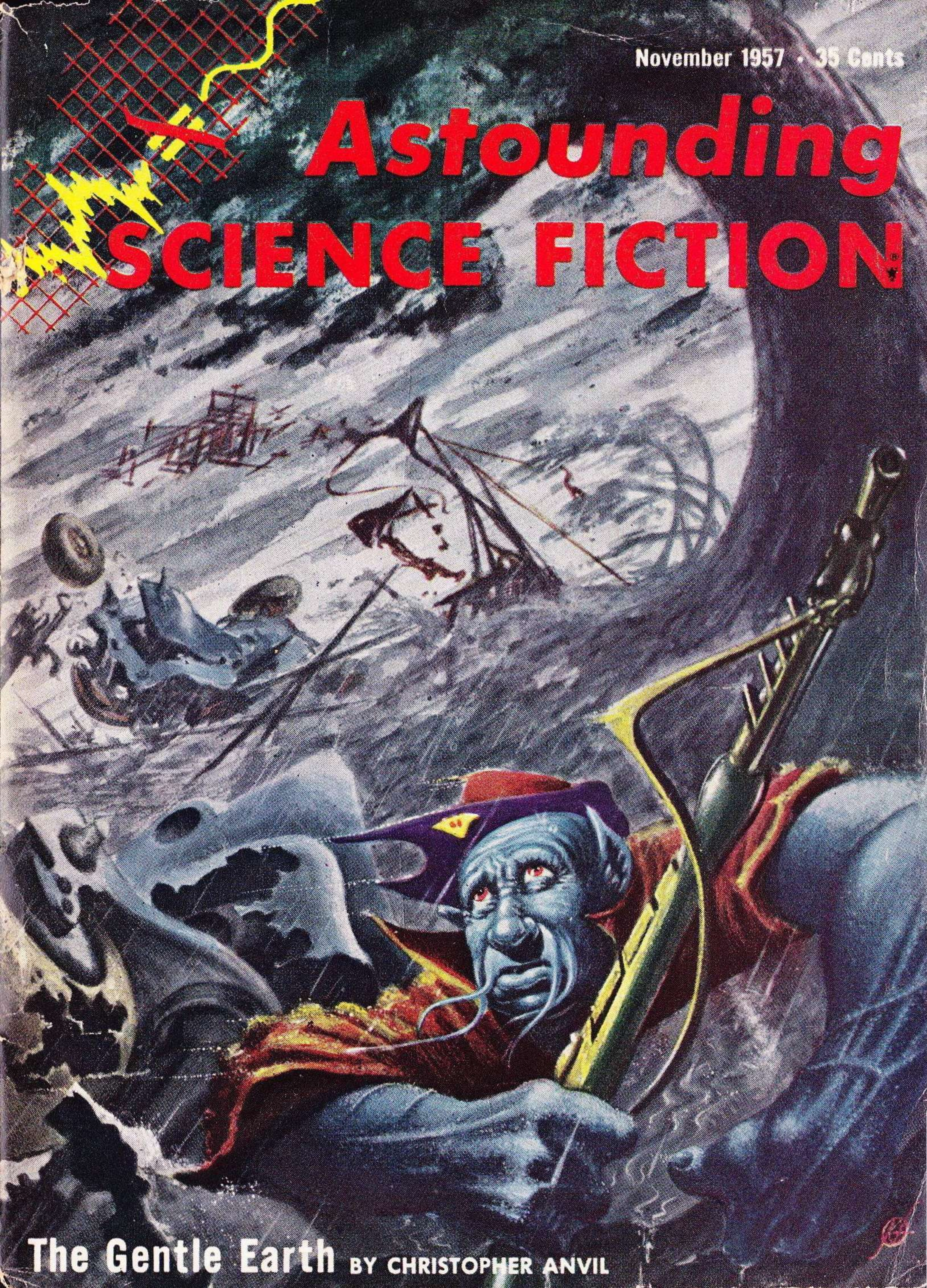


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Astounding SCIENCE FICTION



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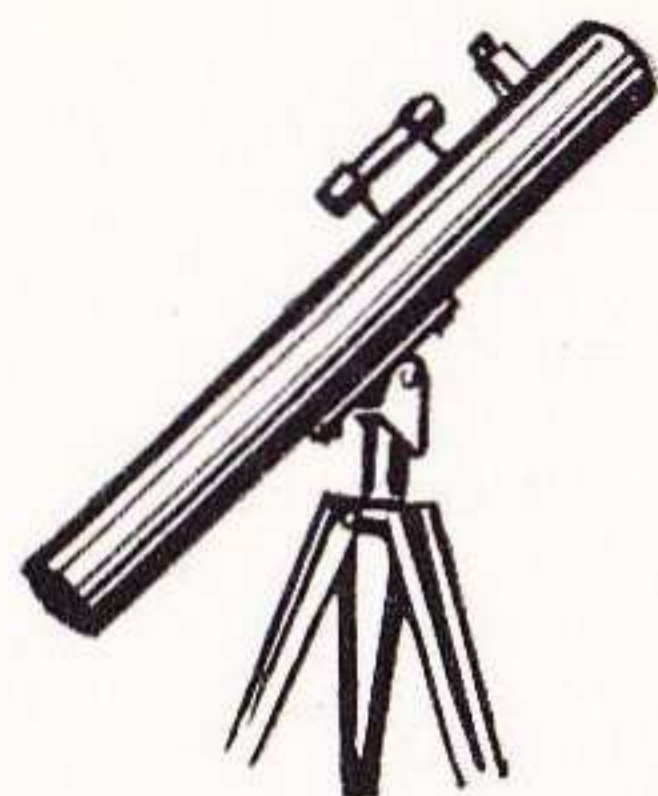
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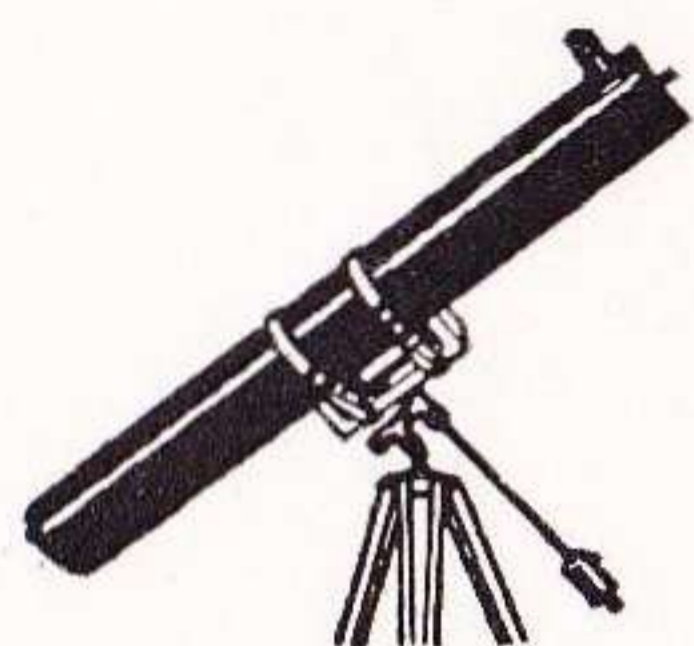
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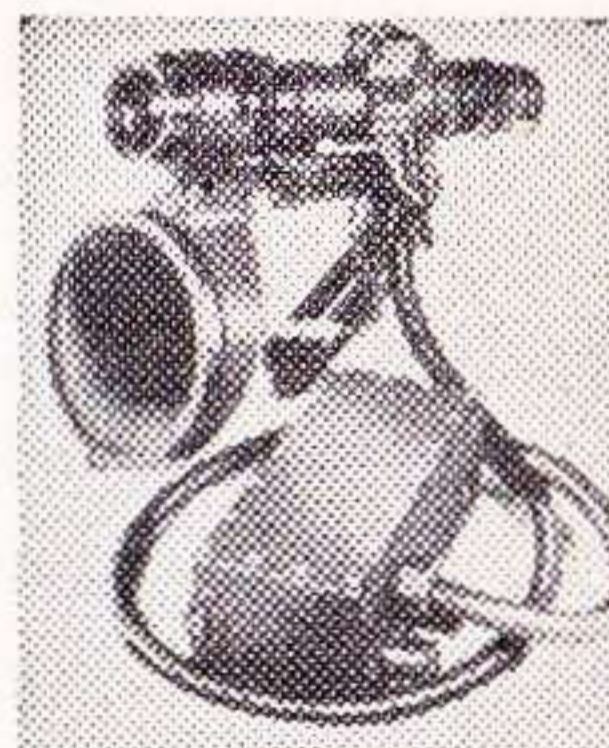
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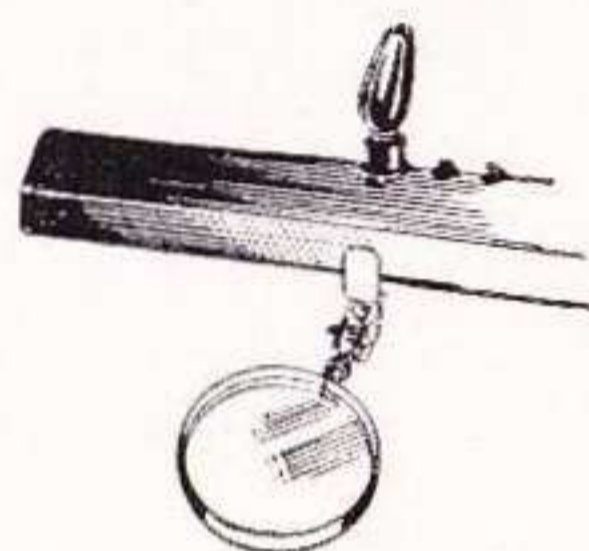
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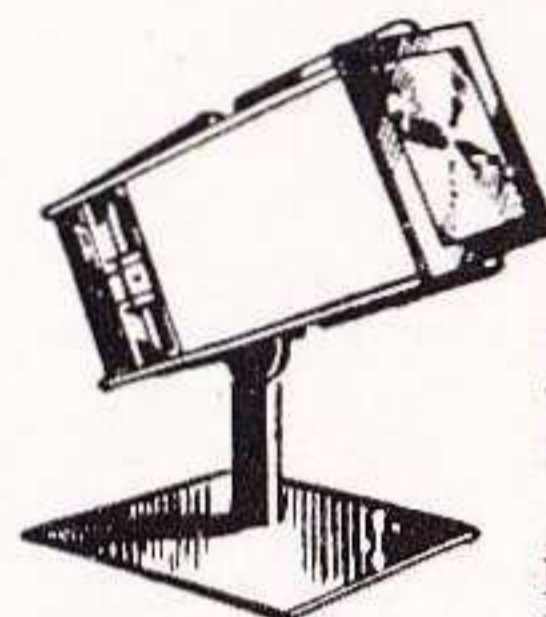


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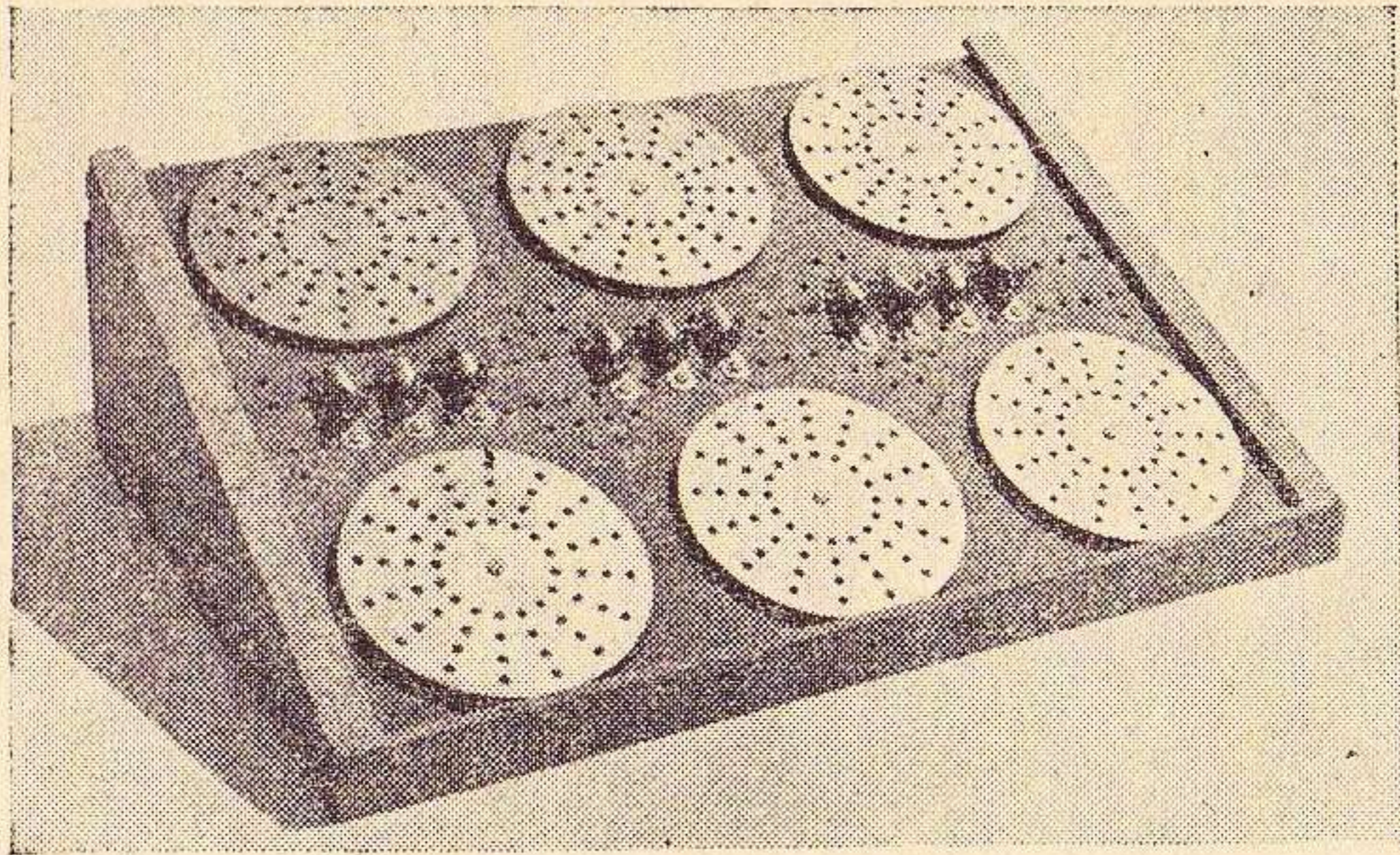


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Astounding SCIENCE FICTION

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SYMBOL: Climate is not equivalent to weather.

