spare time. Naturally, you will compensate for this by insisting that you're the most practical damned man that ever lived. You're interested in our charming native friends out there in the woods—you think they have a unique way of life which must be preserved. You think of yourself as their protector. You regard Earth as phony, so you've trotted out here to live in the Great Outdoors—with all modern conveniences, of course."

Bob leaned forward. "Listen, Mac, about one more crack out of you—"

Anthony Thunderton ignored

him. "And you, fair lady," he said to Helen, "have always wondered why you weren't satisfied with your life. You've built an intellectual wall around yourself because you don't seem to *fit* anywhere. You've come out here with your man to find something you've never found. You won't find it here, either. It's in yourself if it's anywhere."

Helen said nothing.

Bob stood up. "If the 'Boy Psychologist' is through with his string of bromides, maybe we can get back to the axes."

"Maybe we can," agreed Thunderton, chewing his cigar.

"Do you deny that you've been giving steel axes to the natives?"

"Have you ever heard me deny it?"

"Forget the double-talk. Do you admit it?"

"Certainly. I'm proud of it, if it comes to that."

Bob stared at him. Thunderton sat there, calmly smoking his cigar. He might have said, "Why, yes, I often have prunes for breakfast."

"You must be stark staring nuts!" Bob said.

"Thank you, sir. You are a born diplomat."

Bob sat down again. He leaned forward, trying desperately to make contact with this man. "Look here, Tony. Don't you realize that those axes will utterly destroy those people out there? Don't you understand that they're human too? Can't you see that you're ripping their lives apart, leaving them with nothing? Do you think you're God?"

"To answer the first and least emotional of your questions, I do realize that the axes will destroy those people. That is my intention."

Bob slammed his fist down on the table. "You won't get away with it! You may be able to push those people around, but you can't push me around."

"Most heroic," Thunderton said. Carefully, he took a pistol out of his pocket and held it loosely in his hand. "I just don't want you to get carried away," he explained. "Rather good pun, if I do say so myself."

Bob looked at Helen, utterly at a loss for words. The man *was* insane, that was the only possible explanation—

"Now," Thunderton said, "if you will be good enough to pour yourself another glass of wine—don't try throwing it in my face, by the way, as it annoys me—I'd like to tell you exactly how I intend to destroy the natives. After that, I'll give you a short history lesson. After that, I'll put the gun away and we shall see what we shall see."

Bob thought of several rash plans, but settled for doing as he was told. The wine, at any rate, was good.

"Very well," Thunderton said. "Here are the details. I think you'll find them interesting."

Bob and Helen waited.

Around them, the long, long night was only beginning.

THUNDERTON replaced what was left of his cigar with a new one.

"Steel axes are curious things," he said with obvious relish. "You can chop down trees with them, bash in heads with them, or use

them for money. On many worlds, a steel axe is a wonderfully effective new invention—a jump forward of maybe a hundred thousand years of time. On other worlds, a steel axe is a tiresome and outmoded antique. It sort of depends on where you are—or perhaps I should say *when* you are."

"We know all that," Bob said. He was not pleased with himself for having said it, but he had been stung, and he wanted to sting back.

"Our somewhat ignorant friends out there in the forest," Thunderton said, jerking his thumb toward the dark wall of pinelike trees, "are still living in a stone-age culture. That means that their technology is pretty crude stuff, even if it did take the human animal the better part of a million years to get that far on Earth. A stone axe takes time to make, as you doubtless know, and flint has the unhappy property of shattering or losing its edge if you whack it into a tree too many times. A steel axe can save you a lot of time, it lasts longer, and it gets the job done more efficiently. Of course, that happens to be irrelevant."

"Why?" Helen asked.

Thunderton grinned around his cigar. "I don't give a hoot in hell how long it takes them to chop down a tree. I'm interested in knocking their culture apart in the quickest possible way."

Bob Wistert eyed the gun in Thunderton's hand and shifted his weight on the chair. *Why? Why is he trying to destroy them? What's in it for him? What kind of a man is he? What kind of a man—*

"Interesting business," Thunderton said. "I've made quite a study of it—can't afford to make mistakes, you know. There are two things about the native culture that are important. The first is that the society is set up in such a way that the old men, the tribal elders, run the show. They get the best food, the best women, and the best places around the fire. Those old buzzards are really powerful, too—their authority is real, and damned near absolute. Okay. I don't care. That's one way to do things. But look at this: the symbol of their authority is the stone axe. An old man is the only person who can own a stone axe. If a woman or a boy wants to use one, they have to go to 'Old Man Mose' and get his permission. There's a complex taboo system thrown up around the stone axes, naturally. If you use one without permission, you've had it. It's a cute system; all the old men have to do is threaten to hold back the axes, and that's all the power they need."

I knew those axes were important. But Tony knows more than I do. Is it too late to stop him?

Thunderton puffed on his cigar. "The second important thing is that those axes have to be made out of a special kind of stone—and there are no such stones within two hundred miles of here. The old men have to trade for them. There's a network of trade that almost crosses this continent—and it's based on area specialization in the manufacture of stone axes. The tribal elders around here supply wood for the handles—that's all they do. Somebody else supplies the stone. Another tribe makes the axes. All the old men have trading partners in other villages, and reg-

ular trade routes they follow seasonally. Get the picture?"

"I'm beginning to," Bob said quietly.

"Let me fill in the details," Thunderton said. He smiled with genuine pleasure. "I go into this set-up with a crate or so of steel axes—I made 'em myself, by the way. I give the steel axes to the women and the young men. At first, they're afraid to take them. I take them aside and explain to them—look, these aren't stone axes! These aren't sacred! They can't hurt you—there are no taboos around them! Try 'em and see! Well, they *do* try them. No bolt of lightning strikes, they don't get sick and die. And damned if they don't work *better* than the old stone axes! Okay. The chain reaction starts. Nobody has to ask the permission of the old codgers anymore—they've got their own axes. The authority of the old men goes down the drain. The boys and young men stop giving the old men all the good deals. They figure they're already big shots—they've got something the old men haven't got. The stone axes are suddenly anachronisms. The old men get discouraged. Why make that long, hard trading expedition? Say! Maybe if they play their cards right *they* can get some of those new axes with the hard, sharp blades!"

Thunderton crushed out his cigar. "That does it. A few steel axes, and presto! The whole web of tribal interrelationships breaks down—why trade for something useless? The power of the gods is challenged. The social organization collapses; the younger generation starts feeling its oats. In a word, the old culture is *kaput*. Neat, eh?"

"Yeah," said Bob. "Neat."

Why has he done this thing? What kind of a man—

"You spoke of a history lesson," Helen said.

Anthony Thunderton stood up, the gun still held loosely in his hand. He looked out into the night, toward the sand and the sea and the quiet.

"Have you ever heard of the American Indian?" he asked.

Nuts. Stark staring nuts. Or—

He pointed the gun at Bob Wistert, casually.

"Well?"

"Come off of it, Tony. Of course I've heard of the American Indian. There's a statue in Washington. We learn about them in school. People write novels about them."

"Hooray. What do you think of the Indian, Mr. Wistert?"

Bob shrugged. "They were an interesting people. I guess they got a dirty deal. They were there first and all that."

Thunderton nodded. "I notice you use the past tense," he said. "I suppose that's the point, really. Did you find them quaint when you studied them, Mr. Wistert? Unique way of life? Sort of like the natives out there in the woods?"

"I don't know. That's not a fair question. Anyway, I didn't destroy them. That's more than you can say, whatever you're driving at."

"How do you know you didn't?"

"Look, I know you speak English. Try a little and forget the riddles."

Thunderton sighed. "Time for the history lesson. Topic for tonight: The American Indian. Lis-

tening time: two minutes. Hang on, boys and girls."

"I don't understand—"

"Be quiet, Bob," Helen said. "Let him finish."

He looked at his wife in astonishment.

"We'll skip all the romantic guff, with your permission," Thunderton said. "You know who the Indians were, and you've heard all about the broken treaties and the smallpox. Okay. How about after all that was over? How about when everything was friendly, when the Indians weren't a threat any longer? How about the reservations and all the people who admired the Indian ways of life?"

"I'll bite," Bob said. "How about them?"

"This about them: by the middle of the twentieth century, most people did not hate the Indians. They were colorful, interesting. Many people tried to preserve what was left of the Indian cultures. Sure, maybe the reservation schools were poor and under-staffed. Sure, maybe an Indian kid had nothing to look forward to because he couldn't get a good education and compete in the white world. Sure, maybe they were backward and caught in a trap. Didn't they make pretty pots? Didn't they weave colorful blankets? Weren't they *fascinating?*"

Thunderton sat down and spun the pistol on his finger. "Oh, people meant well, all right. Nobody bothered to tell the Indian about real estate deals and mineral rights and stocks and bonds and con men. Nobody bothered to make sure he could stand on his own hind legs and fight for his rights after he became a citizen. Nobody told him he might lose his land when he became 'free'. Hell, education was expensive. It was easier to just turn him loose and hope for the best. People meant well, most of them. It was all very high-minded. But this is 2104. Where are the Indians? Let's see—there's a statue in Washington, there's that *lovely* novel about the wicked cavalry troopers—"

"I see what you mean," Bob said. "But, those natives aren't Indians, and this is 2104. We've learned a few things in the last century or so. They're working out a fair program back there in the Council, they'll figure out the right thing to do. I'm afraid I don't get the connection. Your speech was pretty—but *you're* the one who destroyed those natives."

Thunderton ignored him. "A few more points, Mr. Wistert. Maybe the policy will be a dandy one; scientific and all that. Back in Spain, along about 1520, they had an enlightened policy toward the Indians. But it was a long way from Spain to Mexico; some of the boys with Cortez didn't pay much attention to the nice policy. Okay. Suppose the policy they develop *is* a good one, and suppose, just for the hell of it, that it's honored to the letter. So what? So they'll come out here and tell those natives what to do—for the good of the natives, of course. Why not ask the natives what *they* want? Excuse me; I detest idealists."

Thunderton poured himself a glass of wine with his free hand.

"Get this," he said. "Industry is coming out here, whether the natives like it or not. We're here, and

they've got to change. I don't say it's right and I don't say it's wrong. That's just the way it works, Mr. Wistert. I've got maybe thirty years before the teams come in on Sirius Seven. I can't do much, and I can't reach many of the people on this planet. But, by God, when those teams come in here, there are going to be a few natives around who know what the score is. They're going to speak English, they're going to know how money works, and they're going to know about the law. They're going to have a chance. After that, if they throw it away, that's their business."

"But you're tearing them apart!" Bob said. "You're not teaching them anything."

"Mr. Wistert," Thunderton said quietly, "it is sometimes necessary to destroy before you can build. The old men were very conservative, and they ran the tribe. I had to give the young men a chance to change. There's one group you haven't seen yet. They may not be any wizards of finance, pal, but they know enough to get a lawyer."

"You'll go to jail. You can't set yourself above the law."

Thunderton laughed.

"How do you know you're right? Who are you to say you're smarter than the United World Council?"

"I never said I was right, Mr. Wistert. I do what I have to do. That's all."

Anthony Thunderton put the pistol down on the table in front of him. He stood up. He turned his back on them and walked into his house, leaving them where they were.

Bob Wistert picked up the pistol, looked at it, and put it back on the table.

"I don't know what to do," he said slowly.

Helen got up and took his arm. "Come on, honey."

"Where are we going?"

"Let's take a walk."

He stood up. Together, they walked off the porch, feeling a tingle as they passed through the bug screen. They walked along a pathway under the pinelike trees, until there were no trees and there was only sand.

They walked toward the sea.

Bob Wistert tried to think. He didn't understand. Why had Thunderton done it?

What kind of a man—

THE SEA was vast and lonely, silver-flecked beneath a million stars. It slid up the sand at their feet and made slow wet curves of phosphorescence and then whispered back to black depths and ageless currents.

He tried to speak honestly, forgetting the hurt inside him. "Helen, we have twenty years ahead of us here, on this world, with this man. I don't know whether he's right or wrong. I don't know what I should do, or shouldn't do. We've got to think of ourselves."

"Yes. We must think of ourselves."

"I didn't mean it that way." He managed a smile. "Our pay is already deposited on Earth; that makes it easier to be brave."

She kissed him. "You have me, Bob. You just have to do what you think is right."

"I don't *know* what's right."

"Maybe there is no right or wrong here. Maybe there are just two different ways of doing things. Maybe nothing we do will make any difference in the end."

The night filled the world around them. It would be night for two hundred Earth-days. Out there, in the forests and the fields, another kind of night had begun for the peoples whose world this was. An ancient, bitter night of misery and despair. A cold night, a night of shadows and destruction.

Still, the light would come again.

Beyond every night there was a morning.

"Who is he, Helen? Why has *he* come here?"

"Look at his face, Bob. Look at his eyes and his hair. Look at that painting of his wife. It's been almost six hundred years since the first Indian met Cortez. That's a long time—but not too long to remember the white man."

Broad face, bronze skin, black hair, dark eyes—

What kind of a man—

"What are we going to do?"

"I don't know," she said. "I haven't got any answers, not now."

He hesitated. "We have twenty years to go. We can help him or not help him, but I hope we can be his friends."

"I know this," she said quietly. "He is a lonely man."

They turned and put the dark sea behind them. Slowly, they walked through the sand toward the small light that burned in the trees.

When they got back, Tony had the coffee ready, waiting for them.

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A CHAT WITH THE EDITOR

(Continued from page 3)

voice and power to save him from sweatshops and overwork and pittance wages. But I also know that Caesar brought glory to the common people, that Stalin started out by freeing the people of Russia from the ignorance and oppression of the Tsarist yoke, and that Hitler and Mussolini began the march to absolute power through the bettering of conditions for the laboring man and woman.

The pattern scares me stiff.

While I believe in the union movement, I also believe that its power should be limited to the state in which it functions. I believe that unions in Utah, for instance, should be completely divorced from those in Illinois or New York or California or any of the other forty-seven states, each with its own separate leader. In this way they can carry on the fight for which they were originally formed—wages, hours, working conditions and the welfare of their own members in their own states. They would still have a voice in the national government—as each one of us has a voice—through a duly elected representative.

The consolidation proposal, if it is passed, will create an organization that will be physically able to sign the death warrant of any opposition. It will become an octopus with its tentacles reaching into the political, industrial, economical, and cultural life of the U.S.A.

In fact, one of these tentacles may well be circled around your own throat. —jlq

BY FRANK RILEY

THE CYBER *and* JUSTICE HOLMES

Old Judge Anderson feared the inevitable—he was to be replaced by a Cyber! A machine that dealt out decisions free of human errors and emotions. What would Justice Holmes think?

"CYBER JUSTICE!" That's what the District Attorney had called it in his campaign speech last night.

"Cyber justice!"

Oh, hell!

Judge Walhfred Anderson threw the morning fax paper on top of the law books he had been researching for the past two hours, and stomped angrily across his chamber to the door of the courtroom.

But it was easier to throw away the paper than the image of the words:

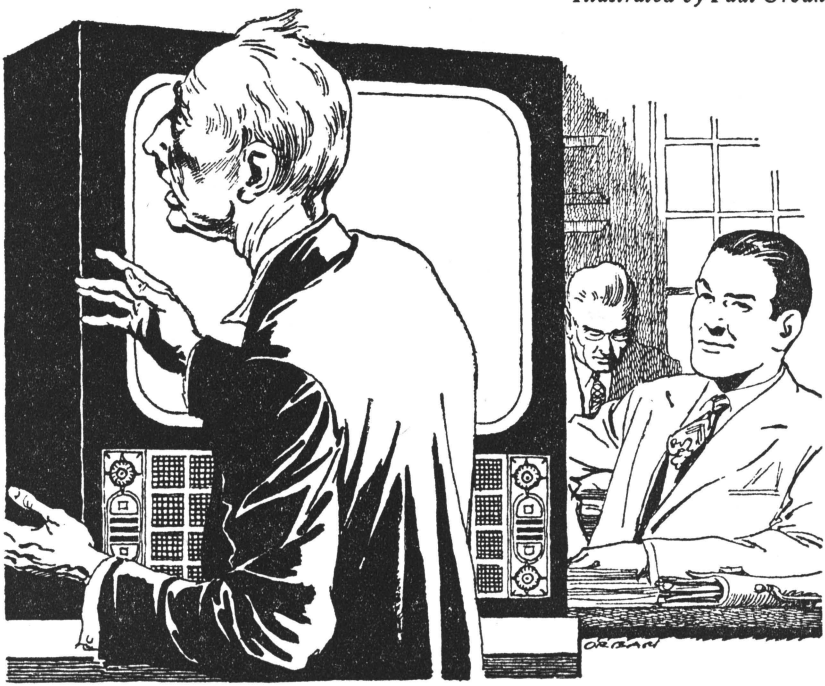
"—and, if re-elected, I pledge to do all in my power to help replace human inefficiency with Cyber justice in the courts of this county!

"We've seen what other counties have done with Cyber judges. We've witnessed the effectiveness of cybernetic units in our own Appellate Division . . . And I can promise you twice as many prosecutions at half the cost to the taxpayers . . . with modern, streamlined Cyber justice!"

Oh, hell!

Walhfred Anderson caught a glimpse of his reflection in the oval mirror behind the coat rack. He paused, fuming, and smoothed down the few lingering strands of grey hair. The District Attorney was waiting for him out there. No use giving him the satisfaction of looking upset. Only a few moments ago, the Presiding Judge had visa-

Illustrated by Paul Orban



phoned a warning that the D.A. had obtained a change of calendar and was going to spring a surprise case this morning . . .

The Judge cocked his bow tie at a jaunty angle, opened the neckline of his black robe enough for the pink boutonniere to peep out, and stepped into the courtroom as sprightly as his eighty-six years would permit.

The District Attorney was an ex-football player, square-shouldered and square-jawed. He propelled himself to his feet, bowed perfunctorily and remained standing for the Pledge of Allegiance.

As the bailiff's voice repeated the pledge in an unbroken monotone, Walhfred Anderson allowed his eyes to wander to the gold-framed picture of his personal symbol of justice, Oliver Wendell Holmes. Judge Anderson winked at Justice Holmes. It was a morning ritual he had observed without fail for nearly fifty years.

This wasn't the classic picture of Justice Holmes. Not the leonine figure Walhfred Anderson had once seen in the National Gallery. The Justice Holmes on the wall of Judge Anderson's courtroom was much warmer and more human than the official portrait. It was from an old etching that showed the Justice wearing a natty grey fedora. The Justice's fabled mustaches were long and sweeping, giving him the air of a titled playboy, but his eyes were the eyes of the man who had said: "When I am dying, my last words will be—have faith and pursue the unknown end."

Those were good words to remember, when you were eighty-six. Walhfred Anderson stared wistfully at the yellowed etching, waiting for some other dearly remembered phrase to spring up between them. But Justice Holmes wasn't communicative this morning. He hadn't been for a long time.

The District Attorney's voice, threaded with sarcasm, broke into his reverie:

"If the Court pleases, I would like to call up the case of People vs. Professor Neustadt."

Walhfred Anderson accepted the file from his aging, nearsighted clerk. He saw that the case had been assigned originally to Department 42. It was the case he had been warned about by the Presiding Judge.

Walhfred Anderson struggled to focus all his attention on the complaint before him. His craggy features, once described as resembling a benign bulldog, grew rigid with concentration. The Judge had a strong sense of honor about dividing his attention in Court. A case was not just a case; it was a human being whose past, present and future were wrapped up in the charge against him.

"Your Honor," the District Attorney broke in, impatiently, "if the Court will permit, I can summarize this case very quickly . . ."

The tone of his voice implied:

A Cyber judge would speed things up around here. Feed the facts into the proprioceptor, and they'd be stored and correlated instantly.

Perhaps so, Walhfred Anderson thought, suddenly tired, though the morning was still young. At eighty-six you couldn't go on fighting and resisting much longer.

Maybe he should resign, and listen to the speeches at a farewell luncheon, and let a Cyber take over. The Cybers were fast. They ruled swiftly and surely on points of law. They separated fact from fallacy. They were not led down side avenues of justice by human frailty. Their vision was not blurred by emotion. And yet . . . Judge Anderson looked to Justice Holmes for a clarifying thought, but the Justice's eyes were opaque, inscrutable.

Judge Anderson wearily settled back in his tall chair, bracing the ache in his back against the leather padding.

"You may proceed," he told the District Attorney.

"Thank you, your Honor."