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4 • NEXT ISSUE ON SALE NOVEMBER 19, 1957 •

SITUATION NORMAL:

Explosive

I can present photographic evidence that I can hang unsupported in midair, a clear, sharp, unretouched, and completely honest photograph of myself two feet away from any support. No hidden wires, or other tricks involved, either. Just a simple fifty-thousandth of a second flash shot. It's completely legitimate photographic evidence that a person can hang unsupported, isn't it?

They talk about the "critical mass" of U-235; let us assume that twenty kilograms of pure U-235 shaped into a solid sphere is super-critical. Nevertheless, and whatever the actual parameters may be, it can be shown that super-critical masses can and have existed. One existed as a solid mass over Alamogordo back in 1945, and a lot have been built since then. It may be true they lasted for no more than a millimicrosecond—but it must be admitted that, logically, they *did* exist.

Since logic considers only points, one at a time, the existence or non-existence of a point-of-reality is not determined by or influenced by either the preceding process, nor the subsequent consequences. Slapstick-comedy movies have been based on the fact that whatever wildly improbable coincidence may be required for something to happen in a particular way . . . it *could* come about. The movie, of course, proves that such a chain of events could occur, by photographing the actual occurrence; the human motivation "to make an entertaining movie" has served to arrange and induce the wild improbabilities in the required pattern.

Instantaneous snapshots of a process-in-action do, in effect, give us extracted logical points, isolated from the pattern of events . . . and isolated events, abstracted from their context, can, as everyone well knows,

lead to remarkably deceiving conclusions.

One of the major problems in anthropology, sociology, psychology and history—the humanic sciences—is that the phenomena the individual researcher is observing are phenomena of the same order of magnitude as he himself is; they are neither microscopic, nor macroscopic. The great pattern cannot be observed readily because it's small and convenient, nor because it is infinitely remote and of stupendous scope. What a man can observe of a culture tends to be a man-sized picture, and the immediates so surround him that the pattern of long-term things is lost.

A May fly lives only a day; if a studious and philosophical May fly were to record, as evening drew near, the experiences and the philosophy of its "long" lifetime, to record the reality of the world it had observed, it might be able to state with the honest, thoughtful sincerity of a careful observer that the sky was gray, cold, and leaked continuously. And the observation would be perfectly true . . . that day.

Much of the philosophical roots of our own culture stem from the Greek and Roman philosophy and concepts, modified and added to by the Judeo-Christian philosophies. There's an important fact that has, I think, been inadequately evaluated: each of those philosophical sources *stems from an exploding culture!*

The Golden Age of Greece has
(Continued on page 158)

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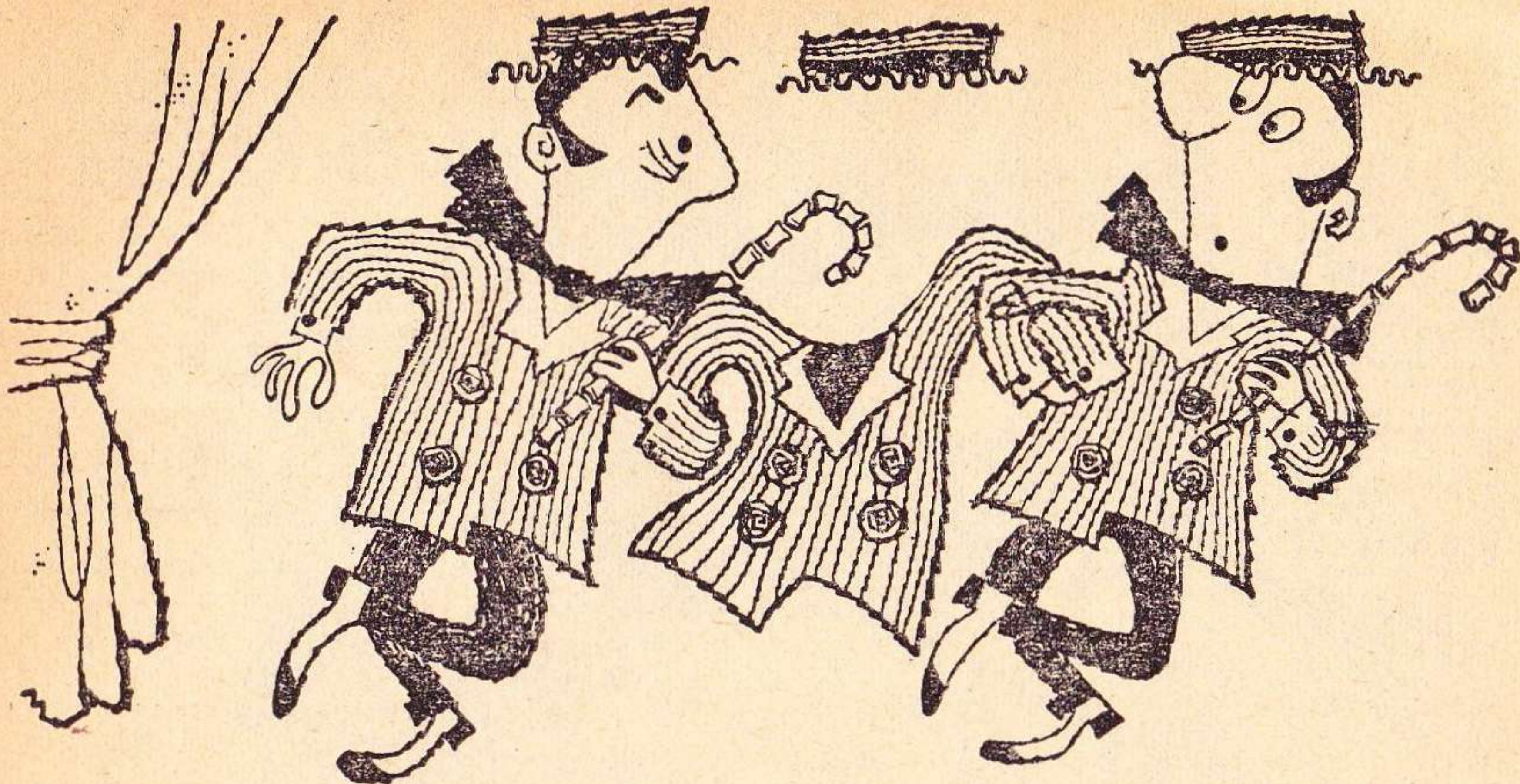
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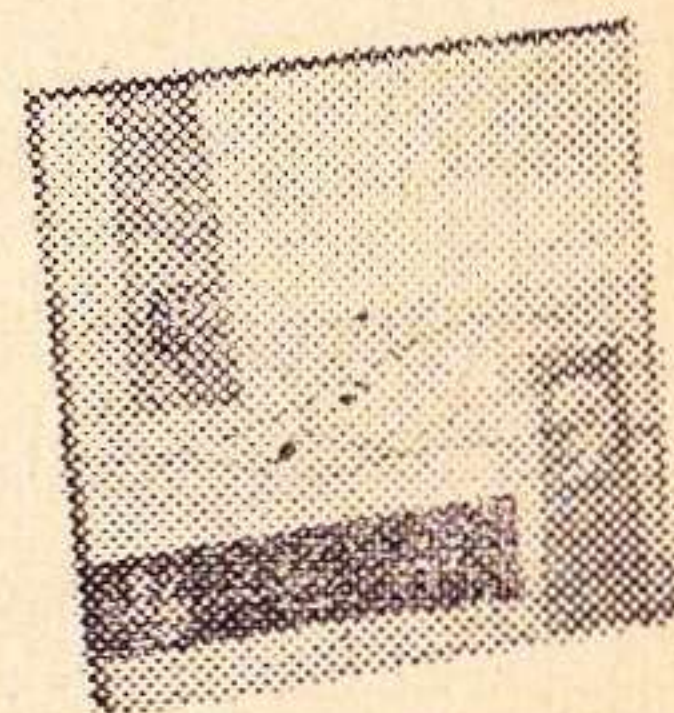
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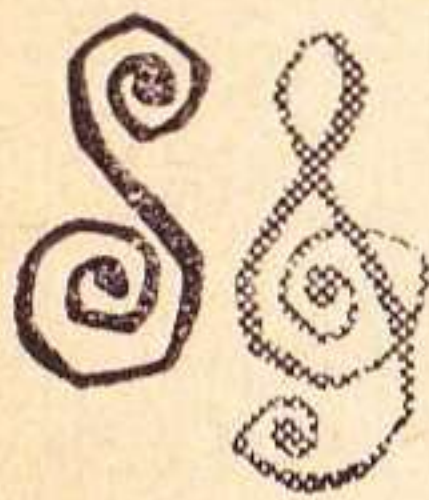
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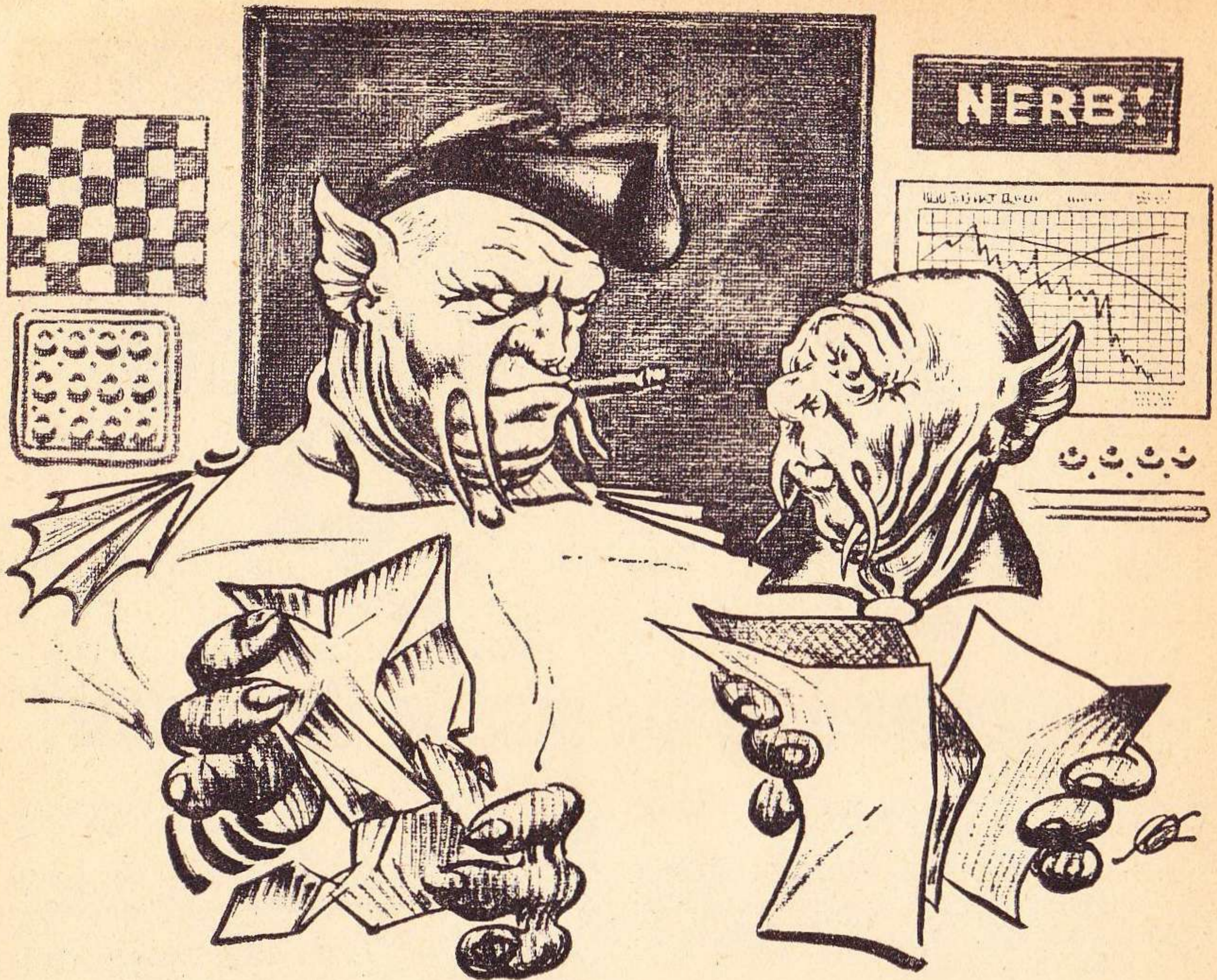
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THE GENTLE EARTH

BY CHRISTOPHER ANVIL

Christopher Anvil's Alien Invaders tend to get into trouble on Earth, it seems—trouble that wouldn't be troublesome to the local talent, who "happen" to be ideally adapted to meet it . . .

Illustrated by Freas

Tlasht Bade, Supreme Commander of Invasion Forces, drew thoughtfully on his slim cigar. "The scouts are all back?"

Sission Runckel, Chief of the Supreme Commander's Staff, nodded. "They all got back safely, though one or two had difficulties with some of the lower life forms."

"Is the climate all right?"

Runckel abstractedly reached in his tunic, and pulled out a thing like a short piece of thick tarred rope. As he trimmed it, he scowled. "There's some discomfort, apparently because the air is too dry. But on the other hand, there's plenty of oxygen near the planet's surface, and the gravity's about the same as it is back home. We can live there."

Bade glanced across the room at a large blue, green, and brown globe, with irregular patches of white at top and bottom. "What are the white areas?"

"Apparently, chalk. One of our scouts landed there, but he's in practically a state of shock. The brilliant reflectivity in the area blinded him, a huge white furry animal attacked him, and he barely got out alive. To cap it all, his ship's insulation apparently broke down on the way back, and now he's in the sick bay with a bad case of space-gripe. All we can get out of him is that he had severe prickling sensations in the feet when he stepped out onto the chalk dust. Probably a pile of little spiny shells."

"Did he bring back a sample?"

"He claims he did. But there's

only water in his sample box. I imagine he was delirious. In any case, this part of the planet has little to interest us."

Bade nodded. "What about the more populous regions?"

"Just as we thought. A huge web of interconnecting cities, manufacturing centers, and rural areas. Our mapping procedures have proved to be accurate."

"That's a relief. What about the natives?"

"Erect, land-dwelling, ill-tempered bipeds," said Runckel. "They seem to have little or no planet-wide unity. Of course, we have large samplings of their communications media. When these are all analyzed, we'll know a lot more."