This time the edge of sarcasm was so sharp that the Clerk and Court Stenographer looked up indignantly, expecting one of the Judge's famous retorts.

The crags in the Judge's face deepened, but he remained quiet.

With a tight smile, the District Attorney picked up his notebook.

"The defendant," he began crisply, "is charged on three counts of fraud under Section 31 . . ."

"To wit," rumbled Judge Anderson, restlessly.

"To wit," snapped the D.A., "the defendant is charged with giving paid performances at a local theatre, during which he purported to demonstrate that he could take over Cyber functions and perform them more efficiently."

Walhfred Anderson felt the door closing on him. So this was why the D.A. had requested a change of calendar! What a perfect tie-in with the election campaign! He swiveled to study the defendant.

Professor Neustadt was an astonishingly thin little man; the bones of his shoulders seemed about to thrust through the padding of his cheap brown suit. His thinness, combined with a tuft of white hair at the peak of his forehead, gave him the look of a scrawny bird.

"Our investigation of this defendant," continued the D.A., "showed that his title was assumed merely for stage purposes. He has been associated with the less creditable phases of show business for many years. In his youth, he gained considerable attention as a 'quiz kid', and later, for a time, ran his own program and syndicated column. But his novelty wore off, and he apparently created this cybernetic act to . . ."

Rousing himself to his judicial responsibility, Judge Anderson interrupted:

"Is the defendant represented by counsel?"

"Your Honor," spoke up Professor Neustadt, in a resonant, bass voice that should have come from a much larger diaphragm, "I request the Court's permission to act as my own attorney."

Walhfred Anderson saw the D.A. smile, and he surmised that the old legal truism was going through his mind: A man who defends himself has a fool for a client.

"If it's a question of finances," the Judge rumbled gently.

"It is not a question of finances. I merely wish to defend myself."

Judge Anderson was annoyed, worried. Whoever he was or claimed to be, this Professor was evidently something of a crackpot. The D.A. would tear him to small

pieces, and twist the whole case into an implicit argument for Cyber judges.

"The defendant has a right to act as his own counsel," the D.A. reminded him.

"The Court is aware of that," retorted the Judge. Only the restraining eye of Oliver Wendell Holmes kept him from cutting loose on the D.A. But one more remark like that, and he'd turn his back on the Justice. After all, what right had Holmes to get stuffy at a time like this? He'd never had to contend with Cyber justice!

He motioned to the D.A. to continue with the People's case, but the Professor spoke up first:

"Your Honor, I stipulate to the prosecution evidence."

The D.A. squinted warily.

"Is the defendant pleading guilty?"

"I am merely stipulating to the evidence. Surely the prosecution knows the difference between a stipulation and a plea! I am only trying to save the time of the Court by stipulating to the material facts in the complaint against me!"

The D.A. was obviously disappointed in not being able to present his case. Walhfred Anderson repressed an urge to chuckle. He wondered how a Cyber judge would handle a stipulation.

"Do you have a defense to present?" he asked the Professor.

"Indeed I do, your Honor! I propose to bring a Cyber into the courtroom and prove that I can perform its functions more efficiently!"

The D.A. flushed.

"What kind of a farce is this? We've watched the defendant's performance for several days, and it's perfectly clear that he is merely competing against his own special Cyber unit, one with very limited memory storage capacity . . ."

"I propose further," continued Professor Neustadt, ignoring the D.A., "that the prosecution bring any Cyber unit of its choice into Court. I am quite willing to compete against any Cyber yet devised!"

This man was not only a crackpot, he was a lunatic, thought Walhfred Anderson with an inward groan. No one but a lunatic would claim he could compete with the memory storage capacity of a Cyber.

As always when troubled, he looked toward Oliver Wendell Holmes for help, but the Justice was still inscrutable. He certainly was being difficult this morning!

The Judge sighed, and began a ruling:

"The procedure suggested by the defendant would fail to answer to the material counts of the complaint . . ."

But, as he had expected, the D.A. did not intend to let this opportunity pass.

"May it please the Court," said the District Attorney, with a wide grin for the fax reporter, "the people will stipulate to the defense, and will not press for trial of the complaint if the defendant can indeed compete with a Cyber unit of our choice."

Walhfred Anderson glowered at the unsympathetic Justice Holmes. Dammit, man, he thought, don't be so calm about this whole thing. What if you were sitting here, and I was up there in a gold frame?

Aloud, he hedged:

"The Court does not believe such a test could be properly and fairly conducted."

"I am not concerned with being fairly treated," orated the wispy Professor. "I propose that five questions or problems be posed to the Cyber and myself, and that we be judged on both the speed and accuracy of our replies. I am quite willing for the prosecution to select the questions."

Go to hell, Holmes, thought Judge Anderson. I don't need you anyway. I've got the answer. The Professor is stark, raving mad.

Before he could develop a ruling along this line, the grinning D.A. had accepted the Professor's terms.

"I have but one condition," interposed the defendant, "if I win this test, I would like to submit a question of my own to the Cyber."

The D.A. hesitated, conferred in a whisper with his assistant, then shrugged.

"We so stipulate."

Firmly, Walhfred Anderson turned his back on Oliver Wendell Holmes.

"In the opinion of the Court," he thundered, "the proposed demonstration would be irrelevant, immaterial and without substantive basis in law. Unless the People proceed with their case in the proper manner, the Court will dismiss this complaint!"

"Objection!"

"Objection!"

The word was spoken simultaneously by both the D.A. and the Professor. Then the defendant bowed toward the District Attorney, and asked him to continue.

FOR ONE of the few times in his life, Walhfred Anderson found himself faced with the same objection, at the same time, from both prosecution and defense. What a morning! He felt like turning the court over to a Cyber judge right here and now, and stomping back to his chambers. Let Holmes try getting along with a Cyber!

The D.A.'s voice slashed into his thoughts.

"The People object on the grounds that there is ample precedent in law for the type of court demonstration to which we have agreed . . ."

"For example," spoke up the Professor, "People vs. Borth, 201 N.Y., Supp. 47—

The District Attorney blinked, and looked wary again.

"The People are not familiar with the citation," he said, "but there is no reason to be in doubt. The revised Judicial Code of Procedure provides for automatic and immediate review of disputed points of law by the Cyber Appellate Division."

CAD! Walhfred Anderson customarily used every legal stratagem to avoid the indignity of appearing before CAD. But now he was neatly trapped.

Grumbling, he visaphoned the Presiding Judge, and was immediately assigned to Cyber V, CAD, fourth floor.

Cyber V presided over a sunlit, pleasantly carpeted courtroom in the south wing of the Justice Building. Square, bulky, with mat black finish, the Cyber reposed in the center of a raised mahogany stand. Its screen and vocader grill looked austerely down on the long tables

provided for opposing counsel.

As Walhfred Anderson belligerently led the Professor and the D.A. into the courtroom, Cyber V hummed softly. A dozen colored lights on its front grid began to blink.

Judge Anderson angrily repressed an instinct to bow, as he had done in his younger years when appearing to plead a case before a human Appellate Court.

The Cyber's soft, pleasantly modulated voice said:

"Please proceed."

Curbing his roiled feelings of rage and indignity, the Judge stepped to the stand in front of the vocader grill and tersely presented the facts of the case, the reasons for his ruling. Cyber V blinked and hummed steadily, assimilating and filing the facts.

The D.A. followed the Judge to the stand, and, from long habit, addressed Cyber V with the same emotion and voice tricks he would have used in speaking to a human judge. Walhfred Anderson grimaced with disgust.

When the D.A. finished, Cyber V hummed briefly, two amber lights flickered, and the soft voice said:

"Defense counsel will please take the stand."

Professor Neustadt smiled his ironic, exasperating smile.

"The defense stipulates to the facts as stated."

The frontal grid lights on Cyber V flashed furiously; the hum rose to a whine, like a motor accelerating for a steep climb.

Suddenly, all was quiet, and Cyber V spoke in the same soft, pleasant voice:

"There are three cases in modern jurisprudence that have direct bearing on the matter of People vs. Neustadt.

"Best known is the case of People vs. Borth, 201 N.Y., Supp. 47 . . ."

Walhfred Anderson saw the D.A. stiffen to attention as the Cyber repeated the citation given by Professor Neustadt. He felt his own pulse surge with the stir of a faint, indefinable hope.

"There are also the cases of Forsythe vs. State, 6 Ohio, 19, and Murphy vs. U.S., 2d, 85 C.C.A.

"These cases establish precedence for a courtroom demonstration to determine points of material fact.

"Thank you, Gentlemen."

The voice stopped. All lights went dark. Cyber V, CAD, had rendered its decision.

Whatever misgivings the D.A. may have generated over the Professor's display of legal knowledge were overshadowed now by his satisfaction at this display of Cyber efficiency.

"Eight minutes!" he announced triumphantly. "Eight minutes to present the facts of the case and obtain a ruling. There's efficiency for you! There's modern courtroom procedure!"

Walhfred Anderson felt the weight of eighty-six years as he cocked the angle of his bow tie, squared his shoulders and led the way back to his own courtroom. Maybe the new way was right. Maybe he was just an old man, burdened with dreams, memories, the impedimentia of human emotions. It would have taken him many long, weary hours to dig out those cases. Maybe the old way

had died with Holmes and the other giants of that era.

Details of the demonstration were quickly concluded. The D.A. selected a Cyber IX for the test. Evidently he had acquired a new respect for Professor Neustadt and was taking no chances. Cyber IX was a massive new model, used as an intergrator by the sciences. Judge Anderson had heard that its memory storage units were the greatest yet devised.

If Professor Neustadt had also heard this, he gave no sign of it. He made only a slight, contemptuous nod of assent to the D.A.'s choice.

For an instant, the Judge found himself hoping that the Professor would be beaten into humility by Cyber IX. The man's attitude was maddening.

Walhfred Anderson banged his gavel harder than necessary, and recessed the hearing for three days. In the meantime, a Cyber IX was to be moved into the courtroom and placed under guard. Professor Neustadt was freed on bail, which he had already posted.

Court fax-sheet reporters picked up the story and ballooned it. The D.A.'s office released publicity stories almost hourly. Cartoonists created "Battle of the Century" illustrations, with Cyber IX and Professor Neustadt posed like fighters in opposite corners of the ring. "Man challenges machine" was the caption, indicating that the Professor was a definite underdog and thus the sentimental favorite. One court reporter confided to Judge Anderson that bookmakers were offering odds of ten to one on Cyber IX.

To the Judge's continuing disgust, Professor Neustadt seemed as avid as the Prosecutor's office for publicity. He allowed himself to be guest-interviewed on every available television show; one program dug up an ancient film of the Professor as a quiz kid, extracting cube roots in a piping, confident voice.

Public interest boiled. TV coverage of the court test was demanded, and eagerly agreed to by both the Prosecutor and Professor Neustadt. Walhfred Anderson ached to cry out against bringing a carnival atmosphere into his courtroom; the fax photographers were bad enough. But he knew that any attempt to interfere would bring him back before that infernal CAD.

WHEN HE entered his courtroom on the morning of the trial, the Judge wore a new bow tie, a flippant green, but he felt like many a defendant he had watched step up before his bench to receive sentence. After this morning, there'd be no stopping the D.A.'s campaign for Cyber judges. He glared unhappily at the battery of television cameras. He noted that one of them was pointed at Oliver Wendell Holmes. The Justice didn't seem to mind; but who would—all safe and snug in a nice gold frame? Easy enough for Holmes to look so cocky.

The bright lights hurt his eyes, and he had to steel himself in order to present the picture of dignified equanimity that was expected of a judge. People would be looking at him from every part of the

world. Five hundred million viewers, one of the columnists had estimated.

Professor Neustadt appeared in the same shiny brown suit. As he passed the huge Cyber IX unit, metallic gray and mounted on a table of reinforced steel, the Professor paused and bowed, in the manner of a courtly gladiator saluting a respected foe. Spectators clapped and whistled their approval. Television cameras zoomed in on the scene. With easy showmanship, Professor Neustadt maintained the pose for closeups, his owlish eyes wide and unblinking.

Judge Anderson banged his gavel for order. What a poseur! What a fraud! This charlatan would get a million dollars worth of publicity out of the case.

At a nod from the D.A., the bailiff gave Professor Neustadt a pad of paper on which to note his answers. It had been previously been agreed that Cyber IX would answer visually, on the screen, instead of by vocader. The Professor was seated at the far end of the counsel table, where he could not see the screen. Clerks with stopwatches were stationed behind the Professor and Cyber IX.

"Is the defendant ready?" inquired Judge Anderson, feeling like an idiot.

"Of course."

The Judge turned to Cyber IX, then caught himself. He flushed. The courtroom tittered.

The District Attorney had five questions, each in a sealed envelope, which also contained an answer certified by an eminent authority in the field.

With a flourish, keeping his profile to the cameras, the D.A. handed the first envelope to Judge Anderson.

"We'll begin with a simple problem in mathematics," he announced to the TV audience.

From the smirk in his voice, Judge Anderson was prepared for the worst. But he read the question with a perverse sense of satisfaction. This Professor was in for a very rough morning. He cleared his throat, read aloud:

"In analyzing the economics of atomic power plant operation, calculate the gross heat input for a power generating plant of 400 x 10^6 watts electrical output."

Cyber IX hummed into instantaneous activity; its lights flashed in sweeping curves and spirals across the frontal grid.

Professor Neustadt sat perfectly still, eyes closed. Then he scribbled something on a pad of paper.

Two stopwatches clicked about a second apart. The clerk handed the Professor's slip of paper to Judged Anderson. The Judge checked it, turned to the screen. Both answers were indentical:

3,920 x 10^6 BTU/hr.

Time was announced as fourteen seconds for Cyber IX; fifteen and three-tenths seconds for Professor Neustadt. The Cyber had won the first test, but by an astoundingly close margin. The courtroom burst into spontaneous applause for the Professor. Walhfred Anderson was incredulous. What a fantastic performance!

No longer smirking, the D.A. handed the Judge a second envelope.

"What is the percentage compressibility of caesium under 45,000

atmospheres of pressure, and how do you account for it?"

Once again Cyber IX hummed and flickered into action.

And once again Professor Neustadt sat utterly still, head tilted back like an inquisitive parakeet. Then he wrote swiftly. A stopwatch clicked.

Walhfred Anderson took the answer with trembling fingers. He saw the D.A. rub dry lips together, try to moisten them with a dry tongue. A second stopwatch clicked.

The Judge compared the correct answer with the Professor's answer and the answer on the screen. All were worded differently, but in essence were the same. Hiding his emotion in a tone gruffer than usual, Judge Anderson read the Professor's answer:

"The change in volume is 17 percent. It is due to an electronic transition for a 6s zone to a 5d zone."

The Professor's elapsed time was 22 seconds. Cyber IX had taken 31 seconds to answer the compound question.

Professor Neustadt pursued his lips; he seemed displeased with his tremendous performance.

Moving with the agility of a pallbearer, the D.A. gave Judge Anderson the third question:

"In twenty-five words or less, state the Nernst Law of thermodynamics."

This was clearly a trick question, designed to trap a human mind in its own verbiage.

Cyber IX won, in eighteen seconds. But in just two-fifths of a second more; Professor Neustadt came through with a brilliant twenty-four word condensation:

"The entropy of a substance becomes zero at the absolute zero of temperature, provided it is brought to this temperature by a reversible process."

A tabulation of total elapsed time revealed that Professor Neustadt was leading by nine and three-tenths seconds.

A wild excitement blended with the Judge's incredulity. The D.A. seemed to have developed a tic in his right check.

On the fourth question, dealing with the structural formula similarities of dimenhydrinate and diphenhydramine hydrochloride, Professor Neustadt lost three seconds.

On the fifth question, concerning the theoretical effects of humidity inversion on microwave transmission, the Professor gained back a full second.

The courtroom was bedlam, and Walhfred Anderson was too excited to pound his gavel. In the glass-walled, soundproofed television booths, announcers grew apoplectic as they tried to relay the fever-pitch excitement of the courtroom to the outside world.

Professor Neustadt held up his bone-thin hand for silence.

"May it please the Court . . . The District Attorney agreed that in the event of victory I could ask Cyber IX an optional question. I would like to do so at this time."

Judge Anderson could only nod, and hope that his bulldog features were concealing his emotions. The D.A. kept his back rigidly to the television cameras.

Professor Neustadt strutted up to Cyber IX, flipped on the voca-

der switch and turned to the cameras.

"Since Cyber IX is essentially a scientific integrator and mathematical unit," he began pedantically, "I'll put my question in the Cyber's own framework. Had another Cyber been selected for this test, I would phrase my question differently."

He turned challengingly back to Cyber IX, paused for dramatic effect, and asked:

"What are the magnitudes of a dream?"

Cyber IX hummed and twinkled. The hum rose higher and higher. The lights flickered in weird, disjointed patterns, blurring before the eye.

Abruptly, the hum stopped. The lights dimmed, faded one by one.

The eternally calm, eternally pleasant voice of Cyber IX spoke from the vocader grill:

"Problem unsolved."

FOR AN interminable instant there was silence in the courtroom. Complete silence. Stunned incredulity. It was followed by a collective gasp, which Walhfred Anderson could hear echoing around the world. Cyber IX had been more than beaten; it had failed to solve a problem.

The gasp gave way to unrestrained cheering.

But the Professor brought quiet again by raising his bony hand. Now there was a strange, incongruous air of dignity about his thin figure.

"Please," he said, "please understand one thing . . . The purpose of this demonstration and my question was not to discredit Cyber IX, which is truly a great machine, a wonder of science.

"Cyber IX could not know the magnitudes of a dream . . . because it cannot dream.

"As a matter of fact, I do not know the magnitudes of a dream, but that is not important . . . because I *can* dream!

"The dream is the difference . . . The dream born in man, as the poet said, 'with a sudden, clamorous pain' . . ."

There was no movement or sound in the courtroom. Walhfred Anderson held the Professor's last written answer between his fingers, as if fearing that even the small movement to release it might shatter something delicate and precious. "The dream is the difference!" There it was. So clear and true and beautiful. He looked at Holmes, and Holmes seemed to be smiling under his gray mustache. Yes, Holmes had known the dream.

In the sound-proof booths, the announcers had stopped speaking; all mike lines were open to carry Professor Neustadt's words to five hundred million people.

"Perhaps there are no magnitudes of such a dream . . . no coordinates! Or it may be that we are not yet wise enough to know them. The future may tell us, for the dream is the rainbow bridge from the present and the past to the future."

Professor Neustadt's eyes were half-closed again, and his head was cocked back, bird-like.

"Copernicus dreamed a dream . . . So did da Vinci, Galileo and Newton, Darwin and Einstein . . . all so long ago . . .

"Cyber IX has not dreamed a dream . . . Nor have Cyber VIII, VII, VI, V, IV, III, II, I.

"But they can free men to dream.

"Remember that, if you forget all else: They can free men to dream!

"Man's knowledge has grown so vast that much of it would be lost or useless without the storage and recall capacity of the Cybers —and man himself would be so immersed in what he knows that he would never have time to dream of that which he does not yet know, but must and can know.

"Why should not the scientist use the past without being burdened by it? Why should not the lawyer and the judge use the hard-won laws of justice without being the slave of dusty law books?"

Walhfred Anderson accepted the rebuke without wincing. The rebuke for all the hours he had wasted because he had been too stubborn to use a Cyber clerk, or consult Cyber V. The old should not resist the new, nor the new destroy the old. There was the letter of the law, and there was the spirit, and the spirit was the dream. What was old Hammurabi's dream? Holmes had quoted it once. " . . . to establish justice on the earth . . . to hold back the strong from oppressing the feeble . . . to shine like the sun-god upon the blackheaded men, and to illumine the land . . ." Holmes had dreamed the dream, all right. He had dreamed it grandly. But maybe there was room for small dreams, too, and still time for dreams when the years were so few and lonely.

The Professor suddenly opened his eyes, and his voice took on the twang of steel under tension.

"You are already wondering," he told the cameras accusingly, "whether I have not disproved my own words by defeating Cyber IX.

"That is not true.

"I defeated Cyber IX because I have wasted a man's life—my own! You all know that as a child I was a mnemonic freak, a prodigy, if you prefer. My mind was a filing cabinet, a fire-proof cabinet neatly filled with facts that could never kindle into dreams. All my life I have stuffed my filing cabinet. For sixty years I have filed and filed.

"And then I dreamed one dream—my first, last and only dream.