"What do they look like?"

"They're pink or brown in color, quite tall, but not very broad or thick through the chest. A little fur here and there on their bodies. No webs on their hands or feet, and their feet are fantastically small. Otherwise, they look quite human."

"Their technology?"

Runckel sucked in a deep breath and sat up straight. "Every bit as bad as we thought." He picked up a little box with two stiff handles, squeezed the handles hard, and touched a glowing wire on the box to his piece of black rope. He puffed violently.

Bade turned up the air-conditioning. Billowing clouds of smoke drew away from Runckel in long streamers, so that he looked like an island looming through heavy mist. His

brow was creased in a foreboding scowl.

"Technologically," he said, "they are deadly. They've got fission and fusion, indirect molecular and atomic reaction control, and a long-reaching development of electron flow and pulsing devices. So far, they don't seem to have anything based on deep rearrangement or keyed focusing. But who knows when they'll stumble on that? And then what? Even now, properly warned and ready they could give us a terrible struggle."

Runckel knocked a clinker off his length of rope and looked at Bade with the tentative, judging air of one who is not quite sure of another's reliability. Then he said, loudly and with great firmness, "We have a lot to be thankful for. Another five or ten decades delay getting the watchships up through the cloud layer, and they'd have had us by the throat. We've got to smash them before they're ready, or *we'll* end up as *their* colony."

Bade's eyes narrowed. "I've always opposed this invasion on philosophical grounds. But it's been argued and settled. I'm willing to go along with the majority opinion." Bade rapped the ash off his slender cigar and looked Runckel directly in the eyes. "But if you want to open the whole argument up all over again—"

"No," said Runckel, breathing out a heavy cloud of smoke. "But our micromapping and radiation analysis shows a terrific rate of progress. It's

hard to look at those figures and even breathe normally. They're gaining on us like a shark after a minnow."

"In that case," said Bade, "let's wake up and hold our lead. This business of attacking the suspect before he has a chance to commit a crime is no answer. What about all the other planets in the universe? How do we know what they might do some day?"

"This planet is right beside us!"

"Is murder honorable as long as you do it only to your neighbor? Your argument is self-defense. But you're straining it."

"Let it strain, then," said Runckel angrily. "All I care about is that chart showing our comparative levels of development. Now *we* have the lead. I say, drag them out by their necks and let them submit, or we'll thrust their heads underwater and have done with them. And anyone who says otherwise is a doubtful patriot!"

Bade's teeth clamped, and he set his cigar carefully on a tray.

Runckel blinked, as if he only appreciated what he had said by its echo.

Bade's glance moved over Runckel deliberately, as if stripping away the emblems and insignia. Then Bade opened the bottom drawer of his desk, and pulled out a pad of dun-colored official forms. As he straightened, his glance caught the motto printed large on the base of the big globe. The motto had been used so often in the struggle to decide the

question of invasion that Bade seldom noticed it any more. But now he looked at it. The motto read:

Them Or Us

Bade stared at it for a long moment, looked up at the globe that represented the mighty planet, then down at the puny motto. He glanced at Runckel, who looked back dully but squarely. Bade glanced at the motto, shook his head in disgust, and said, "Go get me the latest reports."

Runckel blinked. "Yes, sir," he said, and hurried out.

Bade leaned forward, ignored the motto, and thoughtfully studied the globe.

Bade read the reports carefully. Most of them, he noted, contained a qualification. In the scientific reports, this generally appeared at the end:

". . . Owing to the brief time available for these observations, the conclusions presented herein must be regarded as only provisional in character."

In the reports of the scouts, this reservation was usually presented in bits and pieces:

". . . And this thing, that looked like a tiny crab, had a pair of pincers on one end, and I didn't have time to see if this was the end it got me with, or if it was the other end. But I got a jolt as if somebody squeezed a lighter and held the red-hot wire against my leg. Then I got dizzy and sick to my stomach. I don't know for sure if this was what did it, or

if there are many of them, but if there are, and if it did, I don't see how a man could fight a war and not be stung to death when he wasn't looking. But I wasn't there long enough to be sure . . ."

Another report spoke of a "Crawling army of little six-legged things with a set of oversize jaws on one end, that came swarming through the shrubbery straight for the ship, went right up the side and set to work eating away the superplast binder around the viewport. With that gone, the ship would leak air like a fishnet. But when I tried to clear them away, they started in on me. I don't know if this really proves anything, because Rufft landed not too far away, and he swears the place was like a paradise. Nevertheless, I have to report that I merely set my foot on the ground, and I almost got marooned and eaten up right on the spot."

Bade was particularly uneasy over reports of a vague respiratory difficulty some of the scouts noticed in the region where the first landings were planned. Bade commented on it, and Runckel nodded.

"I know," said Runckel. "The air's too dry. But if we take time to try to provide for that, at the same time they may make some new advance that will more than nullify whatever we gain. And right now their communications media show a political situation that fits right in with our plans. We can't hope for that to last forever."

Bade listened as Runckel described

a situation like that of a dozen hungry sharks swimming in a circle, each getting its jaws open for a snap at the next one's tail. Then Runckel described his plan.

At the end, Bade said, "Yes, it may work out as you say. But listen, Runckel, isn't this a little too much like one of those whirlpools in the Treacherous Islands? If everything works out, you go through in a flash. But one wrong guess, and you go around and around and around and around and you're lucky if you get out with a whole skin."

Runckel's jaw set firmly. "This is the only way to get a clear-cut decision."

Bade studied the far wall of the room for a moment. "I'm sorry I didn't get a hand at these plans sooner."

"Sir," said Runckel, "you would have, if you hadn't been so busy fighting the whole idea." He hesitated, then asked, "Will you be coming to the staff review of plans?"

"Certainly," said Bade.

"Good," said Runckel. "You'll see that we have it all worked to perfection."

Bade went to the review of plans and listened as the details were gone over minutely. At the end, Runckel gave an overall summary:

"The Colony Planet," he said, rapping a pointer on maps of four hemispheric views, "is only seventy-five per cent water, so the land areas are immense. The chief land masses are largely dominated by two hostile

power groups, which we may call East and West. At the fringes of influence of these power groups live a vast mass of people not firmly allied to either.

"The territory of this uncommitted group is well suited to our purposes. It contains many pleasant islands and comfortable seas. Unfortunately, analysis shows that the dangerous military power groups will unite against us if we seize this territory directly. To avoid this, we will act to stun and divide them at one stroke."

Runckel rapped his pointer on a land area lettered "North America," and said, "On this land mass is situated a politico-economic unit known as the U. S. The U. S. is the dominant power both in the Western Hemisphere and in the West power group. It is surrounded by wide seas that separate it from its allies.

"Our plan is simple and direct. We will attack and seize the central plain of the U. S. This will split it into helpless fragments, any one of which we may crush at will. The loss of the U. S. will, of course, destroy the power balance between East and West. The East will immediately seize the scraps of Western power and influence all over the globe.

"During this period of disorder, we will set up our key-tools factories and a light-duty forceway network. In rapid stages will then come ore-converters, staging plants, fabricators, heavy-duty forceway stations and self-operated production units. With these last we will produce energy-

conversion units and storage piles by the million in a network to blanket the occupied area. The linkage produced will power our damper units to blot out missile attacks that may now begin in earnest.

"We will thus be solidly established on the planet itself. Our base will be secure against attack. We will now turn our energies to the destruction of the U. S. S. R. as a military power." He reached out with his pointer to rap a new land mass.

"The U. S. S. R. is the dominant power of the East power group. This will by now be the only hostile power group remaining on the planet. It will be destroyed in stages.

"In Stage I we will confuse the U. S. S. R. by propaganda. We will profess friendship while we secretly multiply our productive facilities to the highest possible degree.

"In Stage II, we will seize and fortify the western and northern islands of Britain, Novaya Zemlya, and New Siberia. We will also seize and heavily fortify the Kamchatka Peninsula in the extreme eastern U. S. S. R. We will now demand that the U. S. S. R. lay down its arms and surrender.

"In the event of refusal, we will, from our fortified bases, destroy by missile attack all productive facilities and communication centers in the U. S. S. R. The resulting paralysis will bring down the East power group in ruins. The planet will now lay open before us."

Runckel looked at each of his listeners in turn.

"Everything has been done to make this invasion a success. To crush out any possible miscalculation, we are moving with massive reserves close behind us. Certain glory and a mighty victory await us.

"Let us raise our heads in prayer, then join in the Oath of Battle."

The first wave of the attack came down like an avalanche on the central U. S. Multiple transmitters went into action to throw local radar stations into confusion. Stull-gas missiles streaked from the landing ships to explode over nearby cities. Atmospheric flyers roared off to intercept possible enemy attacks. A stream of guns, tanks, and troop carriers rolled down the landing ways and fanned out to seize enemy power plants and communications centers.

The commander of the first wave reported: "Everything proceeding according to plan. Enemy resistance negligible."

Runckel ordered the second wave down.

Bade, watching it on a number of giant view-screens in the operations room of a ship coming down, had a peculiar feeling of numbness, such as might follow a deep cut before the pain is felt.

Runckel, his face intense, said: "Their position is hopeless. The main landing site is secure and the rest will come faster than the eye can see." He turned to speak into one of a bank of microphones, then said, "Our glider missiles are circling over their capital."

A loud-speaker high on the wall said, "Landing - minus three. Take your stations, please."

The angle of vision of one of the viewscreens tilted suddenly, to show a high, dome-topped building set in a city filled with rushing beetle shapes—obviously ground-cars of some type. Abruptly these cars all pulled to the sides of the streets.

"That," said Runckel grimly, "means their capital is out of business."

The picture on the viewscreen blurred suddenly, like the reflection from water ruffled by a breeze. There was a clang like a ten-ton hammer hitting a twenty-ton gong. Walls, floor, and ceiling of the room danced and vibrated. Two of the viewscreens went blank.

Bade felt a prickling sensation travel across his shoulders and down his back. He glanced sharply at Runckel.

Runckel's expression looked startled but firm. He reached out and snapped orders into one of his microphones.

There was an intense, high-pitched ringing, then a clap like a nuclear cannon of six paces distance.

The wall loud-speaker said, "Landing minus two."

An intense silence descended on the room. One by one, the viewscreens flickered on. Bade heard Runckel say, "The ship is totally damped. They haven't anything that can get through it."

There was a dull, low-pitched thud, a sense of being snapped like

a whip, and the screens went blank. The wall loud-speaker dropped, and jerked to a stop, hanging by its cord.

Then the ship set down.

Runckel's plan assumed that the swift-moving advance from the landing site would overrun a sizable territory during the first day. With this maneuvering space quickly gained, the landing site itself would be safe from enemy ground attack by dawn of the second day.

Now that they were down, however, Bade and Runckel looked at the operations room's big viewscreen, and saw their vehicles standing still all over the landscape. The troops crowded about the rear of the vehicles to watch cursing drivers pull the motors up out of their housings and spread them out on the ground. Here and there a stern officer argued with grim-faced troops who stared stonily ahead as if they didn't hear. Meanwhile, the tanks, trucks, and weapons carriers stood motionless.

Runckel, infuriated, had a cluster of microphones gripped in his hand, and was pronouncing death by strangling and decapitation on any officer who failed to get his unit in motion right away.

Bade studied the baffled expressions on the faces of the drivers, then glanced at the enemy ground-cars abandoned at the side of the road. He turned to see a tall officer with general's insignia stagger through the doorway and grip Runckel by the arm. Bade recognized Rast, General Forces Commander.

"Sir," said Rast, "it can't be done."

"It has to be done," said Runckel grimly. "So far we've decoyed the enemy missiles to a false site. Before they spot us again, *those troops have got to be spread out!*"

"They won't ride in the vehicles!"

"It's that or get killed!"

"Sir," said Rast, "you don't understand. I came back here in a gun carrier. To start with, the driver jammed the speed lever all the way to the front shield, and nothing happened. He got up to see what was wrong. The carrier shot ahead with a flying leap, threw the driver into the back, and almost snapped our heads off. Then it coasted to a stop. We pulled ourselves together and turned around to get the cover off the motor box.

"*Wham!* The carrier took off, ripped the cover out of our hands, threw us against the rear shield and knocked us senseless. Then it rolled to a stop.

"That's how we got here. Jump! Roll. Stop. Wait. Jump! Roll. Stop. Wait. On one of those jumps, the gun went out the back of the carrier, mount, bolts, and all. The driver swore he'd turn off the motor, and fangjaw take the planet and the whole invasion. We aren't going to win a war with troops in that frame of mind."

Runckel took a deep breath.

Bade said, "What about the enemy's ground-cars? Will they run?"

Rast blinked. "I don't know. Maybe—"

Bade snapped on a microphone lettered "Aerial Rec." A little screen in a half-circle atop the microphone lit up to show an alert, harried-looking officer. Bade said, "You've noticed our vehicles are stopped?"

"Yes, sir."

"Were the enemy's ground-cars affected at the same time as ours?"

"No sir, they were still moving after ours were stuck."

"Any motor trouble in Atmospheric Flyer Command?"

"None that I know of, sir."

Bade glanced at Rast. "Try using the enemy ground-cars. Meanwhile, get the troops you can't move back under cover of the ships' dampers."

Rast saluted, whirled, and went out at a staggering run.

Bade called Atmospheric Flyer Command, and Ground Forces Maintenance, and arranged for the captured enemy vehicles to be identified by a large yellow X painted across the top of the hood. Then he turned to Runckel and said, "We're going to need all the support we can get. See if we can bring Landing Force 2 down late today instead of tomorrow."

"I'll try," said Runckel.

It seemed to Bade that the events of the next twenty-four hours unrolled like the scenes of a nightmare.

Before the troops were all under cover, an enemy reconnaissance aircraft leaked in very high overhead.

The detector screens of Atmospheric Flyer Command were promptly choked with enemy aircraft coming in low and fast from all directions.

These aircraft were of all types. Some heaved their bombs in underhand, barreled over and streaked home for another load. Others were flying hives of anti-aircraft missiles. A third type were suicide bombers or winged missiles; these roared in head-on and blew up on arrival.

While the dampers labored and overheated, and Flyer Command struggled with enemy fighters and bombers overhead, a long-range reconnaissance flyer spotted a sizable convoy of enemy ground forces rushing up from the southwest.

Bade and Runckel concentrated first on living through the air attack. It soon developed that the enemy planes, though extremely fast, were not very maneuverable. The enemy's missiles did not quite overload the dampers. The afternoon wore on in an explosive violence that was severe, but barely endurable. It began to seem that they might live through it.

Toward evening, however, a small enemy missile streaked in on the end of a wire and smashed the grid of an auxiliary damper unit. Before this unit could be repaired, a heavy missile came down near the same place, and overloaded the damper network. Another missile streaked in. One of the ships tilted, and fell headlong. The engines of this ship were ripped out of the circuit that powered the dampers. With the next enemy mis-

sile strike, another ship was heaved off its base. This ship housed a large proportion of Flyer Command's detector screens.

Bade and Runckel looked at each other. Bade's lips moved, and he heard himself say, "Prepare to evacuate."

At this moment, the enemy attack let up.

It took an instant for Bade to realize what had happened. He canceled his evacuation order before it could be transmitted, then had the two thrown ships linked back into the power circuit. He turned around, and his glance fell on one of the view-screens showing the shadowy plain outside. A brilliant flash lit the screen, and he saw dark low shapes rushing in toward the ships. Bade immediately gave orders to defend against ground attack, but not to pursue beyond range of the dampers.

A savage, half-lit struggle developed. The enemy, whose weapons failed to work in range of the dampers, attacked with bayonets, and used guns, shovels, and picks in the manner of clubs and battle axes. In a spasm of bloody violence they fought their way in among the ships, then, confused in the dimness, were thrown back with heavy losses. As night settled down, the enemy dug in to make a fortified ring close around the landing site.

The enemy missile attack failed to recover its former violence.

Bade gave silent thanks for the deliverance. As the comparative

quiet continued, it seemed clear that the enemy high command was holding back to avoid hitting their own men dug in nearby.

It occurred to Bade that now might be a good time to get a little sleep. He turned to go to his cot, and there was a rush of yellow dots on Flyer Command's pilot screen. As he stared wide-eyed, auxiliary screens flickered on and off to show a ghostly dish-shaped object that led his flyers on a wild chase all over the sky, then vanished at an estimated speed twenty times that the enemy planes were thought capable of doing.

Runckel said, "Landing Force 2 can get here at early dawn. That's the best we can manage."

Bade nodded dully.

The ground screens now lit in brilliant flashes as the enemy began firing monster rockets at practically point-blank range.

Night passed in a continuous bombardment.

At early dawn of the next day, Bade put in all his remaining missiles, and bomber and interceptor flyers. For a brief interval of time, the enemy bombardment was smothered.

Landing Force 2 set down beside Landing Force 1.

Bade ordered the Stull-gas missiles of Landing Force 2 exploded over the enemy ground troops. In the resulting confusion, the ground forces moved out and captured large numbers of enemy troops, weapons, and vehicles. The captured vehicles

were marked and promptly put to use.

Bade spoke briefly with General Rast, commanding the ground forces.

"Now's your chance," said Bade. "Move fast and we can capture supplies and reinforcements flowing in, before they realize we've broken their ring."

Under the protection of the flyers of Landing Force 2, Rast's troops swung out onto the central plain of the North American continent.

The advance moved fast. Enemy troops and supply convoys were caught off guard on the road. When the enemy fought, his resistance was patchy and confused.

Bade, feeling drugged from lack of sleep, lay down on his cot for a nap. He awoke feeling fuzzy-brained and dull.

"They're whipped," said Runckel gleefully. "We've got back the time we lost yesterday. There's no resistance to speak of. And we've just made a treaty with the East bloc."

Bade sat up dizzily. "That's wonderful," he said. He glanced at the clock. "Why wasn't I called sooner?"

"No need," said Runckel. "It's all just a matter of form. Landing Force III is coming down tonight. The war's over." Runckel's face, as he said this, had a peculiar shine.

Bade frowned. "Isn't the enemy making any reaction at all?"

"Nothing worth mentioning. We're driving them ahead of us like a school of minnows."

Bade got to his feet uneasily. "It can't be this simple." He stepped out into the operations room and detected unmistakable signs of holiday jubilation. Nearly everyone was grinning, and gawkers were standing in a thick ring before the screen showing the map room's latest plot.

Bade said sharply, "Don't these men have anything to do?" His voice carried across the room with the effect of a shark surfacing in the midst of a ladies' swimming party. Several of the men at the map jumped. Others glanced around jerkily. There was a concerted bumping of elbows, and the ring of gawkers evaporated briskly in all directions. In every part of the room there was abruptly something approaching a businesslike atmosphere.

Bade looked around angrily and sat down at his desk. Then he saw the map. He squeezed his eyes shut, then looked again.

In the center of the map of North America was a big blot, as if a bottle of red ink had been thrown at it. Bade turned to Runckel and asked harshly, "Is that map correct?"

"Absolutely," said Runckel, his face shining with satisfaction.

Bade looked back at the map and performed a series of rapid calculations. He glanced at the viewscreens, and saw that those which would normally show the advanced ground troops weren't in use. This, he supposed, meant that the advance had outrun the technical crews.

Bade snapped on a microphone

lettered "Supply, Ground." In the half-circle atop the microphone appeared an officer in the last stage of sleepless exhaustion. The officer's eyes twitched, and his skin had a drawn dull look. His head was slumped on his hand.

"Supply?" said Bade in alarm.

"Sorry," mumbled the officer, "we can't do it. We're overstretched already. Try Flyer Command. Maybe they'll parachute it to you."

Bade switched off, and glanced at the map again. He turned to Runckel. "Listen, what are we using for transport?"

"The enemy ground-cars."

"Fast, aren't they?"

Runckel smiled cheerfully. "They are built for speed. Rast grabbed a whole fleet of them to start with, and they've worked fine ever since. A few wrecks, some bad cases of kinkfoot, but that's all."

"What the devil is 'kinkfoot'?"

"Well, the enemy have tiny feet with little toes and no webs at all. Some of their ground-car controls are on the floor. There just isn't much space so our men's feet get cramped. It's just a mild irritation." Runckel smiled vaguely. "Nothing to worry about."

Bade squinted hard at Runckel. "What's Supply using for transport?"

"Steam trucks, of course."

"Do they work all right, or do they jump?"

Runckel smiled dreamily. "They work fine."

Bade snapped on the Supply

microphone. The same weary officer appeared, his head in his hands, and mumbled, "Sorry. We're overloaded. Try Flyer Command."

Bade said angrily, "Wake up a minute."

The man raised his head, blinked at Bade, then straightened as if hauled by the back of the collar.

"Sir?"

"What's the overall supply picture?"

"Sir, it's awful. Terrible."

"What's the matter?"

"The advance is so fast, and the units are all mixed up, and when we get to a place, they've already pulled out. Worse yet, the steam trucks—" He hesitated, as if afraid to go on.

"Speak up," snapped Bade.

"What's wrong with the trucks? Is it the engine? Fuel? Running gear? What is it?"

"It's . . . the water, sir."

"The water?"

"Sir, there's that constant loss of steam out the exhaust. At home, we just throw a few more buckets of water in the tank and go on. But here—"

"Oh," said Bade, the situation dawning on him.

"But around here, sir," said the officer, "they've had something called a 'severe drought.' The streams are dry."

"Can you dig down?"

"Sir, at best there's just muck. We *know* there's water here somewhere, but meanwhile our trucks are stalled all over the country with the



men dug down out of sight, and the natives standing around shaking their heads, and *sure*, there's *got* to be water down there somewhere, but what do we use right now?"

Bade took a deep breath. "What about the enemy trucks? Can't you use them?"

"If we'd started off with them, I suppose we could have. But Ground Forces has requisitioned most of them. Now we're spread out in all directions with the front getting farther away all the time."

Bade switched off and got in touch with Ground Forces, Maintenance. A spruce-looking major appeared. Bade paused a moment, then asked, "How's your work-load, major? Are you behind schedule?"

The major looked shocked. "No, sir. Far from it. We're away ahead of schedule."

"Aren't these enemy vehicles giving you any trouble? Any difficulties in repair?"

The major laughed. "Fangjaw, general, we don't repair them! When they burn out, we throw them away. We pried up the hoods of some of them, pulled off the top two or three layers of machinery, and took a good look underneath. That was enough. There are hundreds of parts, all shapes and sizes. And dozens of different kinds of motors. Half of the parts are stuck so they won't move when you try to get them out, and, to top it all, there isn't enough room in there to squeeze in an extra grain of sand. So what's the use? If

something goes wrong with one of those things, we give it a shove off the road and forget it. There are plenty of others."

"I see," said Bade. "Do you send your repair crews out to shove the ground-cars off the road?"

"Oh, no, sir," said the major, looking startled. "Like the colonel says, 'Let the Ground Forces do it.' Sir, it doesn't take any skill to do that. It's just that that's our *policy*: Don't repair 'em. Throw 'em away."

"What about *our* vehicles, then? Have you found out what's wrong?"

The major looked uncomfortable. "Well, the difficulty is that the vehicles work satisfactorily *inside* the ship, and for a little while *outside*. But then, after they've been out a while, a malfunction occurs in the mechanism. That's what causes the trouble." He looked at Bade hopefully. "Was there anything else, sir?"

"Yes," said Bade dryly, "it's the malfunction I'm interested in. What is it that goes wrong?"

The major looked unhappy. "Well, sir, we've had the motors apart and put back together I don't know how many times, and the fact is, there's nothing at all wrong with them. There's nothing wrong, but they still won't work. That's not our department. We've handed the whole business over to the Testing Lab."

"Then," said Bade, "you actually don't have any work to do?"

The major jumped. "Oh, no sir, I didn't say that. We . . . we're holding ourselves in readiness, sir, and

we've got our shops in order, and some of the men are doing some very, ah, very important research on the . . . the structure of the enemy ground-car, and—"

"Fine," said Bade. "Get your colonel on this line." When the colonel appeared, Bade said, "Ground Forces Supply has its steam trucks out of service for lack of water. Get in touch with their H. Q., find out the location of the trucks, and get out there with the water. Find out where they can replenish in the future. Take care of this as fast as you can."

The colonel worked his mouth in a way that suggested a weak valve struggling to hold back a large quantity of compressed air. Bade looked at him hard. The colonel's mouth blew open, and "Yes, sir!" came out. The colonel looked startled.

Bade immediately switched back to Supply and said, "Ground Forces Maintenance is going to help you water your trucks. Why didn't you get in touch with them yourselves? It's the obvious thing."

"Sir, we did, hours ago. They said water supply wasn't in *their* department."

Bade seemed to see the bursting of innumerable bubbles before his eyes. It dawned on him that he was bogged down in petty details while big events rushed on unheeded. He switched back to the colonel briefly and when he switched off the colonel was plainly vibrating with energy from head to toe. Then Bade looked forebodingly at the map and ordered

Liaison to get General Rast for him.

This took a long time, which Bade spent trying to anticipate the possible enemy reaction if Supply broke down completely, and a retirement became necessary. By the time Rast appeared on the screen, Bade had thought it over carefully, and could see nothing but trouble ahead. There was a buzz, and Bade looked up to see a fuzzy picture of Rast.

Rast, as far as Bade could judge, had a look of victory and exhilaration. But the communicator's reception was uncommonly bad, and Rast's image had a tendency to flicker, fade, and slide up and down. Judging by the trend of the conversation, Bade decided reception must be worse yet on the other end.

Bade said, "Supply is in a mess. You'd better choose some sort of defensible perimeter and halt."

Rast said, "Thank you. The enemy is in full flight."

"Listen," said Bade. "Supply is stopped. We can't get supplies to you. Supply can't catch up with you."

"We'll pursue them day and night," said Rast.

"Listen to me," said Bade. "Break off the pursuit! We can't get supplies to you!"

Rast's form slowly dimmed and expanded till it filled the screen, then burst, and reappeared as a brilliant image the size of a man's thumb. His voice cut off, then came through as a crackle.

"Siss kissis sissis," said the image,

expanding again, "hiss siss kississ sissikississ." This noise was accompanied by earnest gestures on the part of Rast, and a very determined facial expression. The image grew huge and dim, and burst, then started over again.

Bade spat out a word he had promised himself never to say again under any circumstances whatever. Then he sat helpless while the image, large and clear, leaned forward earnestly and pounded one huge fist into the other.

"Hiss! Siss! Fississ!"

"Listen," said Bade, "I can't make out a word you're saying." He leaned forward. "WE CAN'T GET SUPPLIES TO YOU!"

The image burst and started over, bright and small.

Bade sucked in a deep breath. He grabbed the Communications microphone. "Listen," he snapped, "I've got General Rast on the screen here and I can't hear anything but a crackle. The image constantly expands and contracts."

"I know, sir," said a gray-smocked technician with a despairing look. "I can see the monitor screen from here. It's the best we can do, sir."

Out of the corner of his eye, Bade could see Rast's image growing huge and dim. "Hiss! Siss!" said Rast earnestly.

"*What causes this?*" roared Bade.

"Sir, all we can guess is some terrific electrical discharge between here and General Rast's position. What such a discharge might be, I can't imagine."

Bade scowled, and looked at a thumb-sized Rast. Bade opened his mouth to roar out that there was no way to get supplies through. Rast's image suddenly vibrated like a twanged string, then stopped expanding.

Rast's voice came through clearly, "Will you repeat that, sir?"

"WE CAN'T SUPPLY YOU," said Bade. "Halt your advance. Pick a good spot and HALT!"

Rast's image was expanding again, "Siss hiss," he said, and saluted. His image vanished.

Bade immediately snapped on the Communications microphone. "Do you have anyone down there who can read lips?" he demanded.

"Read *lips*? Sir, I—" The technician squinted suddenly, and swung off the screen. He was back in a moment, his face clear and hopeful. "Sir, we've got a man in the section that's a fanatic on communications methods. The other men think he *can* read lips, and I've sent for him."

"Good," said Bade. "Set him to work on the record of that conversation with General Rast. Another thing—is there any way you can get a message through to Rast?"

The technician looked doubtful. "Well, sir . . . I don't know—" His face cleared slightly. "We can try, sir."

"Good," said Bade. "Send 'Supply situation bad. Strongly suggest you halt your advance and consolidate position.'" Bade's glance fell on the latest plot from the map room. Glumly he asked himself how Rast

or anyone else could hope to consolidate the balloonlike situation that was coming about.

"Sir," asked the technician, "is that all?"

"Yes," said Bade, "and let me know when you get through to Rast."

"Yes, sir."

Bade switched off, and turned to ask Runckel for the exact time Landing Force 3 would be down. Bade hesitated, then squinted hard at Runckel.

Runckel's face had an unusually bright, animated look. He was glancing rapidly through a sheaf of reports, quickly scribbling comments on them, and tossing them to an excited-looking clerk, who rushed off to slap them on the desks of various exhilarated officers and clerks. These men eagerly transmitted them to their various sections. This procedure was normal, but the faces of the men all looked too excited. Their movements were jerky and fast.