"I dreamed that man would misuse another gift of science, as he has mis-used so many . . . I dreamed of the Cybers replacing and enslaving man, instead of freeing man to dream . . . And I dreamed that the golden hour would come when a man would have to prove that he could replace a Cyber—and thereby prove that neither man nor Cybers should ever replace each other."

Professor Neustadt turned to Judge Anderson, and his voice dropped almost to a whisper.

"Your Honor, I move that this case be dismissed."

The worn handle of his old teakwood gavel felt warm and alive to the Judge's fingers. He sat up straight, and banged resoundingly on the top of his desk.

"Case dismissed."

Then, in full view of the cameras, Walhfred Anderson turned and winked boldly at Oliver Wendell Holmes. • • •

A series of "incidents" had provoked a state of emergency between two great powers. The reason was obvious. But why a single chemist as bait—and who *was the third party? . . . The 4th award winner in IF's College Science Fiction Contest.*

THE 3rd PARTY

BY

LEE B. HOLUM

Illustrated by Kelly Freas

SNOW BEAT against the tall windows of the terminal building. The howling of the wind around the corners of the building and across the broad expanse of the rocket field went unheard by the thousands who streamed across the crowded floor. Each was intent on his or her affairs, hurrying to board one of the tall spires out on the snow covered field, seeing someone off, or waiting for incoming friends.

Roger Lorin and his wife waited near the entrances to the boarding tunnels for the announcement that would send them out under the field to their rocket. The shouts of porters and the voices of excited passengers mingled with the noises of the terminal. Groups of people moved across the floor like the currents of the ocean.

Suddenly, the announcer's voice boomed out over the p. a. "All passengers for the Arctic City rocket report to tunnel seven."

"Come on Linda," Roger said. "That's our ship." He hurried his wife toward the tunnel entrance. A few minutes later they stepped off the conveyer walk at the bottom

of an elevator shaft. The gray uniformed attendant checked their tickets, before the glass cage lifted them to the lock entrance high on the side of the rocket. The wind sang its mournful song around the corners of the cage and fired volleys of snow against the glass. At the air lock entrance, a stewardess checked their tickets a second time.

"Couches 34 and 35? Follow me, please." She led them up one deck and over to a pair of couches, one of which was next to a small eyeport.

"Take the one next to the port, honey," said Roger. "The view's worth seeing."

A moment later, a buzzer sounded, and a red light flashed on near the hatch to the deck above. The voice of the pilot came over the intercom system.

"We are blasting off in five minutes. All passengers who have not strapped in will please do so immediately." Three minutes went by, and the final warning buzzer sounded. After another two minutes, the rumble of the motors came from the tail of the ship. The rocket, a towering silver needle with orange flame spouting from its lower end, paused on the field as its motors warmed up. Then it rose majestically on a column of fire and disappeared in the swirling snow.

Linda was surprised to find that the sound of the blast off was not as loud as she had expected. Neither did she find the acceleration of two and a half gravities excessively uncomfortable. The brightly lighted compartment made the scene outside the eyeport seem dark; although it was only four-

thirty in the afternoon. Tiny pellets of snow streamed by the port during the few seconds it took the rocket to scream through the lower atmosphere. Then the ship burst through the clouds. Linda gave an exclamation of surprise and pleasure at the sheer beauty of the sight. The clouds rose like tumbled snowy mountain ranges under an ice blue winter sky. The setting sun painted their tops in brilliant hues of pink, orange, and violet. Their eastern sides lay in blue shadow honeycombed with caves and grottos.

"It's beautiful!" exclaimed Linda. "I never dreamed it would be like this."

"You have to see it to really appreciate it," Roger said. "Descriptions never do it justice."

As the rocket continued to rise, the clouds flattened until they resembled pack ice on an arctic sea. More of Earth became visible, and spots of green and brown appeared on the southwestern horizon. Finally the blue of the Pacific crept into view, brilliantly contrasted against the now black sky.

"You may be able to see a few stars if you don't look toward Earth or the sun," Roger said to Linda. Linda followed Roger's instructions; and, sure enough, a few stars appeared, unwinking points of light against black velvet. Now over three hundred miles above Earth, the rocket had crossed the frontier into outer space.

The rocket passed the top of its arc and the scenery was forgotten; the natural fear of falling to which all humans are heir asserted itself. Linda suddenly realized that there was no sensation of weight and that the rocket was falling steadily through space.

"Is . . . is everything all right?" she asked in a weak voice.

"Don't worry dear," Roger replied soothingly. "We'll be landing in another half hour. You won't have to go through much more of it."

"Thank goodness!" Linda breathed a sigh of relief and laid her dark head on Roger's shoulder. Roger put his arm around her and held her until the rocket came in with a squeal of runners against hard packed snow. Lights flashed by the eyeport as they slid along the runway. In the distance the lighted, slablike towers of Arctic City loomed against the dark sky. The night was clear and bitterly cold.

The rocket slid to a stop, and an electric tractor came to tow the ship to the top of an elevator shaft. A few minutes later the passengers streamed along a conveyer walk into the Arctic City terminal. The sounds of hurried activity echoed through the tunnel. The rumble of heavy freight conveyers, the shouts of stevedores, the whine of heavily loaded electric motors, and the hum of conversation mingled in a medley of sounds that spoke of commerce and industry, of people busy at an almost endless array of tasks.

"Are you Roger Lorin?" The question came from a short, stocky, gray-haired individual.

"Yes, I am," Roger replied.

"I'm Jacob Darcy. I'm supposed to show you to your apartment and help you get oriented."

"Good," Roger said. "You lead. We'll follow." Darcy turned and led them to a small electric mono-

rail car which sped them through a maze of underground streets past the windows of many shops and stores.

After a ten minute ride in the monorail and a fast ascent in an elevator, the three of them entered a small apartment high in one of the slablike buildings. The apartment was comfortable and compact, though not luxuriously furnished. One transparent wall of the living room looked out over the city and the arctic landscape.

"I thought things would be more primitive," said Linda as she looked around her future home. "This doesn't seem like a frontier at all."

"No," Darcy replied with a smile. "Arctic City is pretty well built up. Conditions are a lot better here than they are in some of the mining centers farther north." He turned to Roger. "I'll be around tomorrow morning to show you the labs. Sometime around eight or eight thirty."

"I'll be ready," replied Roger. "It should be interesting to see the facilities here."

"I suppose the high temperature work will be most interesting to you," said Darcy. "I read your paper on molecular linkages. We'll sure be able to use you. We're having the devil's own time with the linings for the reaction chambers in the neutron pile."

"I hope I can help," said Roger. "The cooling problem should be quite a challenge without the extreme temperatures and high vacuum that we had at the moon labs."

"That's right. You did work on the first neutron pile, didn't you?" Darcy said as he prepared to leave. "That makes it much better. There are too few men with practical experience in neutron pile work."

It had long been known by physicists that tremendous amounts of energy could be released if matter could be collapsed to form neutrons. This step had been achieved in 2047 A. D., at the Lunar atomic laboratories. The Arctic City pile was the first attempt to apply it to industrial uses.

Up to this time (2054), man had been barred from the planets by the lack of a fuel cheap enough to make trips across interplanetary space economically feasible. Long, economical orbits could be used; but these brought on psychological problems resulting from living in cramped quarters for long periods of time, and problems of carrying enough supplies for such long trips. In shorter orbits, the profits would be burned up in excessive fuel consumption. The most efficient fuel was monatomic hydrogen, which is highly unstable unless dissolved in a catalyst to keep it from exploding at ordinary temperatures. The catalyst and the process for making the fuel were both expensive. Moon colonies were maintained only because the moon was the best known source of germanium; and its vacuum was a valuable location for astronomical observatories and atomic research laboratories.

The neutron pile applied to space travel would make an interplanetary civilization possible. The pile, releasing neutrons and ions at velocities approaching that of light, would make use of small amounts of inexpensive materials as fuels.

It also had frightening potential-

ities for mass destruction.

The ambassador of the South American Republic thought of the destructive possibilities as he rode the small monorail car toward the Government Center in Chicago, which was now the capital of the North American Union. The shore of Lake Michigan was studded with tall skyscrapers connected by streets with transparent coverings. At ground level, a system of conveyer walks ranging from the hundred mile per hour strips in the center to five mile per hour strips on the edges, whisked brightly clad people about their business. On the second level, monorail tracks carried the high speed freight and passenger traffic of the city. The ambassador's car pulled in at a second level siding near the loading platform for the Government Tower. As he stepped from his car, he was met by two secret service agents who escorted him to the office of the Secretary of State.

The Secretary sat behind a large desk in a comfortably furnished office on the eightieth floor. Through the large window wall behind the Secretary, the scattered towers of the city were somewhat obscured by flying snow and the gloom of a December morning.

The distinguished looking man behind the desk had served his country well during the past thirty years. He knew the problems faced by such nations as the South American Republic, the League of Islam, the Asian Commonwealth, the decadent subject nations of western Europe, and the tiny, constantly warring states that comprise what was left of the once mighty U.S.S.R. That morning he had sent a note refusing help to the Baltic Federation, which had accused the Arctic League of aggression. The North American Union had no desire to enter foreign wars that did not concern it.

The Secretary rose and extended his hand.

"Good morning," he greeted the ambassador as he shook hands with him. "Have a seat." The Secretary waved toward a comfortable chair near the desk. The ambassador seated himself with his overcoat across his knees.

"I cannot get used to your cold weather," he said good naturedly. I have spent too much time in the tropics."

"We seem to be getting an unusually cold winter," the Secretary replied. "I'll have to admit that Chicago doesn't compare with Rio as far as weather is concerned."

"I wish that I were there now," the ambassador said in a more serious tone. "I would not have to discuss with you this trouble that has come up."

"What trouble?" the Secretary asked. "Your note wasn't clear about what you wished to discuss with me."

"As you probably know, there are groups in my country that fear the technical developments that have been going on during the past ten years," the ambassador replied. "They do not know your country as well as I do, and fear that you will use the neutron energy discovery as a weapon."

"Why should they fear our energy developments?" the Secretary asked. "The Lunar atomic laboratories are open for inspection at all times, and the pile being built

in the Arctic is no secret either. All the developments are private ventures. The idea of making neutron bombs hasn't even been raised in Congress."

"Unfortunately my people do not know this," replied the ambassador. "These groups have used much propaganda and have thoroughly misled the masses. That the laboratories are located on the moon does not help. You know how rigid the requirements are for those who would travel in space. Several men from my country have not been allowed to go for health reasons. This naturally feeds the suspicions of my people, who do not understand why such things must be done. To remedy this trouble my government has instructed me to arrange for a meeting between our presidents."

"I think such a meeting would be possible," the Secretary said. "I'm sure that the president will understand the situation. The memory of the twentieth century won't fade easily. I'll see if a trip to the Lunar laboratories can be arranged. It would be good if some members of the dissatisfied groups were allowed to make the trip."

"That would be very good," replied the ambassador. "It would help to counteract their propaganda. They are seeking power, and would gain it at the expense of good will between our nations. This will very effectively remove the source of their grievances."

"I'll bring it up at the cabinet meeting this afternoon," the Secretary said. "It would be wisest to get this business moving as fast as possible."

The ambassador rose from his seat. "You will let me know the outcome of the meeting as soon as you can?"

"Yes," replied the Secretary. "As soon as it's over."

THE LABORATORIES at Arctic City were fairly new but already had the cluttered appearance of all research labs. Electronic instruments, coils of wire, and various articles of chemical apparatus lay on the work benches. One room held the dial-studded face of a computer. Another contained several induction and carbon arc furnaces used in high temperature work. Men wearing white smocks or plastic aprons went quietly and efficiently about their tasks.

Roger and Darcy entered a lab in which a man sat staring at the face of an oscilloscope, where weird figures danced in yellowish-green tracery. The bench was covered with a bewildering array of equipment. A row of gas discharge tubes glowed with varicolored light. From them a spaghetti-like arrangement of many colored wires led to various instruments scattered along the bench.

"How's it coming, Phil?" Darcy asked.

The man looked up from his work. "Hi, Jake," he said. "I might get somewhere if this oscillator would stop wandering all over the place. This thing doesn't seem to be very accurate at high frequencies." He indicated a piece of equipment connected to the oscilloscope.

"I'll sure be glad when we get a good physical chemist to do this work. My business is ceramics, and

I'm getting sick and tired of wrestling with his wiring."

"Well," said Darcy, "you won't have to worry about this any more. This is Roger Lorin, our new physical chemist. Roger, this is Philip Gordon, our ceramics expert."

Gordon grinned and extended his hand. "I'm glad to meet you," he said. "Sorry I blew off like that. I just get disgusted sometimes."

"It does get frustrating," Roger agreed as they shook hands. "Electronics is rather tricky."

"You're right there," replied Gordon. "Especially when you don't know too much about it. What I learned about electronics in college has long since departed. Take a look at this set up. It's about as poor a job of haywiring as you'll find anywhere."

"I see you're using high frequency excitation to get your high temperatures," Roger commented. "Just what compounds are you working with?"

"I've been working with some plastics, inert stuff, to see just what they'll react with, and how fast they'll react at high temperatures."

"It isn't too easy," Lorin said. "It never has been easy to find reaction rates. I'll get to work on these this afternoon. Maybe I can get some of these finished tomorrow or the next day."

"Thanks," Gordon said in a relieved voice. "It'll be good to get some results I can rely on."

Lorin and Darcy left the lab and walked through a winding succession of corridors until they came to a large room. One wall was lined with catwalks linked by metal ladders. Men in coveralls moved against the slate gray background like insects on the side of a building. Through a door to their right Lorin could see banks of instruments at which several men were working.

"This is the south face of the pile," Darcy said. "Most of the instruments are located here. The Klysten converters are mounted in that room over there." He indicated a door on their left.

"I'd like to see those," Roger said. "I hear that these are pretty large compared with what we had at the moon labs."

"They're big enough all right," Darcy said. "Each one is four stories high. We had a deuce of a time evacuating them."

As Darcy said this, they stepped into a long high room. To their right stood six immense transparent tubes. Each tube contained a grid of thick steel bars which was mounted so that it completely surrounded a coil of heavy copper bar in the center of the tube. The steel bars had been treated so that a magnetic field would build up rapidly when they were exposed to hard radiations. The radiation beams were passed into the grid in pulses, thus causing the magnetic field to build up and collapse rapidly producing current in the coils by induction. The tubes were generators with no moving parts except electrons and protons. The system used about seventy-five per cent of the energy produced by the pile. The residual radiation was released as greenish yellow light.

"Why are they transparent?" Roger asked. "I should think that metals would be stronger and easier to manage."

"The transparency helps us to

maintain a more accurate control," Darcy replied. "When the light shifts toward the blue, we know that more energy is being released as radiation, and can shut down the tube before it gets a chance to heat up too much."

"Good idea," said Roger. "Control was our worst trouble at the moon labs."

"We'll use this until we find something better," said Darcy as they left the pile area.

UNKNOWN to Roger Lorin, events which would shape the course of the next few weeks, and would ultimately change his whole life were taking place far to the south. A third party had entered the political stage of the Western Hemisphere. The League of Islam had finally decided to do something about an incident which it had never forgiven. Over thirty years earlier, the Union had sent marines into the Suez Canal area to stop alleged assaults against American citizens. In a sense, the North American Union had indicated that it thought of the League of Islam as nothing more than a backward group, which could be pacified whenever trouble arose within its borders. The insult had never been forgotten by the fanatically nationalistic Moslems. Only the greater military might of the North American power had prevented a war at that time. Now, the League had decided that the time was ripe to gain immunity from such insults forever by some shrewd political maneuvering.

Working through a small dissatisfied political party in South America, they used the North's development of neutron energy to create fear in the minds of the people of the southern republic. By stimulating this fear, the Arabs hoped to weaken both powers through war, and thereby to gain power and prestige among the nations. The League hoped to gain through political devices what it could never get in open war.

Up to January 5, 2055, the leaders of the western hemispheric powers did not realize what was actually taking place. But then reports began coming into the offices of the investigators of both nations which changed the picture.

On January 2, an American oil well in the Gulf of Mexico had been blown up. The saboteur was not caught, since the bomb had been cleverly hidden sometime before the explosion. Two days later, in the state of Venezuela, an official of the South American government was shot and killed. Although the assassin escaped after a grueling two day chase and was never really identified, there were plenty of rumor mongers to remind the people that the dead official had held opinions that were not favorable to the North American Union. Accompanied by such incidents friction between the two nations grew.

The events that set the pot to boiling, and nearly caused it to boil over occurred at Arctic City. Up to this time, Roger Lorin had considered the reports of such incidents as news that seemed rather unreal, because of its distance from his immediate affairs. Now, however, he found himself in the middle of the trouble between the two na-

tions. Although he scarcely knew it, he had become a key man on the neutron pile project. His research into the physics of interatomic and intermolecular forces had aided materially the work on the pile.

It started, innocently enough, during the early afternoon of January 9, when a group of ten men ostensibly bound for a mining town farther north, took a guided tour of the pile area. About one sixth of the reaction cells into which the pile was divided for convenience, were in operation; and the six converter tubes were aglow with greenish yellow light. The entrance of the men into the central chamber was the signal. A previously planted bomb exploded with enough violence to shatter the tubes; filling the converter room with greenish yellow fire and hard radiations.

A smoke bomb provided extra screening and the group hurried down a side tunnel under cover of the gray mantle. Roger heard the sounds of confusion accompanied by the clangor of an alarm bell, announcing that hard radiations were loose somewhere in the plant. He stepped to the door of the lab, and a gas gun exploded in his face. He knew nothing more, until he awoke aboard a fast moving jet.

The convertiplane winged through the Arctic twilight for nearly two hours, and finally came down on a flat stretch of snow covered tundra, near the shore of the Arctic Ocean. A group of three dome huts stood at the base of a low cliff. Otherwise, the scene was one of silent, dark desolation.

One of the men handed Roger a pair of insulated, electrically heated coveralls. Roger put them on without argument. Next, the man motioned toward the hatch with a machine pistol. "Get movin'," he snapped. "Make it quick. And don't try to run for it. You wouldn't get far."

Roger dropped through the hatch and waited quietly. When his captors finally dropped through the hatch, they steered him none too gently toward the middle hut.

On his right as he entered, three men sat playing cards around a small table. To his left, a man lay on a cot reading a magazine by the light of a mining lantern. Roger was shoved across the main room, through a passageway and into a room on the right. The metal door clanged shut behind him, and the bolt shot home with the finality of a prison gate.

"Well, I see I have company," a voice came out of the gloom. As Roger's eyes grew accustomed to the dimness, he saw an old man sitting on the edge of a narrow cot.

"Who are you?" Roger asked in a bewildered voice. "And just what's been going on? Why should I be kidnapped and brought to this God forsaken spot?"

"You must be the chemist they were talking about," the old man replied. "I heard them say something about one of the chief chemists at the neutron pile project. As for me, my name is Dr. Alexander Nolan. I came up here in my plane about a month ago to write up some historical research I've been doing during the past five years. Instead, your kidnappers came in and took over. But here I am rambling on about myself as usual. What's your name, young fellow?"

"I'm Roger Lorin," Roger re-

plied. "I'm a chemist all right. I was working at Arctic City on the neutron project, but I still can't figure out why I should be kidnapped. They couldn't get any ransom, and I don't have any information that would be useful to them. I just don't see it."

"Roger Lorin, eh," the historian mused. "I think I see why you were kidnapped. You're more important than you think you are, which is unusual. Most men think that they are more important than they really are. I suppose you've heard about the oil well that was blown up in the Gulf of Mexico and the man who was shot and killed down in Venezuela. Now, if some North American Citizen were to be found dead, possibly tortured for information about the neutron pile, it might be just the spark that sets off the powder keg that's been building up during the past ten years."

"But why should South America do anything like that?" Roger asked nervously. "They have nothing to gain by such actions. We've shared the information on pile developments since the projects were started."

"Oh, but South America is not the power behind this business," Nolan said gently. "I'll admit that the evidence seems to point to South America, but I have reasons to believe that another power is behind this."

"But which one could it be?" asked Roger.

"Indications point to the League of Islam," replied Nolan. "They are clever, but a student of political history can get some insight into their plans if he looks carefully enough. If you're interested, I can give you some background."

"Go ahead," Roger said. "I'd like to find out what's behind this."