Bade became aware of the sensation of watching a scene in a lunatic asylum.

The excited-looking clerk rushed to Runckel's desk to snatch up a sheaf of reports, and Bade snapped, "Bring those here."

The clerk jumped, rushed to Bade's desk, halted with a jerky bounce and saluted snappily. He flopped the papers on the desk, whirled around and raced off toward the desks of the officers who usually

got the reports Bade was now holding. The clerk stopped suddenly, looked at his empty hands, spun around, stared at Runckel's desk, then at Bade's. A look of enlightenment passed across his face. "Oh," he said, with a foolish grin. He teetered back and forth on his heels, then rushed over to look at the latest plot from the map room.

Bade set his jaw and glanced at the reports Runckel had marked.

The top two or three reports were simple routine and had merely been initialed. The next report, however, was headed: "Testing Lab. Report on Cause of Vehicle Failure; Recommendations."

Bade quickly glanced over several sheets of technical diagrams and figures, and turned to the summary. He read:

"In short, the breakdown of normal function, and the resultant slow violent pulsing action of the motor, is caused by the abnormally low conductivity of Surface Conduction Layer S-3. The pulser current, which would normally flow across this layer is blocked, and instead builds up on projection L-26. Eventually a sufficient charge accumulates, and arcs across air gap B. This throws a shock current through the exciter such as is normally experienced only during violent acceleration. The result is that the vehicle shoots ahead from a standing start, then rolls to a stop while the current again slowly accumulates. The root cause of this malfunction is the fantastically low moisture content of the atmosphere

on this planet. It is this that causes the loss of conductivity across Layer S-3.

"Recommended measures to overcome this malfunction include:

a) Artificial humidification of the air entering the motor, by means of sprayer and fan.

b) Sealing of the motor unit.

c) Coating of surface condition layer S-3 with a top-sealed permanent conducting film.

"A) or b) probably can be carried out as soon as the requisite devices and materials are obtainable. This, however, may involve a considerable delay. C), on the other hand, will require a good deal of initial testing and experimentation, but may then be carried into effect very quickly, as the requisite tools and materials are already at hand. We will immediately carry out the initial measures for whichever plan you deem preferable."

Bade looked the report over again carefully, then glanced at Runckel's scrawled comment:

"Good work! Carry this out immediately! S. R."

Bade glared. Carry *what* out immediately?

Bade glanced angrily at Runckel, then sat up in alarm. Runckel's hands clenched the side of his desk. Runckel's back was straight as a rod. His chest was inflated to huge dimensions, and he was slowly drawing in yet more air. His face bore a fixated, inward-turned look that might indicate either horror or ecstasy.

Bade shoved his chair back and glanced around for help.

His glance stopped at the map screen, where the huge overblown blot in the center of the continent had sprouted a long narrow pencil reaching out toward the west.

There was a quick low gonging sound, and the semicircular rim atop the Communications microphone lit up in red. Bade snapped the microphone on and a scared-looking technician said, "Sir, we've worked out what General Rast said."

"What?" Bade demanded.

At Bade's side, there was a harsh scraping noise. Bade whipped around.

Runckel lurched to his feet, his face tense, his eyes shut, his mouth half open and his hands clenched.

Runckel twisted. There was a gagging sound, then a harsh roar:

Ka

Ka

Ka

KACHOOOOO!!

Bade sat down in a hurry and grabbed the microphone marked, "Medical Corps."

A crowd of young doctors and attendants swarmed around Runckel with pulse-beat snoopers, blood-pressure gauges, little lights on long rubber tubes, and bottles and jars which they filled with fluid sucked out of the suffering Runckel with long hollow needles. They whacked Runckel, pinched him, and thumped

him, then jumped for cover as he let out another blast.

"Sir," said a young doctor wearing a "Medical-Officer-On-Duty" badge, "I'm afraid I shall have to quarantine this room and all its occupants. That includes you, sir." He said this in a gentle but firm voice.

Bade glanced at the doorway. A continuous stream of clerks, officers, and messengers moved in and out on necessary business. Some of these officers, Bade noticed, were speaking in low angry tones to idiotically smiling members of the staff. As one of the angry officers slapped a sheaf of papers on a desk, the owner of the desk came slowly to his feet. His chest inflated to gigantic proportions, he let out a terrific blast, reeled back against a wall, and let out another.

The young medical officer spun around excitedly. "Epidemic!" he yelled. "Seal that door! Back, all of you!" His face had a faint glow as he turned to Bade. "We'll have this under control in no time, sir." He went briskly to the door, his hand came up and plastered a red and yellow sticker over the joint where door and wall came together. He faced the room. "Everyone here is quarantined. It's death to break that seal."

From Bade's desk came an insistent ringing, and the small voice of the communications technician pleaded, "Sir . . . please, sir . . . this is important!" On the map across the room the bloated red space now had two sizable dents driven into it, such

as might be expected if the enemy were opening a counteroffensive. The thin pencil line reaching toward the west was wobbling uncertainly at its far end.

Bade became aware of a fuzzy quality in his own thinking, and struggled to fix his mind on the scene around him.

The young doctor and his assistants hustled Runckel toward the door. As Bade stared, the doctor and assistants went out the door without breaking the quarantine seal. The sticker was plastered over the joint on the hinge side of the door. The seal bent as the door opened, then straightened out unhurt as the door shut.

"*Phew,*" said Bade. He picked up the Communications microphone. "What did General Rast say?"

"Sir, he said, 'I can't reach the coast any faster than a day-and-a-half!'"

"The *coast!*"

"That's what he said, sir."

"Did you get that message to him?"

"Not yet, sir. We're trying."

Bade switched off and tried to think. His army was stretched out like a rubber balloon. His headquarters machinery was falling apart fast. An epidemic was loose among his men and plainly spreading fast. The base was still secure. But without sane men to man it, the enemy could be expected to walk in any time.

Bade's eyes were watering. He blinked, and glanced around for some sane face in the sea of hysteri-

cally cheerful people. He spotted an alert-looking officer with his back against the wall and a chair leg in his hand. Bade called to him. The officer looked around.

Bade said, "Do you know when Landing Force 3 is coming down?"

"Sir, they're coming down right now."

Bade stayed conscious long enough to watch the beginning of the enemy's counteroffensive, and also to see the start of the exploding sickness spread through the landing site. He grimly summarized the situation to the man he chose to take over command.

This man was the leader of Landing Force 3, a general by the name of Kottek. General Kottek was a fanatic, a man with a rough hypnotic voice and a direct unblinking stare. General Kottek's favorite drink was pure water. Food was a matter of indifference to him. His only known amusements were regular physical exercise and the dissection of military problems. To hesitate to obey a command of General Kottek's was unheard of. To bungle in the performance of it was as pleasant as to sit down in the open mouth of a shark. General Kottek's officers were usually recognizable by their lean athletic appearance, and a tendency to jump at unexpected noises. General Kottek's men were nearly always to be seen in a state of good order and high spirits.

As soon as Bade, aching and miserable, summarized the situation and

ordered Kottek to take over, Kottek gave a sharp precise salute, turned, and immediately began snapping out orders.

Heavily armed troops swung out to guard the site. Military police forced wandering gangs of sick men back to their ships. The crews of Landing Force 3 divided up to bring the depleted crews of the other ships up to minimum standards. The ships' damper units were turned to full power, and the outside power network and auxiliary damper units were disassembled and carried into the ships. Word came that a large enemy force had made an air-borne landing not far away. Kottek's troops marched in good order back to their ships. The ships of all three landing forces took off. They set down together in the center of the largest mass of Rast's encircled troops. The next day passed embarking these men under the protection of Kottek's fresh troops and the ships' dampers. Then the ships took off and repeated the process.

In this way, some sixty-five per cent of the surrounded men were saved in the course of the week. Two more landing forces came down. General Rast and a small body of guards were found unconscious part-way up an unbelievably high hill in the west. The situation at this point became hopelessly complicated by the exploding sickness.

This sickness, which none of the doctors were able to cure or even relieve, manifested itself in various forms. The usual form began by

exhilarating the victim. In this state, the patient generally considered himself capable of doing anything, however foolhardy, and regardless of difficulties. This lasted until the second phase set in with violent contractions of the chest and a sudden out-rush of air from the lungs, accompanied by a blast like a gun going off. This second stage might or might not have complications such as digestive upset, headache, or shooting pains in the hands and feet. It ended when the third and last phase set in. In this phase the victim suffered from mental depression, considered himself a hopeless failure, and was as likely as not to try to end his life by suicide.

As a result of this suicidal impulse there were nightmarish scenes of soldiers disarming other soldiers, which brought the whole invasion force into a state of quaking uncertainty. At this critical point, and despite all precautions, General Kottek himself began to come down with the sickness. With him, the usual exhilaration took the form of a stream of violent and imperative orders.

Troops who should have retreated were ordered to fight to the death where they stood. Savage counter-attacks for worthless objectives were driven home "to the last drop of blood." Because General Kottek ordered it, people obeyed without thought. The hysterical light in his eye was masked by the fanatical glitter that had been there to begin with. The general himself only realized

what was wrong when his chest tightened up, his body tensed, and a racking concatenation of explosions burst from his chest. He immediately brought his body to the position of attention, and crushed out by sheer will a series of incipient tickling sensations way down in his throat. General Kottek handed the command over to General Runckel and reported himself to sick bay.

Runckel, by this time, had recovered enough from the third phase to be untied and allowed to walk around with only two guards. As he had not fully recovered his confidence, however, he immediately went to see Bade.

Bade's illness took the form of nausea, weakness, cold hands and feet, and a sensation of severe pressure in the small of the back. Bade was lying on a cot when Runckel came in, followed by his two watchful guards.

Bade looked up and saw the two guards lean warily against the wall, their eyes narrowed as they watched Runckel. Runckel paused at the foot of Bade's bed. "How do you feel?" Runckel asked.

"Except for yesterday and the day before," said Bade, "I never felt worse in my life. How do you feel?"

"All right most of the time." He cleared his throat. "Kottek's down with it now."

"Did he know in time?"

"No, I'm afraid he's left things in a mess."

Bade shook his head. "Do we

have a general officer who *isn't* sick?"

"Not in the top brackets."

"Who did Kottek hand over to?"

"Me." Runckel looked a little embarrassed. "I'm not sure I can handle it yet."

"Who's in actual charge right now?"

"I've got the pieces of our own staff and the staff of Landing Force 2 working on it. Kottek's staff is hopeless. Half of them are talking about sweeping the enemy off the planet in two days."

Bade grunted. "What's your idea?"

"Well," said Runckel, "I still get . . . a little excited now and then. If you could possibly provide a sort of general supervision—"

Bade looked away weakly. "How's Rast?"

"Tied to his bunk with half-a-dozen men sitting on him."

"What about Vokk?"

"Tearing his lungs out every two or three minutes."

"Sokkis, then?"

Runckel shook his head grimly. "I'm afraid they didn't hear the gun go off in time. The doctors are still working on him, though."

"Well . . . is Frotch all right?"

"Yes, thank heaven. But then he's Flyer Command. And, worse yet, there's nobody to put in his place."

"All right, how about Sozzle?"

"Well," said Runckel, "Sozzle may be a good propaganda man, but personally I wouldn't trust him to command a platoon."

"Yes," said Bade, rolling over to try to ease the pain in his back, "I see your point." He took a deep breath. "I'll try to supervise the thing." He swung gingerly to a sitting position.

Runckel watched him, then his face twisted. "This whole thing is all my fault," he said. He choked. "I'm just no goo—"

The two guards sprang across the room, grabbed Runckel by the arms and rushed him out the door. Harsh grunts and solid thumping sounds came from the corridor outside. There was a heavy crash. Somebody said, "All right, get the general by the feet, and I'll take him by the shoulders. *Phew!* Let's go."

Bade sat dizzily on the edge of the bed. For a moment, he had a mental image of Runckel before the invasion, leaning forward and saying impressively, "Certain glory and a mighty victory await us."

Bade took several slow deep breaths. Then he got up carefully, found a towel, and cautiously went to wash.

It took Bade almost a week to disentangle the troops from the web of indefensible positions and hopeless last stands Kottek had committed them to in a day-and-a-half of peremptory orders. The enemy, meanwhile, took advantage of opportunity, using ground and air attacks, rockets, missiles and artillery in such profusion as to stun the mind. It was not until Bade's men and officers had recovered from circulating at-

tacks of the sickness, and another landing force had come down, that it was possible to temporarily resume the offensive. Another two weeks, and another sick landing force recovered, saw the invasion army in control of a substantial part of the central plain of the continent. Bade now had some spare moments to squint at certain reports that were piled up on his desk. Exasperatedly, he called a meeting of high officers.

Bade was standing with Runckel at a big map of the continent when their generals came in. Bade and Runckel each looked grim and intense. The generals looked uniformly dulled and worn down.

Bade took a last hard look at the map, then he and Runckel turned around. Bade glanced at Veth, Landing Site Commander. "What's your impression of the way things are going?"

Veth scowled. "Well, we're still getting eight to ten sizable missile hits a day. Of course, there's no predicting when they'll come in. With the men working outside the ships, any single hit could vaporize large numbers of essential technical personnel. Until we get the underground shelters built, the only way around this is to have the whole site damped out all the time." He shook his head. "This takes a lot of energy."

Bade nodded, and turned to Rast, Ground Forces Commander.

"So far," said Rast frowning, "our situation on paper looks not too bad.

Morale is satisfactory. Our weapons are superior. We have strong forces in a reasonable large central area, and in theory we can shift rapidly from one front to the other, and be superior anywhere. But in practice, the enemy has so many missiles, of all types and sizes, that we can't take advantage of the position.

"Suppose, for instance, that I order XX and XXII Tank Armies from the eastern to the western front. They can't go under their own power, because of fuel expenditure, the wear on their tracks, and the resulting delay for repairs. They can't go by forceway network because there isn't any built yet. The only way to send them is by the natives' iron track roads. That would be fine, except that the iron track roads make beautiful targets for missile attacks. Thanks to the enemy, every bridge and junction either is, has been, or will be blown up and not once, either. The result is, we have to use slow filtration of troops from one front to the other, or we have to accept very heavy losses on route. In addition, we now know that the enemy has formidable natural defenses in the east and west, especially in the west. There's a range of hills there that surpasses anything I've ever seen or heard of. Not only is the difficulty of the terrain an obstacle, but as our men go higher, movement finally becomes practically impossible. I know this from personal experience. The result of it is, the enemy need only guard the passes and he has a natural barrier behind



which he can mass for attack at any chosen point."