"Well," the historian began. "I guess that you could say that this story goes back 4000 years. The hatred between the Jews and the Arabs goes back that far, and it plays an important part in the present situation. Actually the seeds of the present trouble were planted more than a hundred years ago, when the United States helped the Jews set up a republic on land that the Arabs considered theirs. When the republic of Israel was established, many Arabs were driven from their homes. Added to this, American economic aid to Israel didn't help our relations with the Arab world. As a result, the fifties and sixties of the last century were a time of unrest throughout the Middle East.

"A short war between Israel and the Arab States lasted from 1946 to 1949. The Arabs lost out, but border incidents occurred intermittently until 1969. After the United States and Russia were involved in the Two Week Chaos, the Arab League moved against Israel. The Arabs had grown in strength during the preceding twenty years and were able to push the Jews out of Palestine or put them under their control.

"Under agreements made in the United Nations, the United States sent an expeditionary force to the Holy Land. The whole affair was a debacle. America had been weakened by the atom bombing of many of her cities and military establishments. Russia was also out of the running. After the death of Malen-

kov in 1968, one of the party leaders had tried to bring union by starting a war. After American retaliation with hydrogen and atom bombs, the growing resentment of the Russian people against an undesirable system exploded into open revolt. The Soviet Union became a disorganized crazy-quilt pattern of small, constantly warring states.

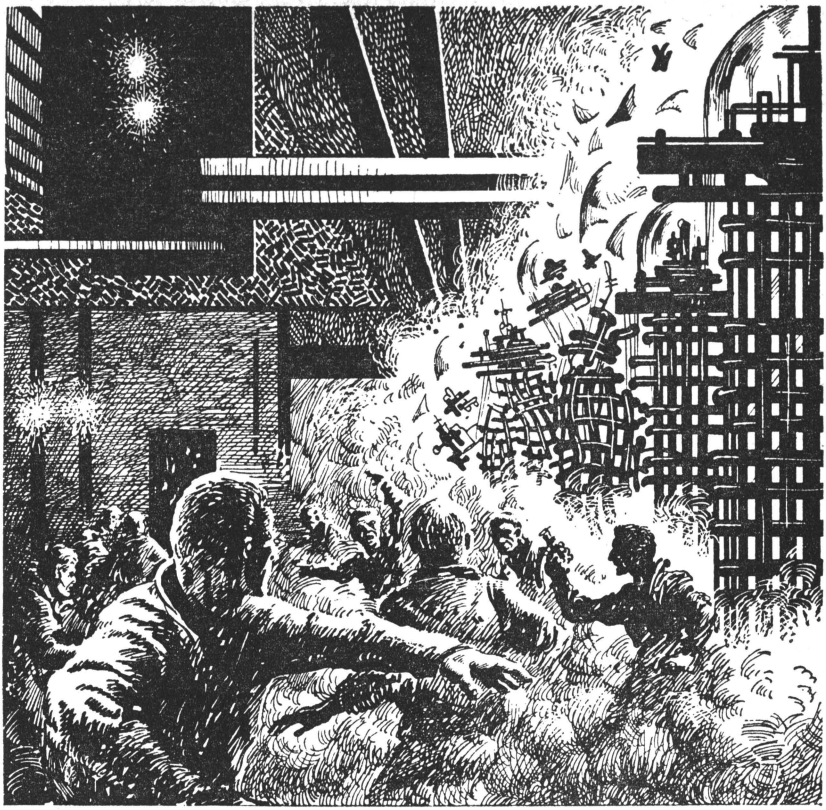
"On top of the destruction of atomic war, came the great economic collapse of 1970. The financial structure of the United States and her allies fell apart, and with it the United Nations went down into oblivion. The states of the Arab League could now do much as they pleased without outside interference.

"The Two Week Chaos and the great collapse incapacitated the western powers for nearly thirty years. The Arab States prospered and formed the League of Islam in 1990. The League covered the eastern end of the Mediterranean and the coast of North Africa. During this period, South America had formed the South American Republic and became a world power.

"The North American Union, which was formed in 1997, wished to take up where the United States had left off in the development of Arabian oil. The Arabs, who had developed the fields themselves with help from South America, had no desire for North American intervention. The Americans, who had a long term lease signed in the late fifties, were not willing to give up so easily, and hard feeling developed. The Suez incident of thirty years ago and the American control of the moon and the satellite stations didn't help matters any.

"When the Americans finished the first satellite station in 1984 and landed the first rocket on the moon in 1991, the Arabs became apprehensive and made known their wish to build a spaceport in the Sahara Desert. The North American Union, which had a monopoly on rocket building facilities, refused to allow it, out of fear of the growing strength of the Arabs. I think that that was a serious mistake. The sight of the satellites passing overhead, plus the knowledge that they belong to an unfriendly power doesn't help to create good will. The fact that the moon has an independent government makes it worse. The leaders of Islam know that the Lunar government wouldn't allow nationalism in space. I guess you know how the Lunar citizens feel about the North American monopoly on space travel."

"They don't like it," Roger said. "They feel that they could be more independent if they were receiving supplies from more than one source. Lunar government is nothing more than a form, set up by the North American Union to keep up appearances. The moon isn't self sufficient enough to make its independence more than a form. If the Lunar colonies could trade with more than one nation, they could maintain their independence by the moon's natural defensive position; and control of the satellite stations would help to ease international tensions. There's not much chance of a dictatorship being formed there, because the colonists are too individualistic and



are interested in their government. It looks to me like both sides are at fault in this mess."

"That's usually the case," the historian commented. "The Arabs aren't free of blame either. Some of their tactics in the Holy Land weren't exactly calculated to win the good will of the United States, and they have been rather violent in some of their dealings with our citizens."

The conversation was interrupted when one of their captors opened the door a few inches and slid two cans of food concentrate through the crack.

"I see dinner has arrived," Nolan said as he stepped over to the door and picked up the containers. He handed one to Roger, and the two men removed the tops. In a few minutes a coil in the sides of each container heated the contents, and the prisoners ate a warm if uninspiring meal. Plastic spoons fastened to the sides of the cans served as utensils.

After they had finished the food, the two prisoners sat and discussed various topics until late in the evening, when they finally turned in.

Outside, the temperature dropped to sixty degrees below

zero. The stars sparkled with a brilliance that was reminiscent of outer space. Once the frosty stillness was broken by the whine of the jets of a cargo plane, hauling a train of ore gliders from the mines on an island farther north. In the front room of the center hut a guard sat, watching a number of television screens which showed the area around the camp bathed in infra red light. In front of the hut lay the convertiplane, a shining, bluish silver dart with its needle nose and swept back wings and tail. Near the cliffs back of the huts, Nolan's small two seater lay with its channel wings folded into the fuselage.

At six, Roger was awakened roughly by one of the guards. He was given a can of concentrates which he ate quickly, his eyes straying now and then to the big machine pistol held by one of his captors. After Roger had eaten, he was ordered out to the plane and strapped into a seat, an armed guard beside him. With screaming jets blowing air over its channel wings, the convertiplane lifted from the snow and, a few minutes later, streaked into the dark sky under the power of its main jets.

Three hours later they descended to the yard of a large house on the outskirts of Denver. The scattered buildings of the city lay on a blinding white blanket of snow that sparkled in the winter sun like minute jewels. Roger was hurried into the house and soon stood in the middle of a spacious living room, his hands held firmly by steel handcuffs. He faced a man with swarthy skin and dark hair, a typical Latin type.

"Señor Lorin," the South American said and motioned toward an easy chair. "Please be seated. Perhaps you are tired after your trip."

"The trip was all right," Roger replied coldly, "though I don't like traveling against my will. I trust that the Arabs are paying you well for this little job."

A momentary look of surprise crossed the man's handsome features, but he smiled quickly and said in an affable voice tinged with surprise. "Arabs? What do they have to do with this? I do not know any Arabs. You do me an injustice to think that I would work for any other country than my own."

Hoping that the results would justify his confidence, Roger replied. "Quit trying to bluff. South Americans have no reason to kidnap me. They'd have absolutely nothing to gain and plenty to lose by such actions. Even if they could fight a long drawn out war with us, they'd lose in the end. Why most of your scientists and engineers receive their graduate schooling up here. I met quite a few of your countrymen during my school days."

"You are an astute man," the South American smiled. "Yes, I *am* actually working for the League of Islam." He admitted it blandly without apparent conscience or remorse.

"I can't say that I admire a man who'd sell his country, and not only that but the whole western hemisphere down the river. Did they pay you thirty pieces of silver?" Roger asked scornfully.

"The stakes are much higher than that," the traitor replied, without apparently being affected

by Roger's scorn. "An empire awaits those who are bold, greater power and riches than any ruler has even known before."

"I thought that we had left that behind with the twentieth century."

"The desire for power is always with us," the traitor, whose name was Manuel Juarez, said. "If I do not get it, someone else will. The struggle never ends."

"Maybe that's true in some parts of the world," Roger said, "but we don't do things that way here."

"Be that as it may," Juarez said with finality. "We won't speak of it again." Abruptly he turned his chair toward a blank wall and pressed a button on the arm of the chair. The whole wall lit up with stereo color, and the room resounded with the hum of a crowd of people.

"Skiing is an interesting sport," Juarez commented. "I enjoy watching the skill with which the skiers perform in these tournaments."

Roger and Juarez watched a symphony of graceful form and movement against a backdrop of snow, blue sky, and tall pines. Both men sat in chairs that moulded automatically to the shape of the body. Radiant heat bathed them in warmth that was a pleasant contrast to the wintry scene in the television wall.

The instrument which showed them the ski tournament so clearly represented a force that had killed an entire industry eighty years earlier. The economic collapse and the development of good color stereo television had resulted in the complete destruction of the movie industry. Although there was still much poor entertainment on the air, any person could usually find entertainment to suit his taste, whether it was for adventure stories or Shakespeare, for popular music or the works of the great composers.

ROGER was held in the house for about a week and a half. Although he did not know why he was held for such a long time, he knew that he was being watched with unceasing vigilance. He had no chance to escape. Then suddenly the enforced inactivity was over.

Juarez and two guards entered his room. All three were dressed in outdoor clothing and were armed.

"You will come with us peacefully," Juarez warned. "If you try anything foolish, we will not hesitate to kill you. We have other plans for you, but your death here would serve our purpose."

Roger went. They left the house and prepared to enter a small channel winged plane. The craft had a tear shaped body flanked by two pontoon-like cylinders. Each cylinder contained two small jet engines, one blowing a stream of air forward and the other blowing a stream backward across wing-like plates. The supersonic blasts gave the wings enough lift so that the plane could hover, rise vertically, or move forward or backward with equal ease. Such planes could attain a speed of 450 miles per hour.

At this time, a small patrol plane of the same type was flying slowly through the area. Both of its occupants were thoroughly bored, and one of them began to look

around through a pair of light amplifying binoculars. He spotted the abduction scene taking place below. Every detail, including Roger's handcuffs, was crystal clear. The patrolman, his curiosity aroused, switched to ultraviolet sensitivity, but saw none of the code numbers that appeared on the bodies of all police planes. Handcuffs and no police markings meant a check report to police headquarters.

"Patrol 67," the policeman reported into the radio. "There's a prisoner being held in Zone 18. The plane has no police markings. The prisoner is about five feet, eleven inches tall, has light hair, a rather large nose, and is wearing a green jacket over gray coveralls. One of the other men is dark, short, and stocky."

"That sounds like Roger Lorin," came the reply. "He disappeared from Arctic City about a week ago. There's a bulletin out on him. Keep a long distance watch on that plane."

About an hour after they had taken off the fugitives, who were flying low, disappeared in the mountains and were lost to the police plane's radar.

The sun set, and night settled its cold hand over the mountains. The stars glittered like icy diamonds in the almost black firmament. The moon bathed the world in cold silvery light. The mountains rose like walls against the cold, dark sky.

The plane climbed out of a canyon and flew southwest along the side of a high peak. At treetop level, they flew through a high pass, and entered a valley where a small, ice-covered lake gleamed in the cold moonlight. The plane landed on the glittering ice. Among the pines on the west side of the lake, stood a stately hunting lodge. The outside was faced with logs to give it a rustic look, but the interior was luxuriously furnished.

Two men from the lodge pushed the plane into a hangar on the lake shore, while Roger and his captors climbed a short flight of stairs and entered the building.

"Now we wait," Juarez said disgustedly. "I hope that Gomez gets here soon, so that we can get this business over with and get out of here. I cannot be sure, but I thought I saw someone following us after we took off this morning."

But he didn't get his wish. For the next three days, the men passed the time in various ways. Some went fishing through the ice on the lake, others watched television, still others played cards or pool in the game room.

During this time the police were not idle. They staked out the house in Denver and waited. Their patience was rewarded when, on the second night, a small plane came down out of the dark sky and hovered over the landing area. A man dropped to the ground and headed toward the house, and the plane rose into the night with blue flame dancing from the ends of the wing cylinders, and headed back toward the mountains. A large police plane high above traced the flight of the small ship with infra red detectors and spotted the hideout of the fugitives.

On the third night Miguel Gomez arrived. He was a big, strapping man unusually light complected for a South American. His

greetings were loud and boisterous.

"Well, Juarez," he said loudly, "I see that you have our prisoner in good condition. But we can do nothing for awhile. A new plan has been developed. In one week, a rocket carrying high officials from our Republic will take off from the Chicago spaceport. These officials go to inspect the Lunar atomic laboratories. That rocket will crash, and the North Americans will be blamed. There will be evidence of general negligence with hints of sabotage. So! the fun will begin. If that does not work, we will use our friend, Lorin, here to top it off."

That night they listened to a late newscast before going to bed. The situation was tense. The presidents' meeting had been postponed until after the inspection of the moon laboratories by the South American officials. There was talk of a general mobilization and a tightening of discipline at the military stations along the Mexican border and the gulf coast.

FIVE HUNDRED miles above the Earth, the polar weather station wheeled silently through space. A sphere two hundred feet in diameter, it was girded by a ring deck that was home to forty men and women. The big observation room was the real reason for the space station's existence. Here, the weathermen kept watch over the movements of Earth's atmosphere. The fluffy white clouds that appeared on their screens told a tale of mass air movements that meant stormy or clear weather for the Earth below. An almost blinding white mass of cloud over Canada told of a cold front moving southward to collide with warm air from the Gulf of Mexico and unleash a blizzard over the plains of the Midwest. Tumbling clouds hid a storm that whipped the North Atlantic into a raging fury of white water. Clear areas showed where snow sparked under the winter sun or where soft tropical breezes ruffled the fronds of palm trees.

The station was passing over the Pampas of Argentina on the day side of Earth when the incident occurred. Miriam Andrews, on duty at the time, sat watching the progress of a small rain squall. Suddenly a look of surprise crossed her rather plain features, and she turned the amplifier gain-knob of the light amplifying telescope to higher magnification. On the screen appeared a sprawling airport on which lay scores of large, box-like transport planes. Into the huge, channel winged craft flowed lines of robot controlled armored vehicles. Miriam, who had a keen mind and an interest in international affairs, recognized the dangerous possibilities of these preparations. She did not hesitate to call the station director. That individual was summoned from a deep sleep by the imperative buzzing of the intercom. He switched the instrument on, saw Miriam's excited face, and came fully awake with a feeling of alarm. Excitement on the part of station personnel was apt to mean deadly danger. He interrupted the excited girl. "Repeat that again and slow down." Miriam repeated her story.

"I'll send a message when we get close enough to Chicago to use a tight beam," he said. "There's no

use spreading that news all over the western hemisphere." With that he broke the connection and called the radio room to give instructions about the message.

The station swept around the Earth untroubled by the gathering fury below. A rocket, a slender, blue steel, winged cone, blasted away from the station with a brief but brilliant display of its atomic jets. The watches changed, and the weathermen continued to receive data, analyze it, and send it to the coordinating centers on Earth.

Although most of the men on the station heard the news with the detachment of those whose main interest lies in space and on the moon, the North American government was not so calm. It was not long before big formations of box-like transports were headed southward with heavy loads of flying armored equipment, technicians, and troops. Flights of dart like interceptors patrolled the gulf area, ranging the blue skies at supersonic speeds. On the ground, rows of slim antiaircraft missiles stood like candles in a birthday cake. At the first flicker on a radar screen, they would scream skyward to intercept hydrogen and atom armed missiles at the borderline of space. Both powers made good resolutions of nonaggression, but the rest of the world watched the preparations with a skeptical eye. The weapons that could unleash the horrors of nuclear warfare at the flick of a switch stood in frightening array on both sides of the gulf.

Meanwhile, the police prepared to close in on the mountain cabin. Equipped with gas bombs, machine pistols and recoiless rifles, they came struggling through a snow clogged pass and down the mountain sides from hovering planes. Unseen in the darkness, they crept through the woods toward the house. A rifle shot cracked as a guard sighted them with his sniperscope. One of the policemen fell, a bullet in his leg. The lights in the house went out, and gun flashes lanced through the windows. Bullets, hunting their prey like angry wasps, snarled through the darkness.

Roger was locked in an upstairs bedroom with a guard before the door. During the next two hours, the roar of machine pistols and the crack of rifle fire split the mountain stillness and echoed from the hillsides. At the end of that time, the police withdrew to rearrange their strategy.

Juarez sat on the floor near a broken window and cleaned his machine pistol. "I think that it is time to kill Lorin and get out of here," he said, as he placed a fresh clip in the magazine. "It will serve us to good advantage."

"Fool!" Gomez exclaimed. "If they found us with a dead man on our hands, we wouldn't stand a chance. I have used this place enough to know that they have us pinned in. We can use Lorin as a bargaining point. We will arrange to take him with us and drop him by parachute. But—the parachute will not open. A convertiplane, which I have called, will meet us above the clouds and take us away before they can stop us."

"They will not trust our word," Juarez said. "We cannot get away with it."

"Oh, but we can," Gomez said. "The police know that Lorin's death would have regrettable results. Even the fact that he is a citizen of the North American Union would be enough to start trouble, let alone his position as a key research man on the neutron project. They will do anything to see that he remains alive. The scheme will further enrage the North Americans and might perhaps incite them to war."

"I see," replied Juarez. "An excellent plan. Let's contact the police, and see what happens."

UNSEEN by the guards around the house, four policemen crawled through the snow. Wearing white uniforms, they blended so well with their background that even the sniperscope men didn't see them. Their view was limited by the fact that most of the large lights that had flooded the area with infra red radiation had been shattered by gunfire. Individual beams were insufficient to sweep the whole area.

Carrying thirty-shot rocket launchers and rocket powered gas bombs, they took positions around the house and aimed the slender guns. At a radio signal, streams of red fire shot from the tubes, and the small rockets tore through every window in the house. In a few minutes, the place was saturated with sleep gas. Not a man moved throughout the building. Policemen in gas masks converged on the house.

Roger awoke on a stretcher aboard a police plane. A police officer sitting beside the stretcher answered his dazed inquiries. "You're on a police plane. We gassed the place where you were being held, and then moved in and took over." He grinned. "You looked so peaceful that I didn't have the heart to give you stimulants."

"How long has it been?" Roger asked worriedly. "I'd like to call my wife as soon as I can. She's probably worried sick by now."

"It's been close to three hours," the officer replied. "We had to buck a snowstorm when we came out of that valley. We knew it was coming, but we thought that we could move in ahead of it and get you out before it struck. Unfortunately, they spotted us with those big infra red lights of theirs and threw our timing all out of kilter. We should be in Denver in less than half an hour."

Twenty minutes later the plane set down on the landing stage at the top of police headquarters. Roger was helped to his feet and led from the plane across the wind and snow lashed platform to an elevator.

A few minutes later, he sat in the office of the Federal Police Commissioner for the Rocky Mountain district. Roger asked permission to use the desk viewphone and quickly put through a call to Arctic City. In a few minutes, Linda's face appeared on the screen. When she saw Roger her face lit up with joy. "Roger!" she exclaimed. "I've been so worried about you. I haven't been able to sleep for days, wondering what they might do to you."

"I'm all right, honey," Roger reassured her. "I'll be home in less than a day if the police don't detain me here."

"Better have her come to Chicago," the commissioner interrupted. "You'll have to stay there until we get this mess straightened out."

"I guess it would be better for you to come to Chicago. The police say that it'll take a while to clear this business up. Maybe you'd better take a jet. It would be more comfortable for you."

"I'll take the evening rocket," Linda replied determinedly.

"OK," Roger said with a grin. "I'll see you this evening then."

"Your wife seems anxious to see you," the officer remarked drily. "Well, you may as well tell me about this business. I'll send you on the rocket this afternoon so that you can meet your wife. We're not sure just what was behind this kidnapping."

Roger narrated the events of the past two weeks explaining the part the Arabs were playing in the troubles between North and South America.

"The Arabs, eh," the officer mused. "I'm sending the prisoners to Chicago with you. I don't think that it will be too hard to get a cerebral analysis writ. At least I'm going to recommend such action."

"Cerebral analysis?" Roger asked. "That must be something new."

"It is," replied the officer. "This particular development of the encephalograph is so new that not many people know about it. The machine in Chicago is the only one in existence. We use truth drug writs to make it legal and still keep it secret. It isn't exactly according to Hoyle, but we have to be careful these days. It takes an expert to read the charts and, even then, only very clear thoughts can be picked up."

"It sounds like something out of science fiction," Roger commented.

"So did a lot of things we now take for granted," replied the officer.

Late that afternoon, Roger sat aboard a rocket that screamed through the upper atmosphere on the last leg of its flight to Chicago. He watched through an eyeport as the ship lost altitude and circled the city, finally coming to rest with squealing tires on the concrete runway. As soon as the locks were opened, Roger, accompanied by a police officer, left the ship and went through the boarding tunnel into the bustling terminal building. Roger's eyes searched the crowd until they found Linda. He hurried toward her, and in a few minutes they were in each other's arms.

AFTER two days of quiet relaxation, a plainclothes man took them to the tower of the Security Building which housed the Federal Police. The place was an electronic wonderland, with banks of instruments lining the walls. Gomez had been drugged and strapped into a large chair in the center of the room. His scalp was shaved, and several electrodes had been taped on. During the next hour and a half, the silence was broken only by the occasional click of a switch and the scratch of pens recording data. At the end of that time the electrodes were removed, and Gomez was carried from the room to sleep off the anesthesia. One after another, the prisoners went through

the same process. Gradually the data added up and revealed the plan that was meant to plunge two nations into the horrors of atomic war.

An officer gave quick orders. "I want all out going spaceships checked for sabotage. These men didn't know the technical details. The least obvious thing to do would be to tamper with the fuel in such a way that it would explode violently when it was heated in the motors. The nitric acid used in the booster stage would make the best reactant. The rocket would be too close to the ground to drop the booster. Better check the fuel before the rocket carrying those South American officials blasts off."

He turned to Roger. "Would you like to see how we stake out a place?"

"Sure," replied Roger. "Spaceports are always interesting."

They left the building and rode to the rocket field. Night had fallen and the spaceport lay stark and cold in the beams of large floodlights. Three spaceships stood on the field, their bluish sides gleaming in the beams of the floodlights. To the south, a transcontinental rocket rose into the night like a spark from a chimney. The air was bitter with the temperature at eighteen below.

"Take a look," the police officer handed Roger a pair of binoculars. Roger placed the instrument to his eyes, and the side of the center rocket leaped toward him. He saw a man in the red overalls of a fuel technician climb the gantry alongside the center rocket and push something into a valve on the side of the booster stage, near its juncture with the main part of the ship.

"Do you see that mechanic on the center rocket?" Roger asked.

"Let's see," the officer replied and looked toward that rocket. "Yes, I see him now. A mechanic shouldn't be pushing anything into that valve. That particular valve is used to jettison fuel in an emergency. A blast of compressed air will usually clear anything out of it. If that doesn't work, the valve has to be taken apart to be cleaned. I'd like to know just what he shoved into that valve."

The officer spoke briefly into his pocket radio. Four policemen moved toward the entrances that led into the deep pit where the rocket stood. The technician closed the valve and climbed down the ladder. As soon as his feet touched the concrete floor of the pit, he was seized by the waiting policemen. A pistol shot cracked, and the prisoner sagged to the floor with a hole in his chest. Instant confusion reigned in the pit, and in that confusion the assassin somehow escaped.

When the officer and Roger arrived, they found the policemen talking with a fuel technician. The technician left the group and climbed the ladder to the valve. He opened it and inserted a spring operated probe.

"The valve's clean," he shouted down. "I'll take off some of the nitric acid." He did so, collecting the liquid in a small sample bottle which he carried on his belt. Climbing down the ladder, he handed the bottle to the officer in charge, who handed it to Roger. Roger unscrewed the cap and cautiously sniffed the contents. "I can't

be sure, but if it's what I think it is, you'd better not have the tanks drained until morning. Give it a chance to dissolve. Otherwise you'll have some left in the tanks. It doesn't react very rapidly at low temperatures."

"Just what do you think it is?" the officer asked.

"Well," Roger replied, "it's probably some organic compound that would react with the nitric acid to form an explosive nitrate. Of course, it could be an ammonium compound that would react to form ammonium nitrate. That would do the job just as well."

THREE WEEKS later the agents were brought to trial for espionage and conspiracy to start a war. The whole story of the Arab plot came out. Following the lead of the North American Union, the South American Republic carried out an investigation of its own, and discovered the part the Arabs had played in various incidents on the southern continent.

Later that summer, the Gibraltar Conference met to settle grievances between the western powers and the League of Islam. King Ignatius II of the restored Spanish monarchy acted as a mediator. Reluctantly the North American Union agreed to let the Arabs build a spaceport in the Sahara, thus giving them a chance to trade directly with the Lunar colonies. On their part, the Arabs agreed to internationalize the Suez Canal area, on condition of free passage across the isthmus for Arab traffic between Egypt and Palestine. The Arabs refused flatly to allow a re-establishment of the Republic of Israel, but would allow Jews to settle in the Holy Land under yearly quotas. Despite reluctance and bitterness, a compromise was reached, and war was averted . . . for the moment.

About a week after the trial Roger and Linda sat at a table in the large Spaceport Restaurant. Through the large window facing the rocket field, they could see clouds driven by an early March wind. Intermittent flurries of rain splashed against the glass. Roger happened to look up and see an elderly man approaching the table; his face lit up with recognition. "Well, Professor Nolan," he said, offering his hand, "I'm glad to see you."

"I'm glad to see that you got out of that trouble all right," Nolan replied as they shook hands.

"This is my wife, Linda," Roger said. "We're just about to order lunch. Won't you join us?"

"It would be a pleasure," replied Nolan as he sat down. "I'd like to hear about what happened to you."

Roger talked as he had punched their order into the robot server, and through most of the meal that arrived a few moments later.

When he had finished his story Nolan asked him, "Do you intend to go back to Arctic City, now that this is over?"

"No," Roger answered, "The pile at Arctic City is nearly completed. My part of the work is done anyway. I've been offered a job on the neutron rocket project at the Lunar laboratories, and Linda and I are leaving for the moon in about an hour. I enjoyed working there before. The moon colo-

nists seem to have something that most earthmen lack . . . I guess you'd call it a pioneering spirit, a desire to explore. They are willing to accept new ideas.

"But that's enough about myself. I've been wondering how you got away."

"Simple enough," Nolan replied. "The men who were left behind pulled out and left me at the camp when they heard about your rescue. They probably didn't care to kill me if they didn't have to. They left while I was asleep and probably went over the pole into Russia. They took my ship, but I was able to call for help with the radio. What happens to them doesn't matter anyway. We'll probably never hear of them again.

"I suppose it won't be long before we have colonies on all the planets with that neutron rocket you mentioned."

"It'll be a while yet," Roger said. "There are a lot of problems involved in the development of a neutron rocket, and as long as we have to use a fuel processed by passing hydrogen through an electric arc and into an expensive organic compound at low temperatures, space travel will be too expensive for anything more than the exploration expeditions that have been sent to Mars and Venus."

The voice of the announcer interrupted them. "The spaceship *Goddard* is loading passengers from tunnel eleven. All passengers must be aboard in twenty minutes."

Roger and Linda rose from the table. "That's our ship," Roger said. "We'd better get aboard. Goodbye, Professor Nolan. I hope we meet again."

"Goodbye, young fellow, and good luck." Nolan gripped Roger's hand.

Thirty minutes later the professor stood at the window and watched the preparations for blast off. The tail gantry crane moved away from the rocket, and a siren blared forth its warning. The booster motors were started, splashing green flame into the pit and shaking the ground with their roar. The tall ship rose slowly at first, and then more rapidly as it climbed a column of green flame into the clearing sky. It grew small and disappeared. A few minutes later the ship's atomic drive came to life like a tiny new sun that was a beacon on the path to space. • • •

Science is a good piece of furniture for a man to have in an upper chamber, provided he has common sense on the ground floor.
—O. W. Holmes

It is the delusion of mankind that the world is as progressive in religion, tolerance and freedom as it is progressive in machinery.
—Moncure Conway

LOST ART

They lived by and for push buttons and machines, and knew nothing else. But Endicott remembered about the old, old days—when a man could save a life without a push-button . . .

BY G. K. HAWK

STIFF FINGERS of icy, wind-driven snow beat a tattoo on the hull of the cargo ship, filtered through the jagged tears in the metal skin, sifted down over the useless control board with its dead gauges and bank upon bank of pushbuttons. Amidship, a wind-thrashed branch screechingly scraped the reverberating hull, and the sound, like the rasp of sliding hatch covers, echoed through the ship.

Dazedly, Allison watched the sifting snow settle on the buttons, each one acquiring a grotesque, lop-sided, conical hat which grew as he stared. He reached forward an already stiffening finger and brushed one of the hats away, and almost idly watched another one form in its place.

"Come on, Allison, come on. Snap out of it." Endicott came out of the passageway into the control room, returned from his inspection of the machinery. "You hurt in the landing?"

Allison didn't answer. He shivered and pushed another inquisitive finger at the control board; the finger selected a certain button and pushed it steadily. There was no click of a hidden relay, no whir of little motors springing to life.

"You can punch that button or any of the others from now until—It won't do any good. We're dead." The plume of Endicott's frozen breath drifted over Allison's shoulder, merged with the sifting snow.

"Dead?" Allison echoed in a sleepwalker's voice. "Dead," he repeated and jabbed the button again and again.

"In a manner of speaking," Endicott's white-sandy brows drew

together in a frown. "We're off the powercast—our receiver, I guess."

"No power." Allison was following better, was waking up. "That means—Can't you fix it, Chief?"

"Nope. I tried, but something in its guts is burned out. No power." Endicott beat his old blue-veined hands together.

Allison's frost-numbed fingers picked at the straps on his reclining geeseat, and he stepped to the light metal deck. He shivered and

you always get what you want—except now!"

"Now, now," Endicott said soothingly. "Panic isn't going to help us any. All we have to do is sit tight—and wait. They'll send a relief ship out—"

"When?"

"In the morning. Morning, sure. They had us on the 'viewer, don't forget. They'll know exactly where to look."

"They won't be able to locate us

Illustrated by Ed Emsh

punched the button on the control board again. He was seized by a spasm of uncontrollable shaking. "No power means—no heat!" Panic crept into his voice.

Endicott said nothing but looked at the tier upon tier of buttons, functionless now.

Allison looked at the board, too, his narrow shoulders hunched. "They've never failed before," he muttered through chattering teeth.

"What?" Endicott seemed bemused.

"The buttons. Punch 'em, and

in this white stuff."

"I tell you they know precisely where we are. And anyway the scanviewer will pick us up."

"I don't think they'll ever find us." Allison slumped down on his transverse geeseat, stared wide-eyed at the drift forming slowly inside the torn metal of the windward side of the control room. "This white stuff scares me." He shivered, then got up hastily, his boots slipping slightly on the snow-slick decking, and punched the button again. "It's got to work!"

he cried and beat on the board with his fist.

"Stop that!" Endicott said sharply.

There was a crack of a slap in the control room, then silence.

In a moment Endicott said in his soothing voice, "Sorry, Allison. Everything'll be all right. Don't you worry."

"If you say so, Chief." Allison stood in the center of the control room, his arms slack by his sides.

"We'll be all right," Endicott said. "We have food capsules—"

"Sure, Chief."

"We'll be all right, except—" Endicott peered through the rents in the hull into the storm outside. "All we have to do is sit tight," he added hastily.

"We'll freeze tonight without heat." Allison's voice was still breathless with panic.

"Yeah. Yeah, I've been thinking about that. There's some thing 'way down deep in my mind—something I can't quite get—" Endicott still looked out at the storm-thrashed trees, a puzzled expression wrinkling his face. "Something from my childhood—I was born a long time before you, you know, before they set up state conditioning homes for children. Long before they set up this 'everything-from-buttons' business. Lived with my own people, I did, and I seem to remember—seem to remember —" The puzzled expression became a frown of concentration. "Or maybe it was something I read a long time ago," he mused.

"Did what?" Allison perked up.

"Read. You wouldn't know what that was. Everything comes from buttons now, entertainment, food, light, heat—everything . . . No, it was from my childhood, I'm sure. I remember my people used to take me out in the country—" Endicott mused on while a cloak of snow grew on the shoulders of his jacket, and the light began to fade.

"Out in the country? What for? Nobody goes out there." Allison's eyes gleamed slightly in the growing dusk.

"—for picnics. And—" Endicott's eyes brightened, and one hand clenched.

"For what?" Allison's head thrust forward.

"What?" Endicott snapped, irritated at having his train of thought broken.

"What did your people take you in the country for?"

"A picnic . . . Yes, yes, that's it! I remember now!" Endicott's words poured out.

"You know it is forbidden to think of the old days."

"Shut up! Let me think. You want heat, don't you?"

"It's forbidden to think of the old days," Allison repeated stubbornly. "You'll get heat when I report this—in a different way."

"Shut up! Look, you want to keep from freezing tonight?" Endicott glared. "All right. Come with me and do as I say." Without a backward glance Endicott crossed the slippery deck and entered the passageway. At the midship cargo hatch he stopped.

"How are you going to open it without power?" Allison's breath-plume shot over Endicott's shoulder. "It's locked and unlocked by a button on the control board. Remember Chief?"

"Stop gloating, Allison. This is

for your benefit as well as mine. There's an escape hatch in the control room."

"That's controlled by power, too."

"Yes, but in these older models the hatch also has a manual control, as I remember." Endicott moved off toward the control room.

Allison hesitated, then followed, and joined Endicott as he began to search the control board. Endicott found the emergency lever for the escape hatch and tugged on it, turning his head to watch the hatch in the side of the hull, back of his seat. The hatch, big enough for one man to pass through at a time, popped, crackling with frost, and stirred slightly.

"Now, Allison, my boy, let's put our shoulders to it." Endicott was in high spirits again.

As soon as the hatch swung open, Endicott put his head and shoulders through the opening, squinting his eyes against the icy snow which swirled past him. He grabbed a handhold on the outside of the hull and pulled his legs through, and dropped into the snow alongside the ship.

Allison's head and shoulders appeared in the opening, and in a moment he was beside Endicott. "Now what?" Allison yelled above the wind.

Endicott looked toward the clearing in which they had landed, then turned to face the trees around the disabled ship. He waded through the snow to the nearest one and reflectively took hold of a dry branch over his head, tugged it several times as though judging its resiliency, before snapping it off.

"Now, Allison, you see what I did? Well, you do the same, only gather an armload of branches. When you have them, bring them to me at the ship. And keep on gathering them until I tell you to stop."

Allison stood still in the deep snow, peering suspiciously at Endicott through the snow-swirl. "Is this something from the old—?"

"Never mind that now, Allison," Endicott said patiently. "Let's not worry about all that twaddle. You want to be warm, don't you? So, just do as I say."

Allison's eyebrows shot up and lowered instantly, and his face set in stubborn planes. "If this is from the old days I'm not sure I want any part of it." He looked furtively over his shoulders at the gloomy woods.

"There are no Conditioning Committees here, Allison," Endicott said testily. "Get on with it."

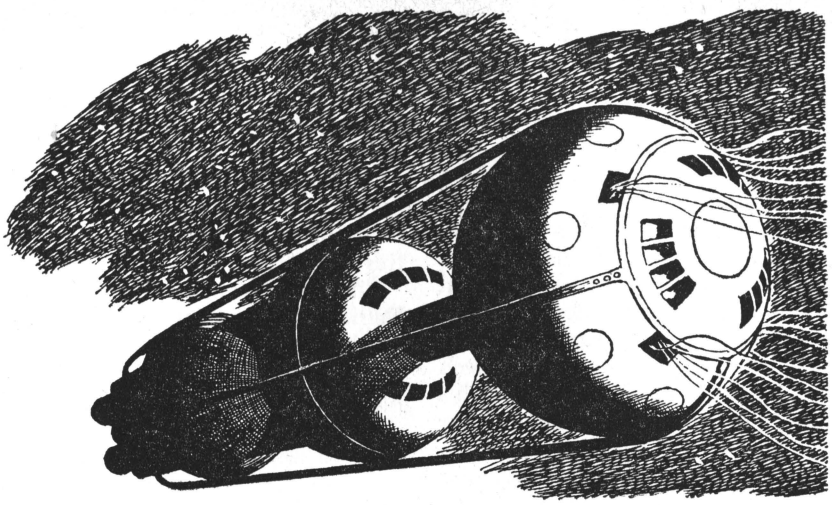
Allison took a few reluctant steps toward the nearest tree. Endicott started back to the ship with his branch, looking back over his shoulder.

"No, no, Allison. See those green needles? It won't do at all. Dry branches, Allison, *dry* branches." The whipping wind carried Endicott's words over the few yards.

"I can't see how these—branches?—are going to keep us warm. It seems like a lot of useless trouble getting them," Allison said sulkily, suspicion and fear unabated.

Endicott didn't answer. Instead, he went to the side of the ship away from the wind and began

(Continued on page 119)



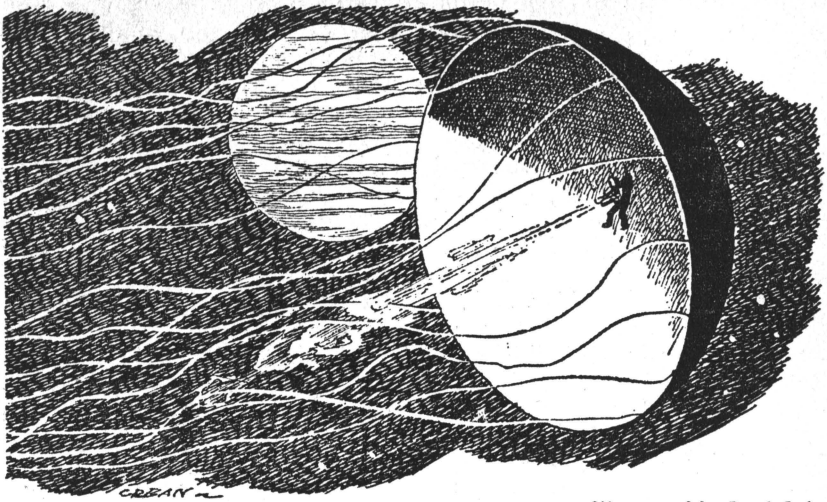
BLOW THE

Hijacking the By Jove! *was quite elementary. Hijacking the crew was something else. And therein lay Captain Vebrug's margin for error . . .*

WHEN CAPTAIN Albrekt Vebrug of the Flanjo intelligence service took over the Mars-Titan freighter *By Jove!,* it was no such terrestrial foolishness as mercy that prevented him from liquidating the ship's three-man crew.

Sure in his own wolfish strength, his attitude was that three peace-loving merchant spacemen could do much to contribute to his personal comfort, if kept under iron control. Besides, with adequate brain-washing to eliminate loyalty to the Solar Council, their technical skills could make them quite

BY CHARLES L. FONTENAY



Illustrated by Paul Orban

MAN DOWN

valuable to the somewhat undermanned Flanjo base on Rhea.

On the other hand, his concern for the others aboard the ship was so slight that he would not, on his own, have warned them of the impending acceleration, which could have injured or killed them.

He made his move at 10 minutes before zero hour. As a paying passenger from Mars City to Titan, he had the run of the ship, and had been lounging in the control room for half an hour. Migl, the engineer, was on duty and was sorting the blast-pattern tapes, a job Qoqol had started during his shift.

Albrekt simply took a heat gun from the rack, stuck it in Migl's back and ordered him to leave the control room. Migl took it as a joke, at first.

"It's no joke," Albrekt assured him, nudging him with the weapon. "Get below, if you don't want to get burned."

Puzzlement written all over his swarthy face, Migl unstrapped himself from the captain's chair and pushed himself across the room. Albrekt slid into the chair, buckled himself in and pulled two rolls of magnetic tape from the breast pocket of his coveralls. He found the roll marked "No. 1," stuck the other in the rack beside him and inserted the end of his tape in the

automatic pilot.