Bade frowned. "Don't the hills have the same harmful effect on the enemy?"

"No sir, they don't."

"Why not?"

"I don't know. But that and their missiles put us in a nasty spot."

Bade absorbed this, then turned to General Frotch, head of Atmospheric Flyer Command.

Frotch said briskly, "Sir, so far as the enemy air forces are concerned, we have the situation under control. And various foreign long-range reconnaissance aircraft that have been filtering in from distant native countries, have also been successfully

batted out of the sky. However, as far as . . . ah . . . missiles . . . are concerned, the situation is a little strained."

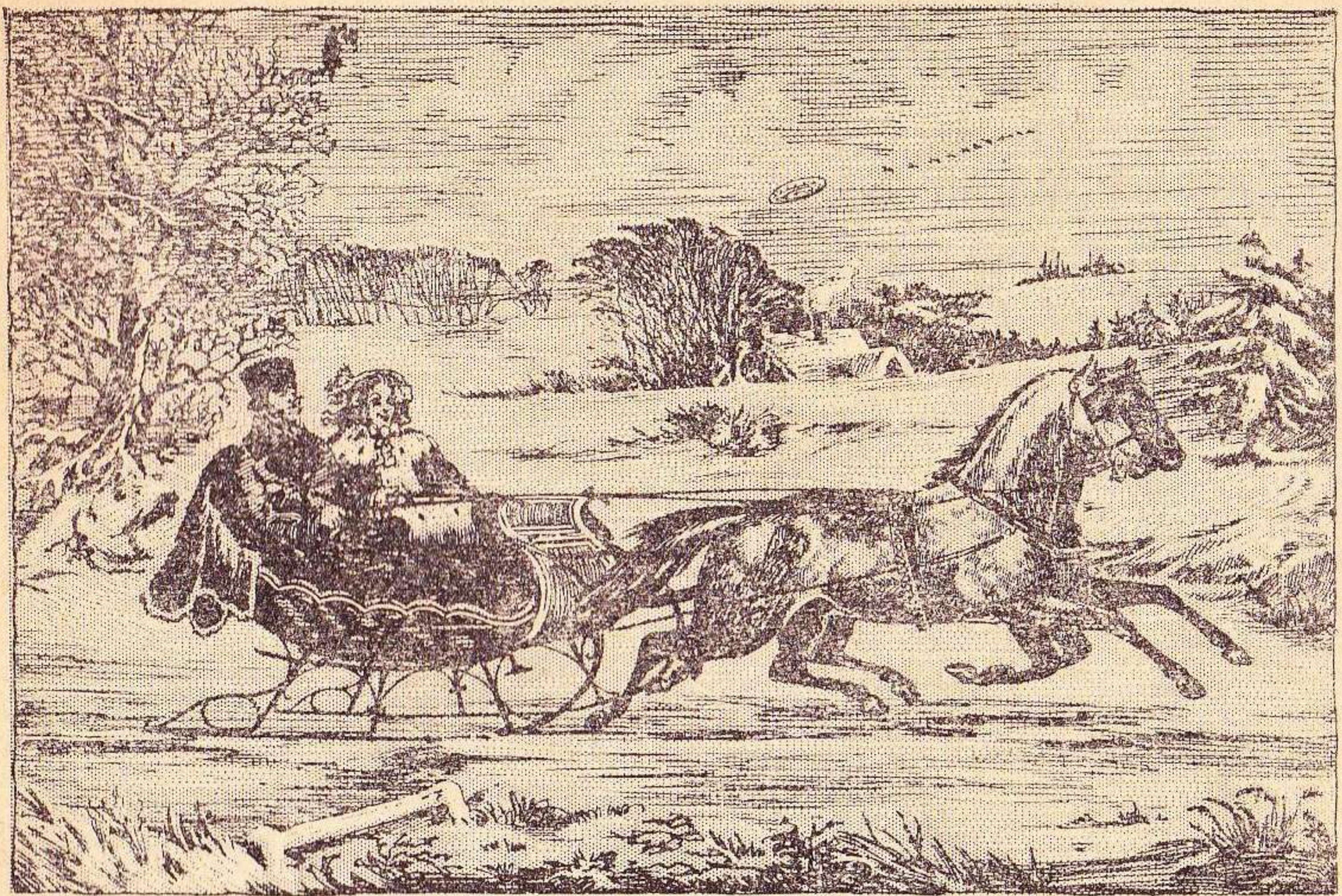
Bade snapped, "Go on."

"Well, sir," said Frotch, "the enemy has missiles that can be fired at the fastest atmospheric flyers, that can be made to blow up near them, that can be guided to them, and even that can be made to chase and catch them."

"What about our weapons?"

"They're fine, on a percentage basis. But the enemy has a lot more missiles than we have pilots."

"I see," said Bade. "Well—" He turned to speak to the Director of Intelligence, but Frotch went on:



T H E R O A D, - W I N T E R .

"Moreover, sir, we are having atmospheric troubles."

"'Atmospheric troubles'? What's that?"

"For one thing, gigantic traveling electrical displays that disrupt plane-to-ground and ground-to-plane communications, and have to be avoided, or else the pilots either don't come out, or else come out fit for nothing but a rest cure. Then there are mass movements of air traveling from one part of the planet to another. Like land breezes and sea breezes at home. But here the breezes can be pretty forceful. The effect is to put an unpredictable braking force on all our operations."

Bade nodded slowly. "Well, we'll

have to make the best of it." He turned to General Sozzle, who was Disseminator of Propaganda.

Sozzle cleared his throat. "I can make my report short and to the point. Our propaganda is getting us nowhere. For one thing, the enemy is apparently used to being ambushed daily by something called 'advertising,' which seems to consist of a series of subtle propaganda traps. By comparison our approach is so crude it throws them into hysterics."

Bade glanced at the Director of Intelligence, who said dully, "Sir, it's too early to say for certain how our work will eventually turn out. We've had some successes; but, so far,

we've been handicapped by translation difficulties."

Bade frowned. "For instance?"

"Take the single word, 'snow,'" said the Intelligence Director. "You can't imagine the snarl my translators get into over that word. It apparently means 'white solid which falls in crystals from the sky.' Figure that out."

Bade squinted, then looked relieved. "Oh. It means, 'dust.'"

"That's the way the interpreters translated it. Now consider this sentence from a schoolbook. 'When April comes, the dust all turns to water and flows into the ground to fill the streams.'"

"That doesn't make any sense at all."

"No. But that's what happens if you accept 'dust' as the translation for 'snow.' There are other words such as: 'winter,' 'blizzard,' 'tornado.' Ask a native for an explanation, and with a straight face he'll give you a string of incomprehensible nonsense that will stand you on your ear. Not that it's important in itself. But it seems to show something about the native psychology that I can't quite figure out. You can fight your enemy best when you can understand him. Well, from this angle they're completely incomprehensible."

"Keep working on it," said Bade, after a short silence. He turned to Runckel.

Runckel said, "The overall situation looks about the same from my point of view. Namely, the natives are driven back, but by no means

defeated. What we have to remember is that we never expected to have them defeated at this stage. True, our time schedule has been set back somewhat, but this was due not to enemy action, but to purely accidental circumstances. That is, first the atmosphere was so deficient in moisture that our ground vehicles were temporarily out of order, and, second, we were disabled by an unexpected disease. But these troubles are over with. My point is that we can now begin the decisive phase of operations."

"Good," said Bade. "But to do that we have to firmly hold the ground we have. I want to know if we can do this. On the surface, perhaps, it looks like it. But there are signs here I don't like. As the old saying goes, 'A shark shows you his fin, not his teeth. Take warning from the fin; when you see the teeth, it's too late.'"

"Yes," said Frotch, turning excitedly to Rast, "that's the thought exactly. "Now, will *you* mention it, or shall I?"

"Holy fangjaw," growled Rast, "maybe it doesn't really mean anything."

"The Supreme Commander," said Runckel angrily, "was trying to talk."

Bade said, "What is it, Rast? Speak up."

"Well—" Rast hesitated, glanced uneasily at Runckel, then thrust out his jaw, "Sir, it looks like the whole master plan of the invasion may have come unhinged."

Runckel angrily started to speak.

Bade glanced at Runckel, took out a long slender cigar, and sat down on the edge of the table to watch Runckel. He lit the cigar and put down the lighter. As far as Bade was concerned, his face was expressionless. Things seemed to have an unnatural clarity, however, as he looked at Runckel and waited for him to speak.

Runckel looked at Bade, swallowed hard and said nothing.

Bade glanced at Rast.

Rast burst out, "Sir, for the last ten days or so, we've been wondering how long the enemy could keep up his missile attacks. Flyer Command has blasted factories vital to missile manufacture, and destroyed all their known stockpiles. Well, grant we didn't get all their stockpiles. That's logical enough. Grant that they had tremendous stocks stored away. Even grant that before we got here they made missiles all the time for the sheer love of making them. Maybe every man, woman, and child in the country had a missile, like a pet. Still, there's got to be an end *somewhere*."

Bade nodded soberly.

"Well, sir," said Rast, "we get these missiles fired at us all the time, day after day after day, one missile after the other, like an army of men tramping past in an endless circle forever. It's inconceivable that they'd use their missiles like this unless their supply is inexhaustible. Frotch gets hit with them, I get hit with them, Veth gets hit with them. For

every job there's a missile. We put our overall weapons superiority in one pan of the balance. They pour an endless heap of missiles in the other pan. *Where do all these missiles come from?*"

For an instant Rast was silent, then he went on. "At first we thought 'Underground factories.' Well, we did our best to find them and it was no use. And whenever we managed to spot moving missiles, they seemed to be coming from the coast.

"About this time, some of my officers were trying to convert a bunch of captives to our way of thinking. One of the officers noticed a peculiar thing. Whenever he clinched his argument by saying, 'Moreover, you are alone in the world; you cannot defeat us alone—' the captives would all look very serious. Most of them would be very still and attentive, but here and there among them, a few would choke, gag, make sputtering noises, and shake all over. The other soldiers would secretively kick these men, and jab them with their elbows until they were still and attentive. Now, however, the question arose, what did all this mean? The actions were described to Intelligence, who said they meant exactly what they seemed to mean, 'suppressed mirth.'

"In other words, whenever we said, 'You can't win; you're alone in the world,' they wanted to burst out laughing. My officers now varied the technique. They would say, for instance, 'The U. S. S. R. is our faithful ally.' Our captives would sput-

ter, gasp, and almost strangle to death. Put this together with their inexhaustible supply of missiles and the thing takes on a sinister look."

"You think," said Bade, "that the U. S. S. R. and other countries are shipping missiles to the U. S. by sea?"

General Frotch cleared his throat apologetically, "Sir, excuse me. I have something new to add to this. I've set submerger planes down along all three of their coasts. Not only are the ports alive with shipping. But some of our men swam into the harbors at night and hid, and either they're the victims of mass-hypnosis or else those ships are unloading missiles like a fish unloads spawn."

Bade looked at Runckel.

Runckel said dully, "In that case, we have the whole planet to fight. That was what we had to avoid at any cost."

This comment produced a visible deterioration of morale. Before this attitude had a chance to set, Bade said forcefully and clearly, "I was never in favor of this attack. And this fortifies my original views. But from a strictly military point of view, I believe we can still win."

He went to the map, and speaking to each of the generals in turn, he explained his plan.

In the three following days, each of the three remaining landing forces set down. The men of each landing force, as expected, became violently ill with the exploding sickness. With

the usual course of the sickness known, it proved possible to care for this new horde of patients with nothing worse than extreme inconvenience for the invasion force as a whole.

The enemy, meanwhile, strengthened his grip around the occupied area, and at the same time cut troop movements within the area to a feeble trickle. Day after day, the enemy missiles fell in an increasingly heavy rain on the road and rail centers. During the height of this bombardment, Bade succeeded in gradually filtering all of Landing Force 3 back to the protection of the ships.

Rast now reported that the enemy attacks were mounting in force and violence, and requested permission to fall back and contract the defense perimeter.

Bade replied that help would soon come, and Rast must make only small local withdrawals.

Landing Forces 7, 8, and 9, cured of the exploding sickness, now took off. Immediately afterward, Landing Force 3 took off.

Landing Forces 3 and 7, under General Kottek, came down near the base of the Upper Peninsula of Michigan, and struck south and west to rip up communications in the rear of the main enemy forces attacking General Rast.

Landing Force 8 split, its southern section seizing the western curve of Cuba to cut the shipping lanes to the Gulf of Mexico. Its northern sections seized Long Island, to block shipping entering the port of New

York, and to subject shipping in the ports of Boston, Philadelphia, Baltimore and Washington to heavy attack from the air.

Landing Force 9 remained aloft until the enemy's reaction to General Kottek's thrust from the rear became evident. This reaction proved to be a quickly improvised simultaneous attack from north and south, to pinch off the flow of supplies from Kottek's base to the point of his advance. Landing Force 9 now set down, broke the attack of the southern pincer, then struck southeastward to cut road and rail lines supplying the enemy's northern armies. The overall situation now resembled two large, roughly concentric circles, each very thick in the north, and very thin in the south. A large part of the outer circle, representing the enemy's forces, was now pressed between the inner circle and the inverted Y of Kottek's attack from the north.

A large percentage of the enemy missile-launching sites were now overrun, and Rast for the first time found it possible to switch his troops from place to place without excessive losses. The enemy opened violent attacks in both east and west to relieve the pressure on their trapped armies in the north, and Rast fell back slowly, drawing forces from both these fronts and putting them into the northern battle.

The outcome hung in a treacherous balance until the enemy's supplies gave out in the north. This powerful enemy force then collapsed,

and Rast swung his weary troops to the south.

Three weeks after the offensive began, it ended with the fighting withdrawal of the enemy to the east and west. The enemy's long eastern and southern coasts were now sealed against all but a comparative trickle of supplies from overseas. General Kottek held the upper peninsula of Michigan in a powerful grip. From it he dominated huge enemy industrial regions, and threatened the flank of potential enemy counterattacks from north or east.

Within the main occupied region itself, the forceway network and key-tools factories were being set up.

Runckel was only expressing the thought of nearly the whole invasion army when he walked into the operations room, heaved a sigh of relief and said to Bade, "Well, thank heaven *that's* over!"

Bade heard this and gave a non-committal growl. He had felt this way himself some time before. During Runckel's absence, however, certain reports had come to Bade's desk and left him feeling like a man who goes down a flight of steps in the dark, steps off briskly, and finds there was one more step than he thought.