Migl paused at the top of the gangway.

"You're not going to blast?" demanded Migl in amazement.

"I am," retorted Albrekt, holding the heat gun steady.

"Por Dios, Carrel's not strapped in!" exclaimed the engineer. "You'll break every bone in his body if you don't give him warning!"

Albrekt glanced at his watch.

"You have five minutes to warn him and strap yourself in," he said. "I can't be bothered."

Migl vanished down the hatch and Albrekt flicked the switch that closed and locked it. A moment later the intercom system erupted with Migl's frantic voice from below:

"General alarm! Prepare for emergency acceleration! General alarm! Hurry, Carrel!"

Albrekt smiled grimly.

The second hand swept around the face of the chronometer, boosting the reluctant minute hand forward in jerks. At exactly 1300 hours, Albrekt pushed the firing button.

The tape chattered through the automatic pilot. Apparently, the makers of the tape had planned on a fast-get-away: the pressure must have approached 5-G, pinning Albrekt painfully back against the cushioned reclining chair.

He was able to move his eyes to watch the outside screens. The other eleven ships of the convoy, coasting in formation in their orbit, dwindled behind them and swung gradually to one side.

In a few moments, everything cut off, and weightlessness returned. Red lights were flashing all over the control board, and distant alarm bells were clanging in the depths of the ship. Albrekt had no idea what they meant. He was no spaceman.

The radio loudspeaker crackled and blared. The convoy had discovered the *By Jove!*'s defection.

"Themis to flagship! *Themis* to flagship! *By Jove!* has changed course! Moving away fast. Position, RA 16-2½, D minus 19-40."

After a moment:

"Flagship to *Themis:* acknowledged. Flagship to *By Jove!* Flagship to *By Jove!* Carrel, what the hell?"

Albrekt grinned.

"Themis to flagship," called the loudspeaker, when silence greeted the query. "Shall we follow?"

"Flagship to *Themis* and all vessels. If you're that flush with fuel, how about passing some around? No pursuit authorized. All vessels take readings on *By Jove!*'s new orbit as long as it's in range. We'll alert the patrol to investigate when we're in radio range."

The ship's intercom buzzed.

"Albrekt!" It was the voice of Carrel, the captain.

"Yes?"

"We'll get to the reason for this damn fool stunt later. Right now, do you plan any further acceleration?"

"Later. I'll warn you in time to strap down."

"I should hope so. Those G's nearly killed Qoqol. This ship wasn't built for that sort of acceleration, you idiot. Half the seams are sprung and leaking air."

"Repair them, then," snapped Albrekt. "You'll have time."

During the long silence that ensued, Albrekt sat back and took stock of the situation. So far, everything had worked perfectly. The other tape given him by the Flanjo agent on Mars was to be run through the automatic pilot exactly 200 hours after the first one, when the *By Jove!*'s diverging orbit carried it beyond range of the convoy's meager radar equipment.

The control room would be his headquarters for the next few months, simply because the control room was the only deck of the *By Jove!* which could be locked against the rest of the ship. All the weapons—the heat guns—were in the control room, so Albrekt expected no trouble on that score.

It was going to be a dull journey from here on out, and Albrekt decided he would do well to learn as much as he could about handling a space ship. He swung the chair around and ran his eyes along the shelves of Carrel's microfilm library. The title *Sailing Space,* by Dr. Russo Alin, caught his attention.

Albrekt inserted the spool in the projector and started it. An intense bearded face appeared on the screen, and the recorder said:

"It is not generally known, except to students of technological history, that the steam powered and electric powered automobile gave the familiar gasoline powered automobile of the last century a close race for preference in early automotive history. The factors that caused the gasoline powered automobile to become predominant are not important here. What is important is that there were alternative methods of automotive propulsion . . ."

This didn't start off well. Albrekt ran the spool up about half way and tried again. This time, the author was pointing to a well-chalked blackboard.

"The radiation is so much stronger at Venus than farther out, that it is here we find most common use of the principle," he said. "Using our formula, which, you remember, is F equals rA over 2 plus gM, we . . ."

Disgusted, Albrekt switched it off and took out the spool. He found another, *Survival for Spacemen,* and tried it. It was a primer on conditions to be met in space travel, handled in popular vein. It was the sort of thing Albrekt wanted, and he settled back to listen to it.

It was about nine hours before the last red light on the control board winked out and the clanging of the last alarm bell died out below. Then Carrel's voice demanded an accounting over the intercom.

"I'm in command of the ship now," answered Albrekt, awakened from a light doze by the call. "I intend to remain so. As long as you and the others recognize that, you won't be harmed."

There was a brief silence.

"The only thing I can figure is that you've gone space happy," said Carrel at last. "Albrekt, you're no spaceman. You can't have known what you were doing when you switched on the jets."

Albrekt did not answer.

"Look," said Carrell, "it'll take several days to figure out what sort of orbit that blast threw us into, and I'm not sure we have anough fuel to correct it. You'd better let us in."

"We may as well understand each other," said Albrekt. "I'm no spaceman, but some very good spacemen figured out that blast tape—and the other one I'm going to use later. I'm a captain in the Flanjo military, and I've taken this ship and its cargo over, to deliver them to the Flanjo patrol. None of you will be hurt if you cause no trouble."

"So that's it!" snorted Carrel. "Damned pirate high-jacker! My advice to you, Albrekt, is to come out of there and let me put you under arrest, because if you don't we'll be coming in after you."

"Try it, and I'll burn you," retorted Albrekt.

AFTER SLEEPING several times, Albrekt was ready to concede it was not going to be as cozy in the control room as he had thought at first. It offered basic comforts of home, but the showers were on the larger navigation deck below. Several months without a bath promised to be uncomfortable. All decks carried plenty of emergency rations in case they were sealed off by a meteor collision, but the rations were not too tasty, Albrekt's mouth was beginning to water at the thought of the frozen meals stored two decks below, available to the crew.

Most of Carrel's book tapes were too technical to interest him, but he spent much of his time listening to those which offered him information in simple terms. The pattern of meaning of all the dials, switches and buttons crowded into the control room became a little clearer to him.

Albrekt did not see how the crew, weaponless and locked below, could challenge his mastery of the ship. He detected the first effort in this direction about 80 hours after the *By Jove!* had left the convoy.

Albrekt was eating a meal of emergency rations when he glimpsed movement on one of the rear screens. He turned his attention to it at once.

A spacesuited figure was emerging from the airlock, which was in a narrow waist between the vessel's personnel sphere and the huge cargo cylinder beneath it. From the suit, it was either Carrel or Migl.

The figure moved cautiously up on the outside of the airlock, gripping its surface with heavy magnetic shoes. In the hooks of the spacesuit, it carried two sledge hammers.

Albrekt flipped on the switch to the intercom, which was tuned to the spacesuit helmet radios as well as the ship's system.

"I'd advise the man in the spacesuit to forget it, and get back aboard," he said gently. "If he doesn't, I'll sweep the outside surface with machine gun fire in exactly two minutes."

His fingers hovered over the firing buttons of the heavy weapons the *By Jove!* carried for defense against possible marauders. But in a moment the spacesuited figure reentered the airlock.

"It would take you some time to break into the control room with a sledge hammer," Albrekt said conversationally into the microphone. "At the first blow, I'll blast anyone who tries it. That's fair warning."

It was several days later that

Albrekt began to feel sleepy long before his sleeping time. The realization hit him suddenly that for some time he had been yawning and stretching, relaxing more and more in the chair, his eyelids getting heavier and heavier. His head was beginning to ache a little. He slept by the clock and awoke by the clock. He should not be sleepy for hours yet.

Rousing himself with an effort, he swung bleary eyes around the control room, anxiously. He could see nothing out of order. But how would one detect something that made one abnormally sleepy? What could it be?

Illness?

If there were harmful bacteria aboard the ship, they should have struck many days ago. There was no disease in space itself.

Gas?

If such ships as the *By Jove!* carried any sort of gas, Albrekt didn't know about it. He had been briefed on the weapons he might face. Surely gas would have been mentioned.

Perhaps it was chance, or perhaps some part of his mind was swiftly scanning what he had learned through his reading of the last few days: his eyes fell on a bank of dials ranged side by side on the control board. The hands of all of them were lined up at the same angle—all but one. It had sunk far to the left.

The legend above the bank of dials read: "OXYGEN." The plate below the lagging dial read: "Control Room."

Albrekt unstrapped himself from the chair with nervously fumbling hands. Somehow the crew of the *By Jove!* was interfering with his oxygen supply.

Albrekt was beginning to feel a little nauseated. His head throbbed. He pushed himself across the control room and grabbed the helmet of the spacesuit that hung there. He did not take time to put on the suit itself, but pulled the helmet down over his head and switched on the suit's oxygen supply.

In a moment his head cleared, leaving only a slight headache.

As well as Albrekt remembered from the reading tapes, the ship's oxygen supply was on one of the lowest decks. The crew evidently had blocked the line to the control room.

"You'd think there'd be some alarm system for that sort of thing," he muttered to himself. But then, of course, the hull had not been punctured. The dials were supposed to be checked frequently.

The question that faced Albrekt now was how to get out of this trap. He couldn't live in the spacesuit indefinitely. His hand brushed the heat gun at his side.

Filling his lungs with deep gulps, he ducked from beneath the helmet and returned to the control board. He unlocked and opened the hatch to the navigation deck below. There was an upward swirl of air, and Albrekt permitted himself to breathe again.

A head poked itself cautiously up the companionway. Carrel. The captain's face was a strong one, lined with years of decision, golden-brown with the tan that one gets only from years in the thin air of Mars. Carrel's dark hair was beginning to gray, but his electric blue eyes were still young.

He stopped when he saw Albrekt at the control board. Albrekt held the heat gun on the captain steadily.

"I'm not anywhere near overcome," said Albrekt. "You'd better turn around and go back down."

Carrel did.

As long as the hatch stayed open, oxygen could not be cut off from the control room. Albrekt decided he could afford to leave it open, since he had possession of the weapons. He would have to lock it while asleep, of course. But, even with the oxygen supply cut off, the control room should contain enough to carry him for eight hours. If not, he could set an alarm to wake him every four hours, or even every two hours, to open the hatch and refresh his air.

The fact that he could leave the hatch open safely gave him another idea. He was hungry for some food besides the dry emergency rations.

Albrekt checked the chronometer. Within the next two hours, he was scheduled to run the other blast tape. He would have time.

Heat gun in hand, he moved quietly to the hatch. The companionway was clear. From below came the murmur of voices. He moved cautiously a few steps down the metal ladder until he could see beneath the ceiling of the navigation deck.

Migl was taking a shower on the other side of the room, while Carrel and Qoqol relaxed in contour chairs beside the dead-reckoning tracer.

"What is Flanjo, Carrel?" asked the booming voice of Qoqol, the navigator.

Qoqol was a Martian. His round body with its huge oxygen storage hump was not quite as big as a human body, but his thin arms and legs, each equipped with half a dozen double joints, were longer than a tall man's height. They were wrapped around him now, out of the way, and his big-eyed, big-eared head peered through them like an urchin's face through a tangle of vines.

"The Flanjos are members of a fanatic sect who believe in human supremacy," answered Carrel soberly. "More than that, they believe in their own supremacy over other humans. They revolted against the Solar Council and have a hidden base our forces haven't been able to locate yet."

"They are *loco,* Qoqol," said Migl from the shower. "Crazy. They'd make all you Martians slaves. Us too, probably."

"Why they want this ship?" asked Qoqol.

"For the ship itself, partly," said Carrel. "But our cargo's pretty strategic, too. It's mostly lithium, which they can use in nuclear weapons and power plants. They can use the plastics, tools and machinery we're carrying to improve conditions at their base. The general opinion I've heard is that their objective is to take over the Mars colonies. They need fusion weapons for that, but it's hard to get light elements on the outer moons, where their base is thought to be. Whatever they have already, 100 tons of lithium will help them immensely."

"Immensely," assented Albrekt, stepping off the ladder to drift to the floor. He held the heat gun lightly in his hand. "I'm afraid I'm

going to require all of you to go ahead of me down to the storage deck and remain there while I enjoy a good lunch."

Silently they complied. The living quarters, where the food was, were one deck down, the storage deck below it.

Albrekt ate his meal, keeping a watchful eye on the opening between the living quarters and the storage deck. Then he returned to the control room, locked the hatch and strapped himself down for blasting.

He kept his promise to Carrel and broadcast a warning of the blast over the intercom system. At the appointed moment, he ran the blast tape through the automatic pilot.

The acceleration was not as heavy this time. The ship, safe from the prying of the convoy's radar, swung slowly from its course and into a new prearranged orbit, on which a Flanjo vessel was to intercept it in approximately six months.

SPACE is a lonely place—lonelier than any place on Earth, lonelier than any place on Mars. No expanse of desert or ocean is so empty as space, for there one at least has something material beneath him and around him.

"An experienced spaceman would rather be burned than left alone in space," said Carrel. "It'll drive most men completely crazy in a pretty short time. I think you've realized that by now, Albrekt. That's why you won't kill us."

Albrekt was eating a meal at the table in the living quarters, his heat gun lying beside his hand. The others were seated on bunks across the room. Since the only necessity was to protect himself and keep the others out of the control room, he had discontinued the practice of making the crew go below while he ate. Despite the atmosphere of enmity, the conversation and companionship filled a need he was beginning to recognize more keenly.

"That's true," answered Albrekt agreeably. "For that and other reasons, I won't kill you unless I'm forced to."

"But there's nothing to prevent our killing you and retaking the ship," reminded Carrel.

"Nothing but this." Albrekt laid his hand on his heat gun.

"As a matter of fact, I don't want to kill you, Albrekt," said Carrel. "I want to capture you alive, and take you back to Mars. I imagine you have some information about Flanjo plans that would be pretty valuable to the council."

Albrekt laughed.

"I admire your courage, Carrel," he said. "But I've been in dangerous positions before, for longer periods than this. I don't intend to let my guard down."

Carrel apparently was blessed with iron self-control and Qoqol, like all Martians, habitually showed emotion in ways no Earthman could interpret. But Albrekt's practiced eye detected Migl's restlessness. When the crew's move came, two days later, Albrekt was ready for it.

As he had anticipated, it happened at mealtime. Albrekt was be-

ginning to spend more time outside the control room, always keeping the others from getting between him and the hatch to higher decks, but mealtime was the logical time for his guard to be lax.

At some signal Albrekt failed to catch, Carrel and Qoqol launched themselves directly at him from opposite sides of the round room. Simultaneously, Migl drove through the air for the hatch to the upper decks.

Albrekt's muscles reacted like steel springs. Scooping up the heat gun, he dove across the table and twisted in the air as he floated swiftly between Carrel and Qoqol. Ignoring them for the moment, he trained the gun on the hatch to the navigation deck above and pressed the trigger. Migl had to grab the ladder frantically to keep from drifting head-on into the sizzling beam that barred his way.

Albrekt anchored himself to a bunk and waved the heat beam in an arc above their heads. The metal ceiling smoked faintly.

"I won't kill you all unless I have to," he said calmly. "I can get along easily without one or two of you, though. Before you try anything like this again, I'd suggest you think seriously about which of you wants to die first."

Silence answered him. Migl still clung to the companionway ladder, about halfway up. Carrel clasped his knees in a sitting position about six inches off the floor near the round table in the center of the room. Qoqol, unable to stand upright anywhere aboard the ship, crouched like a spider against the farther wall.

Albrekt switched off the heat beam and motioned at Migl with the gun. Watching them closely, Albrekt moved to the companionway and pushed himself up through the hatch.

Locking himself in the control room, he devoted himself to serious thought for a while. Despite his warning, this sort of thing was likely to happen often. Eventually it must succeed, if only by the law of averages.

The trouble was, Albrekt was actually at a slight disadvantage. He knew by now that the absolute need for companionship in space was not idle talk. He had no intention of coasting alone, in a silent ship, for five and a half more months, and being shot as hopelessly insane when his Flanjo colleagues picked him up at the rendezvous.

One solution, of course, was to kill two of the crew members. Then neither of the two men left could afford to kill the other. For several reasons, Albrekt preferred to find another solution. He had heard rumors that personality conflicts between two people cooped up together in a spaceship drove them eventually at each other's throats. Another factor was that, as long as there were three of the others, Albrekt could hold the threat of killing one or two of them over them. Besides, their technical knowledge would be valuable to the Flanjos, and Albrekt wanted to face no disciplinary action for destroying any of them unnecessarily.

What was the substance of their threat to him, then? He examined it. Their threat was that they might reach the control room. He could not lock it from the outside, and he must come outside for good

food and necessary companionship, so that line of reasoning got him nowhere.

But what was behind the threat of their reaching the control room? They might (a) obtain weapons to match his own; (b) communicate the ship's position to warships of the Solar Council; (c) swing the ship off its prearranged course and avoid the rendezvous with the Flanjo vessel.

Solution? Albrekt laughed shortly. There was a solution to all three problems.

With his heat gun, he reduced the radio transmitter to a molten mess. Now the *By Jove!* could still receive, but not send.

Piling all the heat guns in the center of the room, he gave them the same treatment. The beam left them almost unrecognizeable in the midst of a shallow crater. He had come very near burning a hole through into the navigation deck.

The last step was the most daring of all. It meant that he must trust absolutely to the accuracy of the two blast tapes he had run through the automatic pilot. He threw the switches that jettisoned the fuel tanks.

In the screens, he watched the spheres of hydrazine and nitric acid, hurled from the ship by spring action, go drifting slowly away into the void. In effect, the *By Jove!* was now a voiceless derelict.

Albrekt went below.

"This means that I intend to stand for no more foolishness," he said harshly when he had told the others what he had done. "If you prefer, you may draw lots to decide which two I shall kill and which one shall have the pleasure of my company for the rest of the trip. The continued existence of all three of you will depend strictly on your good behavior."

Migl, lolling on a bunk, curled a sardonic lip at him.

"You seem to have gone to a great deal of unnecessary trouble, *ladrón,*" he said. "It is still worth the risk of at least one of our lives to destroy or capture you."

"You're wrong, Migl," said Carrel soberly. "Now we have no fuel, we have no radio. The ship is in orbit, and we're helpless to change it. No matter what we do aboard, the Flanjo ship will intercept us. The Flanjos will destroy us then if they don't find Albrekt alive and safe."

"An accurate analysis," agreed Albrekt briskly. "You're showing good sense now, Carrel."

Carrel shrugged and spread his hands. Albrekt felt a little sorry for him in defeat. He admired Carrel's bravery and resourcefulness.

Albrekt's sleep that night was more carefree than it had been since the *By Jove!* pulled free from its satellite orbit around Mars. There was still danger, of course. He had to be on the alert for a desperate attempt to disarm him, or an effort to overcome him in the control room by tampering with the ship's machinery, despite Carrel's surrender. But it was less likely now.

RELATIONS were on a much more cordial basis from then on. Their conversation returned, almost, to the friendly terms of the earlier portion of the trip.

"Ever been to the outer planets before, Albrekt?" Carrel asked casually one day, munching a beef sandwich.

"I spent ten years at the base, before they sent me back to work on Mars and Earth," Albrekt replied. "I was born on Earth. My father took me out to the base when I was a boy."

"The base?" repeated Carrel, even more casually.

"On Rhea," said Albrekt deliberately. His faint smile recognized the attempt to elicit information. "Now, figure some way to tell them back on Mars!"

He thought Carrel flushed slightly, but could not be sure.

"Ever been to Venus?" asked Carrel.

"Never that far in, I'm afraid," answered Albrekt.

"I don't suppose you passed quite this close to Jupiter on your other trips?" said Carrel.

"How should I know?" demanded Albrekt. "I'm no spaceman. I don't know how close to Jupiter we're going now. I don't remember anything said about Jupiter on my trips."

"They'd have opened the ports and let all of you see, if you were going within several million miles of it," said Carrel. "Qoqol's figured it out. We're going pretty close this time."

"You want me to open the ports and let you see Jupiter?" asked Albrekt sarcastically.

"Something more serious than that," answered Carrel gravely. "It's the radiation."

Albrekt pushed himself back from the table and stared quizzically at Carrel.

"You wouldn't take advantage of my ignorance to rib me a little, would you now, Carrel?" he chided gently. "I studied elementary astronomy, you know."