"Look at this," said Bade. Runckel leaned over his shoulder, and together they looked at a report headed, "Enemy Equipment." Bade passed over several pages of drawings and descriptions devoted to enemy knives, guns, grenades, helmets, can-

teens, mess equipment and digging tools, then paused at a section marked "Enemy clothing: 1) Normal enemy clothing consists of light two-piece underwear, an inner and an outer foot-covering, and either a light two-piece or light one-piece outer covering for the arms, chest, abdomen and legs. 2) However, capture of enemy supply trains in the recent northern offensive uncovered the following fantastic variety: a) thick inner and outer hand coverings; b) heavy one-piece undergarment covering legs, arms, and body; c) heavy upper outer garment; d) heavy lower outer garment; e) heavy inner foot covering; f) massive outer foot-covering; g) additional heavy outer garment; h) extraordinarily heavy outer garment designed to cover entire body with exception of head, hands, and lower legs. In addition, large extra quantities of the heavy cover normally issued to the troops for sleeping purposes were also found. The purpose of all this clothing is difficult to understand. Insofar as the activity of a soldier encased in all these garments would be cut to a minimum, it can only be assumed that all these coverings represent body-shielding against some abnormal condition. The presence of poisonous chemicals in large quantities seems a likely possibility. Yet with the exception of the massive outer foot-covering, these garments are not impermeable."

Bade looked at Runckel. "They do have war chemicals?"

"Of course," said Runckel, frown-

ing. "But we have protective measures and our own war chemicals, if trouble starts."

Bade nodded thoughtfully, slid the report aside, and picked up one headed, "Medical Report on Enemy Skin Condensation."

Runckel shook his head. "I can never understand those. We've had a flood of reports like that from various sources. At most, I just initial them and send them back."

"Well," said Bade, "read the summary, at least."

"I'll try," growled Runckel, and leaned over Bade's shoulder to read:

"To summarize these astonishing facts, enemy captives have been observed to form, on the outer layer of their skin, a heavy beading of moisture. This effect is similar to that observed with laboratory devices maintained at depressed temperatures—that is, at reduced degrees of heat. The theory was, therefore, formed that the enemy's skin is, similarly, maintained at a temperature lower than that of his surroundings. Complex temperature-determining apparatus were set up to test this theory. As a result, this theory was disproved, but an even more astonishing state of affairs was discovered: The enemy's internal temperature varied very little, regardless of considerable experimental variation of the temperature of his environment.

"The only possible conclusion was that the enemy's body contains some built-in mechanism that actually

controls the degree of heat and maintains it at a constant level.

"Now, according to Poff's widely accepted Principle, no complex bodily mechanism can long maintain itself in the absence of need or exercise. And what is the need for a bodily mechanism that has the function of holding body temperature constant despite wide external fluctuation? What is the need for a defense against something unless the something exists?"

"We are forced to the conclusion that the degree of heat on this planet is subject to variations sufficiently severe as to endanger life. A new examination of what has hitherto been considered to be the enemy's mythology indicates that, contrary to conditions on our own planet, this planet is subject to remarkable fluctuations of temperature, that alternately rise to a peak, then fall to an incredible low.

"According to this new theory, our invasion force arrived as the temperature was approaching its maximum. Since then, it has reached and passed its peak, and is now falling. All this has passed unnoticed by us, partly because the maximum here approaches the ordinary condition on our home planet. The danger, of course, is that the minimum on this planet would prove insupportable to our form of life."

This was followed by a qualifying phrase that further tests would have to be made, and the conclusions could not be considered final.

Bade looked at Runckel. Runckel

snapped, "What do you do with a report like that? I'd tear it up, but why waste strength? It's easier to throw them in the wastebasket and go on."

"Wait a minute," said Bade. "If this report just happens to be right, then where are we?"

"Frankly," said Runckel, "I don't know or care. 'Skin condensation.' These scientists should keep their minds on things that have some chance of being useful. It would help if they'd figure out how to cut down flareback on our subtron guns. Instead they talk about 'skin condensation.'"

Bade wrote on the report, "This may turn out to be important. List on no more than two sheets of paper possible defenses against reduced degree of heat. Get it to me as soon as possible. Bade."

Bade signaled to a clerk. "Snap a copy of this, send the original out, and bring me the copy."

"Yes, sir."

"Now," said Bade, "we have one more report."

"Well, I have to admit," said Runckel, "that I can't see that either of these reports were of any value."

"Well, read this one, then."

Runckel shook his head in disgust, and leaned over. His eyes widened. This paper was headed, "For the Supreme Commander only. Special Report of General Kottek."

The report began, "Sir: It is an officer's duty to state, plainly and without delay, any matter that re-

quires the immediate attention of his superior. I, therefore, must report to you the following unpleasant but incontrovertible facts;

"1) Since their arrival in this region, my troops have on three recent occasions displayed a strikingly low level of performance. Two simulated night attacks revealed feeble command and exaggerated sluggishness on the part of the troops. A defense exercise carried out at dawn to repulse a simulated amphibious landing was a complete failure; troops and officers alike displayed insufficient energy and initiative to drive the attack home.

"2) On other occasions, troops and officers have maintained a high, sometimes strikingly high, level of energy and activity.

"3) No explanation of this variability of performance has been forthcoming from the medical and technical personnel attached to my command. Neither have I any assurance that these fluctuations will not take place in the future.

"4) It is, therefore, my duty to inform you that I cannot assure the successful performance of my mission. Should the enemy attack with his usual energy during a period of low activity on the part of my troops, the caliber of my resistance will be that of wax against steel. This is no exaggeration, but plain fact.

"5) This situation requires the immediate attention of the highest military and technical authorities. What is in operation here may be a disease, an enemy nerve gas, or

some natural factor unknown to us. Whatever its nature, the effect is highly dangerous.

"6) A mobile, flexible defense in these circumstances is impossible. A rigid linear defense is worthless. A defense by linked fortifications requires depth. I am, therefore, constructing a deep fortified system in the western section of the region under my control. This is no cure, but a means of minimizing disaster.

"7) Enemy missile activity since the defeat of their northern armies has been somewhat less than forty per cent of that expected."

The report ended with Kottek's distinctive jagged signature. Bade glanced around.

Runckel's face was somber. "This is serious," he said. "When Kottek yells for help, we've got trouble. We'll have to put all our attention on this thing and get it out of the way as fast as we can."

Bade nodded, and reached out to take a message from a clerk. He glanced at it and scowled. The message was from Atmospheric Flyer Command. It read:

"Warning! Tornado sighted approaching main base!"

Runckel leaned over to read the message. "What's this?" he said angrily. "'Tornado' is just a myth. Everybody knows that."

Bade snapped on the microphone to Aerial Reconnaissance. "What's this 'tornado' warning?" he demanded. "What's a 'tornado'?"

"Sir, a tornado is a whirling severe

breeze of destructive character, conjoined with a dark cloud in the shape of a funnel, with the smaller end down."

Runckel gave an inarticulate snarl.

Bade squinted. "This thing is dangerous?"

"Yes, sir. The natives dig holes in the ground, and jump in when one comes along. A tornado will smash houses and ground-cars to bits, sir."

"Listen," snarled Runckel, "it's just *air*, isn't it?"

Bade snapped on Landing Site Command. "Get all the men back in the ships," he ordered. "Turn the dampers to full power."

"Holy fangjaw!" Runckel burst out. "Air can't hurt us. What's bad about a breeze, anyway?" He seized the Aerial Reconnaissance microphone and snarled. "Stand up, you! What have you been drinking?"

Bade took Runckel by the arm. "Look there!"

On the nearest wall screen, a wide black cloud warped across the sky, and stretched down a long arc to the ground. The whole thing grew steadily larger as they watched.

Bade seized the Landing Site Command microphone. "Can we lift ships?"

"No, sir. Not without tearing the power and damper networks to pieces."

"I see," said Bade. He looked up.

The cloud overspread the sky. The screen fell dark. There was a heavy clang, a thundering crash, the ship trembled, tilted, heeled, and slowly, painfully, settled back upright as

Bade hung onto the desk and Runckel dove for cover. The sky began to lighten. Bade gripped the microphone and asked what had happened. He listened blank-faced as, after a moment, the first estimates of the damage came in.

One of the thousand-foot-long ships had been tipped off its base. In falling, it struck another ship, which also fell, striking a third. The third ship struck a fourth, which fell unhindered and split up the side like a bean pod. The mouth of the tornado's funnel then ran along the split, and the ship's inside looked as if it had been cleaned out with a vacuum hose. A few stunned survivors and scattered bits of equipment were clinging here and there. That was all.

The enemy chose this moment to land his heaviest missile strike in weeks.

It took the rest of the day, all night, and all the following day to get the damage moderately well cleaned up. Then a belated report came in that Forceway Station 1 had been subjected to a bombardment of desks, chairs, communications equipment, and odd bolts and nuts that had riddled the installation from one end to the other and set completion date back four weeks.

An intensive search now located most of the missing equipment and personnel—strewn over forty miles of territory.

"It was," said Runckel weakly, "only air, that's all."

"Yes," said Bade grimly. He look-

ed up from a scientific report on the tornado. "A whirlpool is only water. Whirling water. Apparently this planet has traveling whirlpools of air."

Runckel groaned, then a sudden thought seemed to hit him. He reached into his wastebasket, fished around, and drew out a crumpled ball of paper. He smoothed it out, read for a while, then growled, "Scientific reports. Here's some kind of report that came in right in the middle of a battle. According to this thing, the native name for the place where we've set down is 'Cyclone Alley.' Is there some importance in knowing a thing like that?"

Bade felt severe prickling sensations across his back and neck. "'Cyclone,'" he said. "Where did I hear that before? Give me that paper."

Runckel shrugged and tossed it over. Bade smoothed it out and read:

"In this prevalent fairy tale, the 'cyclone'—corresponding to our 'sea serpent,' or 'Ogre of the Deep'—makes recurrent visits to communities in certain regions, frightening the inhabitants terribly and committing all sorts of prankish violence. On some occasions, it carries its chosen victims aloft, to set them down again far away. The cyclone is a frightening giant, tall and dark, who approaches in a whirling dance.

"An interesting aspect is the contrast of this legend with the equally prevalent legend of Santa Claus. Cyclone comes from the south, Santa

from the north. Cyclone is prankish, frightening. Santa is benign, friendly, and even brings gifts. Cyclone favors 'springtime,' but may come nearly any time except 'winter.' Santa comes only in 'winter.' Cyclone is secular. Santa reflects some of the holy aura of the religious festival, 'Christmas.'

"'Christmas comes but once a year. When it comes, it brings good cheer.' Though Cyclone visits but a few favored towns at a time. Santa visits at once all, everyone, even the lowliest dweller in his humble shack. The natives are immensely earnest about both of these legends. An amusing aspect is that our present main base is almost ideally located for visits by that local Ogre of the Sea, 'Cyclone.' We are, in fact, situated in a location known as 'Cyclone Alley.' Perhaps the Ogre will visit us."

At the bottom of the page was a footnote: "'Cyclone' is but one name for this popular Ogre. Another common name is 'Tornado.'"

Bade sat paralyzed for a moment staring at this paper. "Tornado Alley," he muttered. He grabbed the Flyer Command microphone to demand how the tornado warning system was coming. Then, groggily, he set the paper aside and turned his attention to the problem of General Kottek's special report. He looked up again as a nagging suspicion began to build up in him. He turned to Runckel. "How many of these 'myths' have we come across, anyway?"

Runckel looked as though a heavy burden were settling on him. He groped through his bulging wastebasket and fished out another crumpled ball of paper, then another. He located the one he wanted, smoothed it out, sucked in a deep breath, and read: "Cyclone, winter, spring, summer, hurricane, Easter bunny, autumn, blizzard, cold wave, Snow White and the Seven Dwarfs, lightning, Santa Claus, typhoon, mental telepathy, earthquake, levitation, volcano—" He looked up. "You want the full report on each of these things? I've got most of them here somewhere."

Bade looked warily at Runckel's overstuffed wastebasket. "No," he said. "But what about that report you're reading from? Isn't that an overall summary? Why didn't I get a copy of that?"

Runckel looked it over and growled, "Try to train them to send their reports to the right place. Yes, it's an overall summary. Here, want it?"

"Yes," said Bade. He took the report, then stopped to wonder, where was that report he had asked for on "reduced degree of heat?" He reached for a microphone, then remembered General Kottek's special report. Bade first sent word to Kottek that he approved what Kottek was doing, and that the problem was getting close attention. Then he read the crumpled overall summary Runckel had given him, and ended up feeling he had been on a trip through fairyland. His memory of the details

evaporated even as he tried to mentally review the paper. "Hallowe'en," he growled, "icebergs, typhoons—this planet must be a mass of mythology from one end to the other." He picked up a microphone to call his Intelligence Service.

A messenger hurried across the room to hand him a slip of paper. The paper was from Atmospheric Flyer Command. It read:

"Warning! Tornado sighted approaching main base!"

This time, the tornado roared past slightly to the west of the base. It hit, instead Forceway Station 1, and scattered sections of it all over the countryside.

For good measure, the enemy fired in an impressive concentration of rockets and missiles. The attack did only slight harm to the base, but it finished off Forceway Station 1.

An incoherent report now came in from the occupied western end of Cuba, to the effect that a "hurricane" had just gone through.

Bade fished through Runckel's wastebasket to find out exactly what a "hurricane" might be. He looked up at the end of this, pale and shaken, and sent out a strong force to put his Cuban garrison back on its feet.

Then he ordered Intelligence, and some of his technical and scientific departments to get together right away and break down the so-called "myths" into two groups: harmful, and nonharmful. The nonharmful group was to be arranged in

logical order, and each item accompanied by a brief, straightforward description.

As Bade sent out this order, General Kottek reported that, as a supplement to his fortified system, he was making sharp raids whenever conditions were favorable, in order to keep the enemy in his section off-balance. In one of these raids, his troops had captured an enemy document which had since been translated. The document was titled: "Characteristics of Unheatful-Blooded Animals." Kottek enclosed a copy:

"Unheatful-blooded animals have no built-in system for maintaining their bodily rate of molecular activity. If the surrounding temperature falls, so does theirs. This lowers their physical activity. They cannot move or react as fast as normally. Heatful-blooded animals, properly clothed, are not subject to this handicap.

"In practical reality, this means that as unheatful conditions set in, the Invader should always be attacked during the most unheatful period possible. Night attacks have much to recommend them. So do attacks at dusk or dawn. In general, avoid taking the offensive during heatful periods such as early afternoon.