"You're proving right now that you didn't study astrogation," retorted Carrel sharply. "Any spaceman can tell you the reaction of cosmic rays on Jupiter's atmosphere is fatal at the distance we'll pass in this orbit. If our convoy had been passing so close, every ship would have been shielded."

"Carrel, I can't see your object in lying, but I think you are. Some damned good spacemen plotted this orbit."

"And what do they care about your life or ours?" demanded Carrel hotly. "You know your Flanjo buddies as well as I do. We'll live long enough for them to get all the information they want out of us."

Albrekt studied him closely. Carrel returned his gaze with serious eyes.

"Maybe you're telling the truth," said Albrekt slowly. "If you're lying, I can't see your reason. You know I won't panic, and we can't change orbit."

"I'm trying to impress you with the seriousness of this thing, because there's something we can do about it if you'll let us," said Carrel patiently. "All it takes is a thin metal shield at a proper distance from the ship, and we can build that out of the cargo we're carrying."

"The only metal aboard is lithium," demurred Albrekt sternly. "That lithium's slated for nuclear reactors and weapons and it's going to reach Rhea intact!"

"We're not going to burn up any of your precious lithium!" exploded Carrel. "All I ask is to use half of it to build a shield. They can use the damn stuff out of the shield as easy as out of cargo bars. It'll all be there, just the same."

Albrekt hesitated. It was quite conceivable that his superiors had not bothered about such a trifle as his slow death from radiation. They would have plotted the most effective orbit for their purposes, and if the *By Jove!* didn't happen to be shielded—well, casualties had to be expected in any military operation.

"You have my permission to build the shield," he said stiffly at last, "under my strict supervision, of course."

"That's all right with me," consented Carrel with a sigh of relief. "And I give you my word as a space captain, Albrekt, nobody aboard the *By Jove!* will lift a hand against you while it's being built."

Despite Carrel's reassurance, Albrekt, wary of some stratagem, held to his determination to oversee every step of the shield construction, with gun handy.

Fifty tons of such a light metal as lithium is a pretty large volume of the stuff. Albrekt assumed that Carrel's shield was to be a square or disc of the metal, rather thick to absorb the radiation, which would be interposed between the *By Jove!* and Jupiter. When work began, after several days of planning, it became apparent that the construction task was something more than cutting out and fastening together chunks of lithium.

Instead of working inside the ship, the crew moved a furnace to the outside of the cargo hull and anchored it down. The Earthmen wore spacesuits, of course, but Qoqol did not, as Martians do not breathe, but extract oxygen from solid matter and store enough of it to last several hours at a time.

To Albrekt's surprise, they next hauled out some of the big packages which were plastic domes for use on Titan. At extra-terrestrial bases, these hemispherical domes were inflated to form huge air bubbles in which humans could live.

"Plastic?" said Albrekt through his helmet radio. "I thought you were going to use lithium."

"We are," replied Carrel's voice. "We'll fasten some of these domes together to form an airtight sphere, then inflate it from the oxygen supply. It won't take much pressure, and we can recover the oxygen later with the ship's compressor.

"Before we recover the oxygen, we'll charge the plastic sphere electrically, so it'll stay rigid. Then we'll vaporize the lithium in the boiler and spray it over half the plastic sphere. We'll blacken the plastic and melt it with solar heat, returning it to the boiler by charging the boiler. I'm afraid we're going to ruin a few of the plastic domes, but that's not important now."

"Spray the lithium? Fifty tons of it?"

"Wait and see," Carrel said. "This will be a bigger shield than you expected."

Later, at mealtime, Carrel brought a worry to the surface of Albrekt's mind which the Flanjo agent had been trying to keep suppressed.

"That was a pretty rash business, jetting all the fuel," said Car-

rel. "What do we do if we're off orbit?"

"It seems to me I've mentioned before that some very good spacemen plotted this orbit," replied Albrekt.

"The best orbits sometimes require minor corrections, when they're this long," said Carrel.

"I couldn't make them, anyhow, and I certainly wouldn't trust any of you at the controls," said Albrekt. "Don't you think my superiors thought of that when they planned this?"

"Maybe," said Carrel.

Albrekt was amazed at the size of the shield Carrel was building. The inflated plastic sphere was bigger than a small asteroid, some six to eight miles in diameter. Carrel had spliced together several of the biggest plastic domes available. Nowhere but in free space, could the sphere have been inflated with so little gas pressure.

The ship could have floated around in Carrel's sphere like a cork in a water bucket.

"It has to be big, because the shield is going to be about 20 miles away from the ship, attached to it by lithium wires," explained Carrel. "So the diameter of the shield has to be this big, to eclipse the disc of Jupiter at the distance we'll pass the planet."

"I don't understand the principle of this at all," said Albrekt irritably. "It seems to me a smaller, heavier shield closer to the ship would be just as effective."

"That's because you don't understand this type of radiation," replied Carrel.

When the shield was completed and the plastic framework removed, it was a tissue-thin metal hemisphere, attached to the ship like a parachute. Migl used up several oxygen cylinders as makeshift rockets to push the shield out to the proper distance from the ship, while the attaching wires were unreeled from the cargo winches.

"We leave the wires on the winches, because we'll have to shift the position of the shield from time to time by shortening some wires and lengthening others," Carrel said.

When the task was complete and the shield glimmered in the sunlight like a nearby moon, they all returned to the living quarters.

"Qoqol, you'll be in charge of keeping the shield at the proper angle," said Carrel. "And, Albrekt, the truce is over."

"What do you mean by that?" growled Albrekt, his hand dropping to his heat gun.

"I've kept my promise while the shield was being built," answered Carrel. "Now, if we can catch you off guard, and do it without being burned down, I warn you we're going to try to disarm and capture you."

Albrekt relaxed.

"You won't get the chance," he promised. "If you did, what good would it do you? We rendezvous with my ship in less than four months now."

DESPITE Carrel's threat, Albrekt was still in control of the situation when the hour of rendezvous approached. The necessity for keeping alert against possible attack was a considerable strain on

him, but he had been under strain many times before in his life. Neither Carrel nor either of the others had made any overt move.

Assured in his own mind that the risk became less and less as the trysting place neared, Albrekt had permitted the crew into the control room except when he slept above a locked hatch. Half an hour before the scheduled time of meeting with the Flanjo ship, Carrel, Migl and Qoqol filed up through the hatch. Albrekt offered no objection, and they floated across the control room to seats.

"Looks like your ship would be on the screens by now, doesn't it, Albrekt?" suggested Carrel quietly.

"They don't have to make the rendezvous exactly on time," replied Albrekt, a little uneasily. "They know the orbit. They can pick us up anywhere along it."

"We're not in the orbit," said Carrel flatly.

Albrekt scowled at him, but his eyes were drawn back irresistibly to the screens, empty except for the silvery lithium shield and, perched just above its edge, the small but baleful disc of Jupiter.

"Qoqol checked the blast tapes you used, and we're not in the orbit they're suppose to put us in," insisted Carrel. "Qoqol's been making sightings for the last six weeks. Jupiter's pulled us off orbit, Albrekt."

"Is true," boomed Qoqol. "We long way off."

"This sort of thing's doing you no good," snapped Albrekt. "I'm not a spaceman and I can't check your figures, but I don't think we're off orbit."

"And if your ship doesn't make the rendezvous?" asked Carrel.

"If it doesn't now, it will later on. And, by Saturn, we're going to sit tight in this kettle till it does, Carrel! Last minute propaganda won't work."

There was silence for a few minutes, as the chronometer hand ticked on toward the hour of meeting.

The radio buzzed. Leaning forward, Albrekt turned up the volume, eagerly.

"Captain Albrekt Vebrug," called the radio. "Flanjo patrol ship *Bavaria* to Captain Albrekt Vebrug."

Albrekt turned a triumphant face to Carrel. But Carrel gestured at the screens. They were still empty. And the radio voice was not coming in strongly.

"Vebrug, we don't find the *By Jove!* on our screens," said the radio, fading a little, then getting louder. "If you get this call, Vebrug, break radio silence and reply. Do you hear this, Vebrug? Break radio silence and reply!"

Perspiration broke out on Albrekt's forehead. He could not reply. The ship's transmitter was a pile of junk.

"Vebrug, Vebrug," intoned the radio insistently. "We don't find you in orbit. If you hear this, break radio silence and reply."

Carrel rose from his seat, floating slightly upward. Albrekt, sweating, dropped his hand to his heat gun.

"We can't stay in this sector, Vebrug," whispered the radio. "Blasting back to base now. Will call every five minutes for the next two hours. If you hear this, break radio silence and reply."

The radio squawked. Then there was nothing but stellar static.

"Well, Albrekt?" said Carrel.

Albrekt felt his iron nerve cracking. He felt that he was breaking apart physically.

"Keep your distance, all of you!" he croaked, drawing the gun. "They'll be back. They'll search all space for us!"

Carrel floated a little closer and Albrekt levelled the gun at him. Migl and Qoqol moved in slightly. Albrekt swung the gun in an arc.

"I'll blast all three of you," he warned desperately. "Carrel. . ."

"Why?" asked Carrel. "We're all in the same boat, Albrekt. We're spiralling into Jupiter."

"You lie!" shouted Albrekt. "I don't believe you, Carrel!"

Carrel laughed shortly.

"Where's your nerve, Albrekt?" he asked. "You've done pretty well up to now. Does the immediate prospect of dying frighten you so much?"

Albrekt lowered the gun slightly.

"If I were afraid to die I wouldn't be here," he replied. "You're not baiting me for nothing, Carrel. What are you after?"

"I don't think you realize how many millions of miles your Flanjo ship had to come to the rendezvous point," said Carrel. "As much as your friends want this cargo, they won't stay around long. Solar Council ships probably heard that broadcast."

"What makes you think they can find us?" sneered Albrekt. "We can't call them either."

"They can't find us," replied Carrel calmly. "The chances are a million to one against it, and we don't have enough time for chances like that."

Ice seemed to enter Albrekt's veins. He glared at them from angry eyes. They were inching closer to him. Already they were halfway across the control room.

"Stand back!" he said, his voice trembling. "I'll burn all of you!"

"And die alone, Albrekt?" Carrel's brittle voice was like the blow of a hammer against rock.

On the screen behind Carrel, the orb of Jupiter floated off the port bow, red and ominous. Giant of the heavens, its tremendous mass could snatch them from the sky, crush and break them like moths.

All the vast loneliness of space swept over Albrekt on wings of fear. It was too much for a planet-bound mind to face. The last companionship even of enemies was better than solitary death.

"No," he muttered, beaten, and the heat gun drooped in his hand. Qoqol's eight-foot arm reached in like a striking snake to lift it from his nerveless grasp.

"Good work, Qoqol," said Carrel heartily. "I had an idea the Flanjo tradition of superiority would break in the face of the inevitable. It was worth risking, now that we know we're safe."

"Safe?" said Albrekt bitterly. "Safe for what? To fall into Jupiter?"

"Well, now," said Carrel drolly, "I believe I neglected to say that our spiral toward Jupiter will intercept the Solar Council base on Callisto, didn't I? Yes sir, it's one of the neatest orbits Qoqol has ever plotted."

"What?" demanded Albrekt, stunned. "You mean we're in a controlled orbit?"

"Why, yes, my Flanjo friend. We started pulling out of the orbits your blast tapes set about four months ago. If we hadn't, we wouldn't have come anywhere near Jupiter."

"You lie!" shouted Albrekt. "You lie, Carrel! You couldn't! There's no fuel!"

"I'm afraid we're going to have to keep you tied up to one of the bunks for the next few weeks, Albrekt," said Carrel. "You're too valuable a prisoner to take a chance on your doing away with yourself."

"There's no fuel," repeated Albrekt. He was almost whimpering.

"I'll relieve your mind on that score," said Carrel. "Have you ever seen a sailing ship on Earth?"

Albrekt stared at him, uncomprehending.

"A sailing ship doesn't need fuel because it gets its power from the wind," said Carrel. "Neither do we, now. I'm afraid that story I told you about dangerous radiation from Jupiter was made up of whole cloth, Albrekt. There isn't any.

"That lithium hemisphere we built isn't a shield. It's a sail."

"But there's no wind—there's no air—"

"The wind that blows between the worlds," said Carrel solemnly. "Solar radiation. Its pressure will move a ship if you provide a sail that's big enough and light enough—and that's what we did."

"It's impossible," muttered Albrekt, crouching back against the automatic pilot.

"Not impossible, just extremely unusual this far out," said Carrel. "If they ever let you out of prison, Albrekt, I think a trip to Venus would be worth your while. I think you'd find the annual space regatta particularly interesting." • • •

WORTH CITING

RECENT DEMONSTRATIONS by chemists of the British Department of Scientific and Industrial Research have given indication of leading to a new, previously untapped source of power. In a series of extraordinary tests these men produced electricity by mixing fresh water with sea water.

The osmotic pressure of sea water is about twenty atmospheres; and when a river mixes with the sea in nature, free energy equal to that obtainable from a waterfall 680 feet high is released and lost.

The British experimenters put that osmotic pressure to work by separating alternating layers of salt and fresh water by using alternate basic and acidic membranes. The membranes are connected in series and yield actual measurable amounts of electricity. A hydroelectric pile of forty-seven pairs of membranes, each three inches square, yielded a maximum of fifteen milliwatts, not counting the internal resistance overcome.

Our citation this month goes to these British chemists, who have taken the first concrete step toward giving the world a new source of power—one which has tremendous possibilities.

What Is Your Science I. Q. ?

HOW WELL do you know your stars, planets and other things astronomical? Counting five for each correct answer, you should score 60. Anything over 75 and you're a whizz. See page 118 for the answers.

1. What is the name of that moon of Saturn which has one side five times brighter than the other?
2. The "Great Red Spot" and the "South Tropical Disturbance" are phenomena of the planet _____.
3. What is the name used by astronomers to describe the dark gap in Saturn's rings?
4. The azimuth distance measures the angular distance of a star from the _____.
5. How many days does it take the long-period variable star Mira to fade and brighten again?
6. A one hundred and seventy pound man experiencing 2gs (two gravities) weighs _____ pounds.
7. Polaris is the name of the north pole star. What is the name of the south pole star?
8. The ratio of the total amount of sunlight reflected from a spherical body to the amount received by that body is called its _____.
9. What is the name of the ninth moon of Saturn which was supposedly discovered in 1905, but has been "lost" ever since?
10. Canopus, the second brightest star in our heavens, is about _____ light years away.
11. What is the name of the comet which returns every 3.3 years?
12. The escape velocity from the moon is reckoned at _____ miles per second.
13. How many constellations are there in the whole sky?
14. The two moons of Mars were discovered by _____.
15. Which planet has its axis tilted at 98 degrees?
16. What is the name given to stars which are no further from Polaris than the distance from Polaris to the horizon?
17. That point in the orbit of the moon nearest to the Earth is called _____.
18. The temperature of Jupiter is estimated to be about _____ degrees below zero.

The Elroom

Timmy was getting too much 3-dimension television, and he was mistaking it for Mother Nature. So his parents took him out to see the natural wonders, which he unhappily mistook for 3-D television . . .

BY JERRY SOHL

SHE HAD never seen violinists work so hard. They were running their bows back and forth so fast their hands were blurred. The musicians' faces were studies in concentration and the concertmaster—he wasn't two feet from her—had worked himself into such a frenzy veins were standing out on his red face.

Mrs. Briggs almost laughed, the way the conductor was sweeping his baton to within inches of her head. Several times she had an impulse to reach up and catch it.

So this was Virilio! Disjointed, cacophonic, sometimes sweet but more often deafening. She had never caught him before. But it was just as advertised, all right. Exciting. And moving. She didn't know if there was supposed to be a love theme in Virilio's new *Plenitude on a Thursday Afternoon,* but it definitely stirred her.

Just then the door opened and Timmy came walking through the musicians, eating an apple. Once he stopped to stare at the tympani and a second fiddler's bow kept running through his head. It was rather ghostly, Mrs. Briggs thought.

"Timmy!" she yelled above the music. "I didn't see you go. Where have you been?" As if she didn't know.

"Had to get a glass of water. The music made me thirsty," he said loudly, taking his seat beside her. "This is a lousy program, Mom. What's next?"

Drama in History, she said ab-

sently, her eyes on a flutist's mustache, wondering how he managed to play.

Timmy chomped on his apple, but in the face of his gustatory enjoyment she couldn't find the heart to tell him to be quiet.

At intermission, she left the El-room to let Timmy take in the commercial and returned in time for the beginning of *Drama in History.*

There was a salt spray in the air and a cool wind whipped around them as the lights went out completely. The roar of waves grew loud and the deck creaked beneath their feet.

The ship moved through the dim light. Sailors stood like statues about the deck.

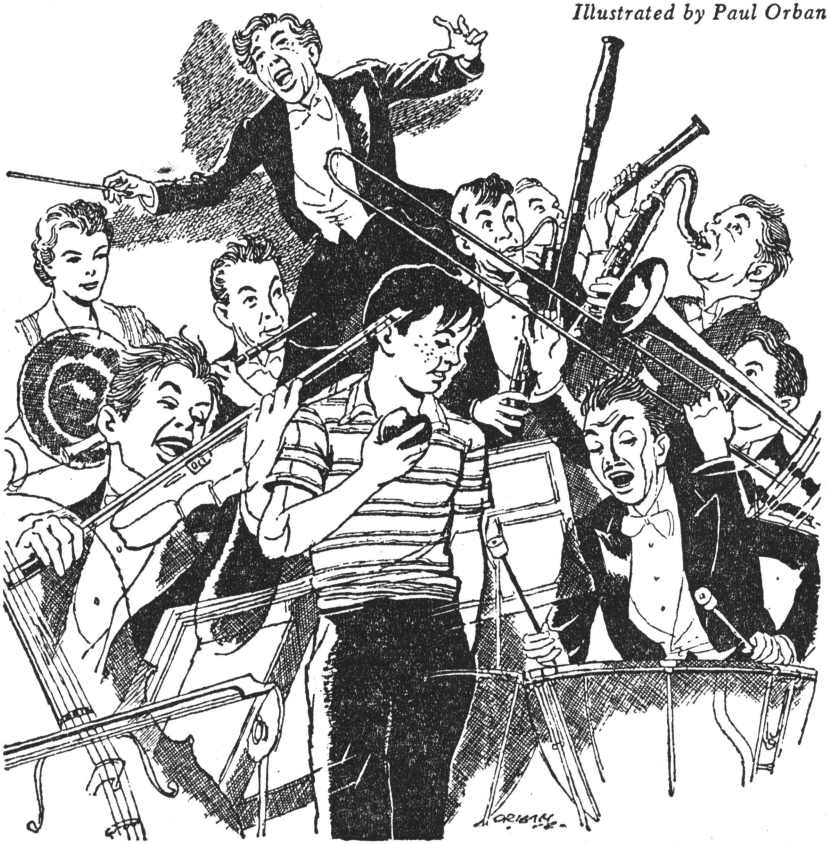
"We're even with the inshore ships, sir!" a voice called hoarsely.

"We've got the French between us, then." Though he was a small man, there was a ring of authority in the voice of the man on the bridge.

"There's the *Orient,* sir!"

"One of ours has gone aground!"

Illustrated by Paul Orban



"She'll mark the shoal for the rest of the fleet," the little man replied calmly. "Ready, Mr. Creston!"

"What's he think he's doing?" the captain's boy whispered.

"Quiet, lad," a peg-legged sailor said softly. "Admiral Nelson will see us through. You'll have your share of action afore mornin', mate!"

The darkness was split by far-away flashes of light. Instantly, there was returning cannon fire that caused the ship to shudder and groan. The Battle of Aboukir Bay had begun. . .

The red flashers above the door winked their message.

"Damn!" Mrs. Briggs said, switching off.

"Ma!"

"There's someone at the door, Timmy. If it's a salesman—!"

Mrs. Briggs checked the dials on the electrocooker as she went to the door. A small but efficient-looking woman in the standard white and blue of school uniforms had alighted from her g-car and stood at the door.

The woman said she was Bernice Pomeroy from the office of the director of Timmy's public school and Mrs. Briggs, scarcely glancing at her offered identification card, pushed for mezzanine. The woman said nothing; she merely waited until the floor came down hydraulically to mez level. Then Mrs. Briggs ran the magnetic curtains around, and when they were private she saw that the woman was sitting on one of the soft lounge cushions, straight-backed, adjusting her glasses on the small bridge of her nose. She drew a sheaf of papers from her portfolio.

"Mrs. Briggs," Miss Pomeroy said, looking up with officious grey eyes. Then she saw Timmy. "Timmy, I suppose."

"Yes." Mrs. Briggs wished she'd get on with it. It was hard enough leaving Admiral Nelson at the mouth of the Nile, without having her settling down as if for all day.

"Maybe it would be best," Miss Pomeroy coughed a little, "if Timmy—"

"If Timmy what?"

"It's about him, you see."

"I'll send him to the Elroom."

"No," Miss Pomeroy said at once. Then she added: "Perhaps it would be best if he stayed after all." She riffled her papers. "Timmy's latest Auden-Gronet test shows his personality has dropped at least five points from positive during the first half of the school year."

Mrs. Briggs looked at her nine-year-old son. He was down to the core of his apple now, a nice looking boy, she thought, with bright blue eyes, hair that insisted on drooping too far down on his forehead—she'd have to start training it in earnest soon—and a fair supply of freckles. He carried himself well. Had a pleasant speaking voice, she thought, and a good vocabulary. She had noticed no—slipping?

"Timmy's not too far behind factually, Mrs. Briggs," Miss Pomeroy said, referring to her records. "In fact, we'll admit he's ahead in stability and adjustment. But he's getting more negative in aggressiveness and personality development. He just doesn't seem to *care*. That factor may account for his stability—he doesn't have any rea-

son to be unstable, you see? And he adjusts easily because he doesn't care enough not to. There *is* a reason, of course."

Mrs. Briggs was annoyed. The schools had gone too far. "And what, may I ask, *is* the reason?"

"Too much time in the Elroom, Mrs. Briggs."

Mrs. Briggs managed a good-natured laugh. "Miss Pomeroy, you have Timmy all wrong. He doesn't spend any more time in the Elroom than other children do."

"Children are all different," Miss Pomeroy countered.

"But not Timmy."

"Parents are often poor judges of their own children, Mrs. Briggs."

"Are you trying to tell me I don't know my own child?"

Mrs. Briggs, I am not *trying* to tell you anything," Miss Pomeroy's cheeks were red. "I am telling you your child is spending too much time watching these programs. Sublimating so much, in fact, that he's beginning to find it difficult telling the difference between life itself and the Elroom."

"Sublimating?"

"Escape. You didn't know? Yes." The teacher smiled tolerantly. "First sublimation room for elevating one's self—sublime the verb. Then SubL for short. Then just L and L-room to Elroom. You didn't know?"

"That, my dear," Mrs. Briggs said heatedly, "is just so much hogwash."

"Tell me, Mrs. Briggs, just what does your husband think of the Elroom?"

"He doesn't have much time to spend in it."

"You mean he'd rather do something else?"

"He's interested in typically man things—cars, mostly." Because Timmy had gone over to the curtains and was starting to walk through, and because she wanted to show Miss Pomeroy she was capable of some discipline, she said, "And where are *you* going, young man?"

"Probably back to the Elroom," Miss Pomeroy put in. Mrs. Briggs gave her an acid look.

Timmy swallowed the last bite of apple. "To get a drink. I'm thirsty."

When he had gone, Miss Pomeroy leaned forward. "You must keep him out of the Elroom, Mrs. Briggs. We'll send you a list of programs. He can have sublimation only one hour a day."

"Ridiculous!" Mrs. Briggs snapped.

Miss Pomeroy adjusted her glasses and looked at her severely. "Are you saying you will not comply?"

"I said it's ridiculous, didn't you hear? Why, you won't find a better child than Timmy—"

"Obviously your only child."

"And what has that to do with it?"

"It is not my job to explain," Miss Pomeroy said icily. "Only to inform. I'm afraid I'll have to report that you will not heed the directive."

"The Elroom is instructive. Why, we were learning something about history just now. We were watching Nelson sink the French fleet when you came."

"It's not the program. It's the identification with it. Let's say Timmy has too much imagination

—but then I have already told you what I came to tell. I'll be going now, Mrs. Briggs."

FROM THE way George sent the gyrocar into a long swoop that ended inside the garage, Laura Briggs knew her husband was angry and she braced herself for battle. But she wasn't quite prepared for such an immediate outburst, the moment he got in the door.

"Stoops!" he cried, robbed of slamming the door because of the automatic permaglass cushion. Timmy scurried away, frightened at this aspect of his father. "The psychocenter we've got to go to yet!"

The electrocooker had dinged a minute ago, and Mrs. Briggs was ready to take everything out and put it on the table, but she could only look at him in amazement. "You're not making sense!"

"Ha!" George's heavy eyebrows hovered high in his forehead, then plunged down over his eyes. His big face was crimson, his blue eyes steely. "Neither are they, and they called just before I left the office. Wouldn't tell me why. Have you done anything?"

"Well—" Mrs. Briggs started tentatively and he gave her a sharp look. "It's about the Elroom."

"The Elroom!"

She told him about the visit of Miss Pomeroy. "She must have reported it."

"Then we'll get rid of the damned thing!" His eyes brightened. "I told you we should have gotten a new car instead."

"But we've got a car, George."

"Not a good one." He leaned against the cooker, his face blissful. "Imagine us—*us*—driving a new *Caddie* gyro—room for eight, you know—supersonic drive—sleek, too—we could get a red one—you'd like red, wouldn't you?—a thousand horsepower with twin turbos for level flight—and those off-center firing tubes with folding back overhead vertical flight pins—Gad!"

"Our present car—"

"Junk!"

"But it runs, and we don't need a car like that for just in-town driving."

"But what about our vacation? Think of it, Laura: We could make it to Alaska, Tibet, Africa—we could go around the world in our three weeks."

"We could do the same with the Elroom, George. And there are a lot more things besides travel." Mrs. Briggs's lower lip was trembling. "You're siding with those nasty school people. You think they're right about Timmy."

"Where is he?"

Timmy stuck his head up from behind the lounge. His big eyes were wide.

"Look at him, George. Ever seen a more normal boy? How could they think a boy like that could get so involved in a program he'd think he was living it."

"Yeah, but if those school people—"

Her eye caught the clock and she drew in her breath quickly. "Say! We've got to hurry if we're going to see *Cameron Capers.*"

Dr. Vincent Potter was a large man with a shining expanse of flesh between two islands of black, bris-

tling hair above heavy brows that met over his nose and almost concealed the bright, intelligent eyes that glittered beneath them.

"So. You cannot understand. Yes." He nodded his head, made a tent with his hands, and rocked. "But this is what we are for. To understand. For you." He smiled. "If understanding easily came, then we would be not needed. No? You see?" He laughed a little, jerked upright. The movement nearly made the three of them jump.

"Doctor," George said. "There are millions of kids in Elrooms all over the country."

"You tell me something new?" The doctor frowned. "Millions of people there are. So? Must they be alike every one? They are not. Yes?" The doctor leaned toward Timmy who was playing with a desk calendar. "Who is your mother?" Timmy pointed to Mrs. Briggs. "Your father?" Timmy pointed to George. "See? He knows."

"Of course," Mrs. Briggs said.

"Exactly," the doctor agreed. Then he was upright, waving his forefinger before them, looking from beneath dark brows. "For how long, Mrs. Briggs? For how long, I am asking? And now, I am telling how long. Who knows? Who can tell how many times you will let him see these things?"

"What day is today?" Timmy asked.

"He is asking what day it is," the doctor laughed.

"Well, why don't you answer him?" Mrs. Briggs suggested.

"The twelfth of June," the doctor said. "And why does Timmy ask such a question?"

"You forgot to tear off yesterday." And Timmy tore the little sheet off, proceeded to make a dart of it.

"Well, what you've been meaning to say," George said, "is that we're going to have to cut down on Timmy's Elroom time."

"Aw, Dad!" Timmy protested.

"No. Cut it down we will not do." The doctor shook his head gravely. "We will cut it out altogether."

"Cut it out?" George said hopefully. He leaned forward with interest. "Maybe we should get rid of our outfit?"

"Mr. Briggs. You do not know, perhaps, sublimation can be dangerous. Confusing reality, stimulating unreality, stunting thinking, bringing on neuroses. Tolerance. He needs tolerance. Timmy cannot develop tolerance with too much of a dose, as he has had. Do you see now? The AG test—ah!—it is good. It shows us he is leaving reality. We can't let him psychotic become."

"But he doesn't believe the programs!" Mrs. Briggs exclaimed.

"Not yet, Mrs. Briggs! Not yet. If he sublimes enough he will soon, though. No?"

"I can't stand the thought of locking Timmy out of it," Mrs. Briggs said sadly.

"I'm in favor of getting rid of it," George muttered. "There are other things—cars—"

Dr. Potter took an official form from a drawer. "A change of environment you need. Timmy needs. You leave tomorrow on a month's vacation."

"But my vacation doesn't come

up for six months," George said. "Or doesn't that matter?" he added hopefully.

"You will leave tomorrow, as said. No? Your office will I inform of the necessary departure. Sector administration will be knowing." He wrote on a sheet of paper. "The colorful spots. That you will see. Timmy will see things as they really are. Itineraries will send the route by facsimile. Good. Not?"

"Why, I think it's wonderful!" George said.

"Timmy must see the sunrise. The sea, he must swim in. Things, he must do. Remember. Yes?"

"Yes," George said. "No?" He turned to his wife. "There's an agency where we can rent a car—and they have new *Caddies*—"

THE TAPERING white obelisk thrust upward from the earth like a giant needle. The Briggses entered the base of it, went up the elevator, and caught glimpses of stairway landings as the cage rose slowly. When they stepped out on the platform near the top, they walked to the pair of port openings on one side and looked out.

In the time it had taken them to get to the top of Washington Monument, a light fog, borne on the slight evening breeze, had enveloped the tall shaft at its midsection; they could see nothing of the ground below. They were isolated from Earth, connected to it only by the elevator well.

"Isn't this eerie?" Mrs. Briggs asked Timmy.

He looked around casually and yawned. "On an Elroom program," he said, "you would be able to see all the way down. I don't think this is so hot." He yawned again. "I'm thirsty."

"We'll be going down in a minute, Timmy."

"I've got the route figured better than Itineraries for the next stop," George said. "If we could leave in twenty minutes—"

Aragonite crystals on the cavern's ceiling twinkled brightly in reflection of glowing electric lights. The fragile beauty of the boxwork formation took Mrs. Briggs's breath away.

"It's just like lace," she whispered to George, pointing to the frosty tracery glistening in the honeycombed walls.

"Tom Bingham discovered this cave," the guide intoned before the tourists seated in the giant chamber, his voice echoing from the walls. "He heard a whistling sound and found it came from a small opening. That's why they call this Wind Cave. The wind goes in and out."

"Why does it do that?" someone asked.

"Difference in atmospheric pressure," the guide said. "Another interesting thing about this cave: It's always forty-seven degrees. Doesn't make any difference whether it's summer or winter. Always the same in here."

"I don't hear any wind," Timmy said to his mother and father. "Why isn't the wind whistling?"

"When the barometer falls, the wind blows out," his father explained. "When the barometer rises, the wind blows in."

"Why isn't the wind whistling now?" Timmy insisted.

"The barometer must be standing still, son."

"This isn't any good. On an Elroom program the wind would be whistling."

"Hush," Mrs. Briggs said.

"I'm thirsty," Timmy said.

"We'll be leaving in a few minutes."

"You'll get plenty of wind when I rev up the *Caddie* on our next hop," George said.

"Think of that," George said. "It's a whole mile down to the river."

Timmy leaned forward to take a deep look over the precipice at Yaki point.

"Boy!" he said. "This is pretty good. Almost makes me dizzy."

Below, the Colorado River was bright quicksilver, threading its way circuitously through the canyon. The striated walls rose majestically from the floor to towering temples.

The boy turned from the rock to look at the tufts of clouds floating by in the deep blue sky.

"I'm thirsty," he said.

Mrs. Briggs, still fascinated by the view, said, "Well, go get a drink, then."

Timmy walked over the edge, screamed as he fell.

Mrs. Briggs could only stare, stunned.

George uttered a cry and ran to the cliff's rim.

Tourists nearby ran up, looked down with George.

A hundred feet below on the slope at a point where it dropped off to nothing, a horrified Timmy was crouched clutching a small tree.

"Hold on!" George called encouragingly.

A few minutes later someone had found a long rope in a gyrocar trunk and roped it about George's middle. They let him over the edge gently, dropped him down the slope slowly.

"Hang on, Timmy!" George yelled, running a tongue over dry lips and momentarily closing his eyes to the dizzying depths. "Don't let the little rocks coming down worry you."

A while later, a dust-streaked Timmy was back on the ledge in his mother's arms, sobbing.

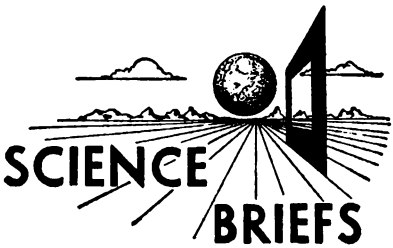
George, his shirt wet with sweat, and struggling out of the rope, panted: "Whatever came over you, Timmy?"

"It was so real I thought it was the Elroom. I was just going out to the kitchen to get a drink of water."

"And I—I told him to go," Mrs. Briggs said, horrified. "It was that real to me, too."

• • •

If I have ever made any valuable discoveries it has been owing more to patient attention than anything else. —*Isaac Newton*



Eye specialists of the future may be using an electronic magnet to take foreign bodies from the eyes. Magnets in use today do not attract non-iron metals such as silver, aluminum, brass, copper and various others, and at least 25% of the eye injuries which cause loss of sight are due to such non-iron fragments. The new device now in the development stages at the Army Medical Center will, when perfected, remove all such foreign objects cleanly and without more than minor damage to the delicate tissues.

A new step toward the automatic factory of the future is an automatic punch press with an electronic "brain". Directions are fed to the punch press by an electronic digital computer which "reads" a perforated card for information on the size, number and location of the holes to be punched. The press automatically positions the material to be perforated and performs the operation within an accuracy of a few thousandths of an inch. New directions for the press are simply a matter of a new card, with no time lost for retooling or the retraining of an operator.

Human beings won't be called upon to act as guinea pigs in cell studies in the days to come. A new method of serial cultivation of human cells has been announced which will enable microbe and disease hunters to grow living bits of normal tissue in test tubes. The key to the new technique seems to be a time period for adjustment to an artificial environment. The new method makes it possible to get information concerning cell nutrition, cell chemistry and the effects of viruses, all of which was unobtainable before except by the infection of human volunteers.

Industry may be able to eliminate the costly building and testing of expensive prototype engines with a new gadget. If the electronic device works as predicted, it will make it possible to test the performance of jet engines, nuclear reactors and the like while they are still on the drawing board. Able to simulate the thermal behavior of materials under rapid and intense temperature changes, the device enables an accompanying computer to predict the performance of a proposed structure from design factors and known material properties. Thermal behavior is simulated by exhibiting a corresponding electrical behavior under the influence of electrical current. The Computer solves the problem of the thermal behavior of any new or existing design by the simple principle of analogy.

Housewives may soon be asking the grocer for a box of tomato juice. This newest addition to the growing list of fruit powders is processed by directly vacuum drying tomato paste, and can quickly be restored

to liquid juice by the simple addition of water. Although the drying process is as expensive as the present one of adding water to make commercial tomato juice, the saving in storage space and freight costs make it a much more economical product for both civilian and military use.

Medical men of the future may be able to make much more accurate diagnosis of cancer and other diseases of the soft internal organs and tissues. A new device known as a Somascope, which combines the principles of radar, sonar and television may soon supplement the X-ray and the fluoroscope. This ultrasonic photographing gadget is expected to give well defined pictures of diseased cells where none can now be detected. The patient to be somascoped is immersed in a tub of water and ultrasonic sound is beamed at the patient, then reflected back through the water. The echo waves are converted into electrical impulses which produce a picture on a television screen. Since tissues with different consistencies reflect sound waves through the water differently, diseased tissue shows up quite blatantly on the screen.

Jets, rockets and helicopters may not be the only aircraft in the skies of tomorrow. Recent tests demonstrated the unique abilities of a channel wing plane weighing 2.5 tons and propeller driven, which is able to hover at about eleven miles an hour without crashing. Two pusher-propeller engines are mounted on wings which resemble half-barrels; and with this equipment the plane can climb 3000 feet a minute after using less than two hundred feet of runway. The slow-motion plane can also do 180 miles an hour and develop as much lift per horsepower at eleven miles an hour as commercial airliners develop at regular speeds.

The smog problem which plagues so many industrial areas may be licked in the not too distant future by the development of lightweight fuels. A proposal has been made to redesign motor fuels so that the heavier components with molecular weights of 150 to 200 which usually escape combustion and are thrown out into the atmosphere to create smog are eliminated. A change to compounds with a weight of 50 to 55, such as propane and butane would solve the problem. These

fuels could be made to burn more efficiently and leave nothing but carbon dioxide and water. Motor redesign would simply consist of replacing the present day air-vented gasoline tank with a pressure tank to contain the liquid petroleum gas.

Your dinner menu may soon have flying fish on it. Officials of the U.S. Fish and Wildlife Service report that fresh flying fish makes a good meal and have proposed that a flying fish canning industry be set up in the Barbados Islands where this aviation-minded fish is a popular food. It is hoped that the needs of food shortages may possibly be filled by this new addition to the list of edible sea food.

LOST ART

(Continued from page 91)

tramping the snow down into a flat, hard floor. He broke his branch into short lengths over his knee, then, in a nearly forgotten gesture, slapped at his uniform until he remembered that he had no pockets. For a moment he stood still, his eyes roving over the side of the ship until it came to one of the jagged tears. With a little self-congratulatory chuckle, he began scraping one of the lengths of wood over the torn metal, catching the splinters and shavings in the palm of one hand.

Allison dropped his armload of branches by the ship, waged an inner battle between fear of the unknown and curiosity in which curiosity won, and stood watching Endicott arrange the branches in a crib around the neatly piled shavings. Endicott, on one knee by the crib, worked steadily, laying the pieces of wood with care and a returning sense of sureness, with only brief pauses to flex his freezing fingers. Finally, with a smile of satisfaction on his face, Endicott got to his feet, and the nearly forgotten gesture at the pocketless uniform was repeated.

Slowly, Endicott's lined face altered. He looked hastily at the watchful Allison and hastily looked away; he looked at the completed crib, and his tongue licked his lips; he looked along the side of the damaged ship, and his eyes narrowed thoughtfully; finally, he looked into the swirl of the icy snow, and he shivered. His hands ceased their pawing, fell slowly, to hang slack by his sides. He was not smiling as he turned away.

"What were you looking for?" Allison asked curiously.

"I just remembered something else," said Endicott, his voice was very soft in the stillness, "we used to have something called a match to start those picnic fires." • • •

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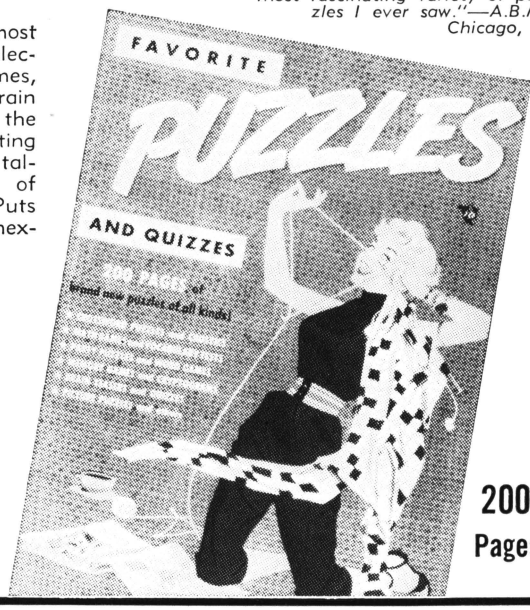

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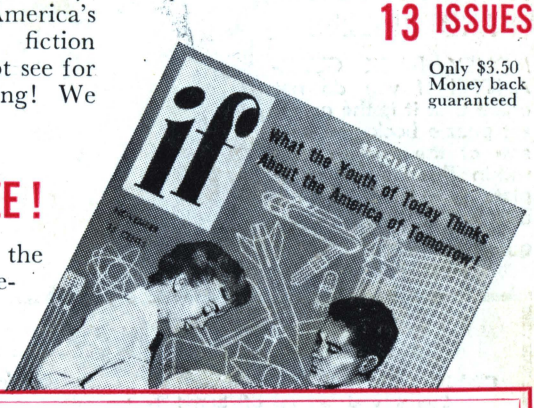

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