"Forecasts indicate that winter will be late this year, but severe when it comes. Remember, there is no year on record when temperatures have not dropped severely in the depths of winter. In such conditions, it is expected that the Invader will be

killed in large numbers by—untranslatable—of the blood.

"Our job is to make sure they are kept worn down until winter comes. Our job then will be to make sure none of them live through the winter."

Bade looked up feeling as if his digestive system were paralyzed. A messenger hurried across the room to hand him a thick report hastily put together by the Intelligence Service. It was titled:

"Harmful Myths and Definitions."

Bade spent the first part of the night reading this spine-tingling document. The second part of the night he spent in nightmares.

Toward morning, Bade had one vivid and comparatively pleasant dream. A native wearing a simple cloth about his waist looked at Bade intently and asked, "Does the shark live in the air? Does a man breathe underwater? Who will eat grass when he can have meat?"

Bade woke up feeling vaguely relieved. This sensation was swept away when he reached the operations room and saw the expression on Runckel's face. Runckel handed Bade a slip of paper:

"Hurricane Hannah approaching Long Island Base."

Intercepted enemy radio and television broadcasts spoke of Hurricane Hannah as "the worst in thirty years." As Bade and Runckel stood by helplessly, Hurricane Hannah methodically pounded Long Island Base to bits and pieces, then swept

away the pieces. The hurricane moved on up the shoreline, treating every village and city along the way like a personal enemy. When Hurricane Hannah ended her career, and retired to sink ships further north, the Atlantic coast was a shambles from one end to the other.

Out of this shambles moved a powerful enemy force, which seized the bulk of what was left of Long Island Base. The remnant of survivors were trapped in the underground installations, and reported that the enemy was lowering a huge bomb down through the entrance.

In Cuba, the reinforced garrison was barely holding on.

A flood of recommendations now poured in on Bade:

1) Long Island Base needed a whole landing force to escape capture.

2) Cuba Base had to have at least another half landing force for reinforcements.

3) The Construction Corps required the ships of two full landing forces in order to power the forceway network. Otherwise, work on the key-tools factories would be delayed.

4) Landing Site Command would need the ships and dampers of three landing forces to barely protect the base if the power supply of two landing forces were diverted to the Construction Corps.

5) The present main base was now completed and should be put to efficient use at once.

6) The present main base was

worthless, because Forceway Station 1 could not be repaired in time to link the base to the forceway network.

7) Every field commander except General Kottek urgently needed heavy reinforcements without delay.

8) Studies by the Staff showed the urgent need of building up the central reserve without delay, at the expense of the field commanders, if necessary.

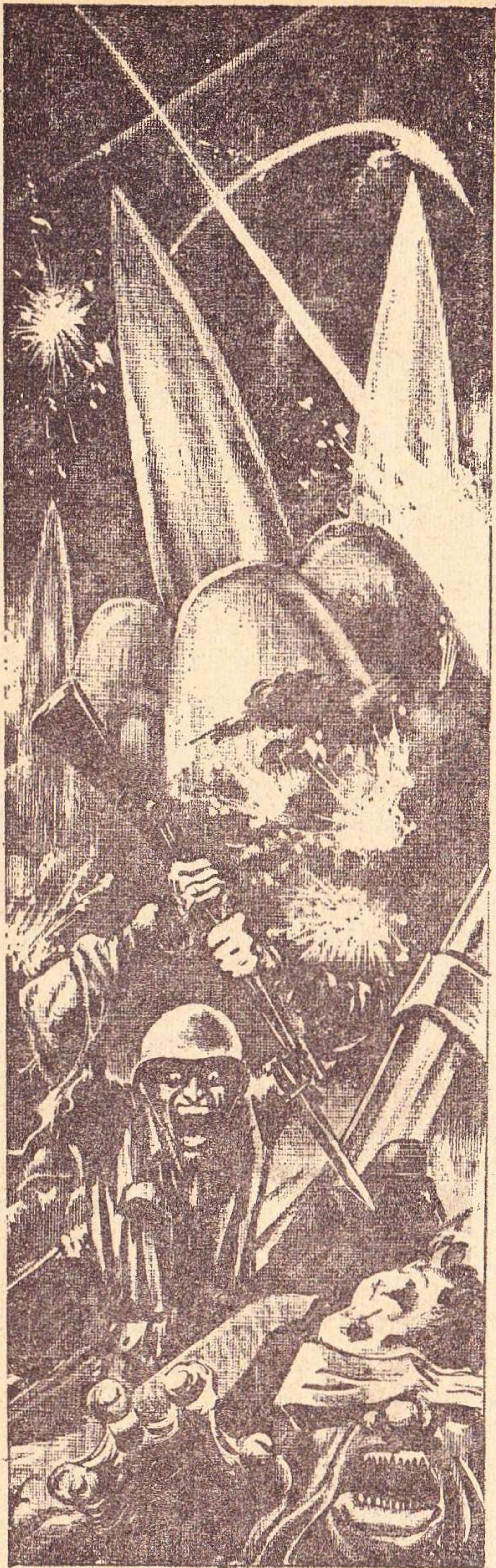
Bade gave up Long Island Base, ordered Cuba Base to hold on with what it had, told the Landing Site Commander to select a suitable new main base near some southern forceway station free of tornadoes, and threw the rest of the recommendations into the wastebasket.

Runckel now came over with a rope smoldering stub jutting out of the corner of his mouth. "Listen," he said to Bade, "we're going to have a disciplinary problem on our hands. That Cuban garrison has been living on some kind of native paint-remover called 'rum.' The whole lot of them have a bad case of the staggering lurch from it; not even the hurricane sobered them up. Poff knew what was going on. But he and his staff covered it over. His troops are worthless. Molch and the reinforcements are doing all the fighting."

Bade said, "Poff is still in command?"

"I put Molch in charge."

"Good. We'll have to court-martial Poff and his staff. Can Molch hold the base?"



"He said he could. If we'd get Poff off his neck."

"Fine," said Bade. "Once he gets things in order, ship the regular garrison to a temporary camp somewhere. We don't want Molch's troops infected."

Runckel nodded. A clerk apologized and stepped past Runckel to hand Bade a message. It was from General Frotch, who reported that all his atmospheric flyers based on Long Island had been lost in Hurricane Hannah. Bade showed the message to Runckel, who shook his head wearily.

As Runckel strode away, another clerk put a scientific report on Bade's desk. Bade read it through, got Frotch on the line, and arranged for a special mission by Flyer Command. Then he located his report on "Harmful Myths and Definitions." Carefully, he read the definition of winter:

"To the best of our knowledge, 'winter' is a severe periodic disease of plants, the actual onset of which is preceded by the vegetation turning various colors. The tall vegetables known as 'trees' lose their foilage entirely, except for some few which are immune and are known as 'evergreens.' As the disease progresses, the juices of the plants are squeezed out and crystallize in white feathery forms known as 'frost.' Sufficient quantities of this squeezed-out dried juice is 'snow.' The mythology refers to 'snow falling from the sky.' A possible explanation of this is that the large trees also 'snow,' producing

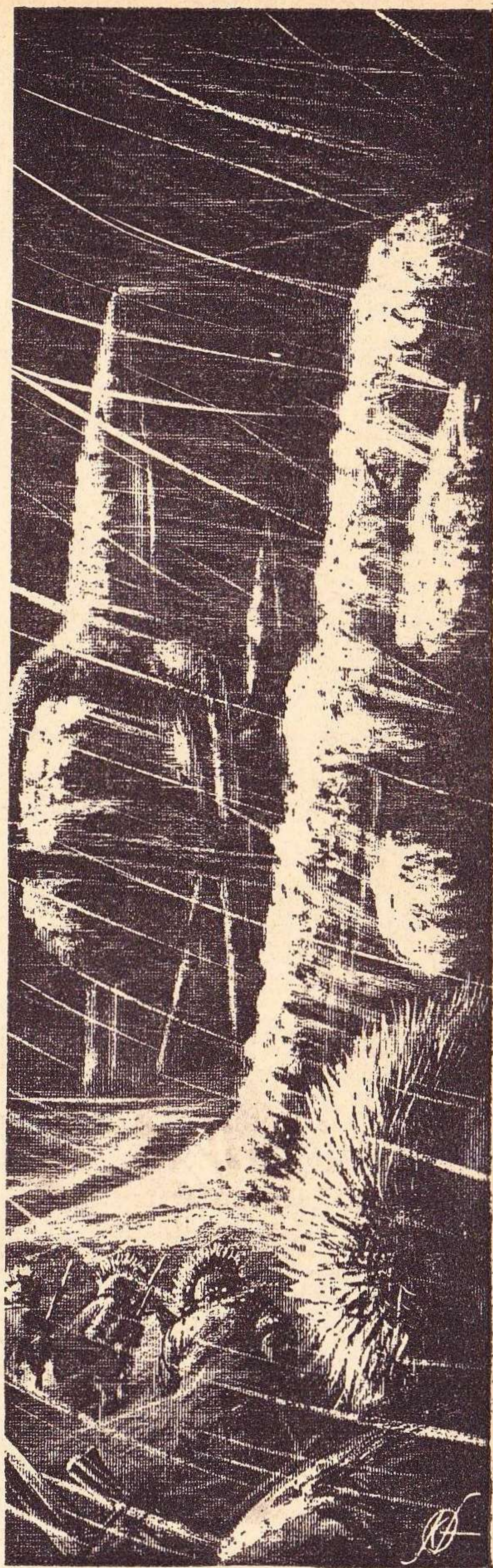
a fall of dried juice crystals. These crystals are clearly poisonous. 'Frost-bite,' 'chilblains,' and even 'freezing to death' are mentioned in the enemy's communication media. Even the atmosphere filled with the resulting vapor, is said to be 'cold.' Totally unexplainable is the common reference to children rolling up balls of this poisonous dried plant juice and hurling them at each other. This can only be presumed to be some sort of toughening exercise. More research on this problem is needed."

Bade set this report down, reread the latest scientific report, then got up and slowly walked over to a big map of the globe. He gazed thoughtfully at various islands in the South Seas.

Late that day, the ships lifted and moved, to land again near Forceway Station 2. Power cables were run to the station across a sort of long narrow valley at the bottom of which ran a thin trickle of water. By early the morning of the next day, the forceway network was in operation. Men and materials flashed thousands of miles in a moment, and work on the key-tools factories accelerated sharply.

Bade immersed himself in intelligence summaries of the enemy communications media. An item that especially interested him was "Winter Late This Year."

By now there were three viewpoints on "winter." A diehard faction doggedly insisted that it was a myth, a mere quirk of the alien men-



tality. A large and very authoritative body of opinion held the plant juice theory, and bolstered its stand with reams of data sheets and statistics. A small, vociferous group asserted the heretical water crystal hypotheses, and ate alone at small tables for doing so.

General Frotch called Bade to say that the special Flyer Command mission was coming in to report.

General Kottek sent word that enemy attacks were becoming more daring, that his troops' periods of inefficiency were more frequent, and that the vegetation in his district was turning color. He mentioned, for what it was worth, that troops within the fortifications seemed less affected than those outside. Troops far underground, however, seemed to be slowed down automatically, regardless of conditions on the surface, unless they were engaged in heavy physical labor.

Bade scowled and sent off inquiries to his scientific sections. Then he heard excited voices and looked up.

Four Flyer Command officers were coming slowly into the room, bright metal poles across their shoulders. Slung from the poles was a big plastic-wrapped bundle. The bundle was dripping steadily, and leaving a trail of droplets that led back out the door into the hall. The plastic was filmed over with a layer of tiny beads of moisture.

Runckel came slowly to his feet.

The officers, breathing heavily, set

the big bundle on the floor near Bade's desk.

"Here it is, sir."

Bade's glance was fastened on the object.

"Unwrap it."

The officers bent over the bundle, and with clumsy fingers pulled back the plastic layer. The plastic stood up stiffly, and bent only with a hard pull. Underneath was something covered with several of the enemy's thick dark sleeping covers. The officers rolled the bundle back and forth and unwound the covers. An edge of some milky substance came into view. The officers pulled back the covers and a milky, semitransparent block sat there, white vapor rolling out from it along the floor.

There was a concerted movement away from the block and the officers.

Bade said, "Was the whole place like that?"

"No, sir, but there was an awful lot of this stuff. And there was a compacted powdery kind of substance, too. We didn't bring enough of it back and it all turned to water."

"Did you wear the protective clothes we captured?"

"Yes, sir, but they had to be slit and zippered up the legs, because the enemy's feet are so small. The arms were a poor fit and there had to be more material across the chest."

"How did they work?"

"They were a great help, sir, as long as we kept moving. As soon as we slowed down, we started to stiffen up. The hand and foot gear

was improvised and hard to work in, though."

Bade looked thoughtfully at the smoldering block, then got up, stepped forward, and spread his hand close to the block. A numbness gradually dulled his hand and moved up his arm. Then Bade straightened up. He found he could move his hand only slowly and painfully. He motioned to Runckel. "I think this is what 'cold' is. Want to try it?" Runckel got up, held his hand to the block, then straightened, scowling.

Bade felt a tingling sensation and worked his hand cautiously as Runckel, his face intent, slowly spread and closed his fingers.

Bade thoughtfully congratulated the officers, then had the block carried off to the Testing Lab.

The report on defense against "reduced degree of heat" now came in. Bade read this carefully several times over. The most striking point, he noticed, was the heavy energy expenditure involved.

That afternoon, several ships took off, separated, and headed south.

The next few days saw the completion of the first key-tool factory, the receipt of reports from insect-bitten scouts in various regions far to the south, and a number of terse messages from General Kottek. Bade ordered plans drawn up for the immediate withdrawal of General Kottek's army, and for the possible withdrawal by stages of other forces in the north. He ordered preparations made for the first completed factories

to produce anti-reduced-degree-of-heat devices. He read a number of reports on the swiftly changing state of the planet's atmosphere. Large quantities of rain were predicted.

Bade saw no reason to fear rain, and turned to a new problem: The enemy's missiles had produced a superabundance of atomic debris in the atmosphere. Testing Lab was concerned over this, and suggested various ways to get rid of it. Bade approved the projects and turned to the immediate problem of withdrawing the bulk of General Kottek's troops from their strong position without losing completely the advantages of it.

Bade was considering the idea of putting a forceway station somewhere in Kottek's underground defenses, so that he could be reinforced or withdrawn at will. This would involve complicated production difficulties; but then Kottek had said the slowing-down was minimized under cover, and it might be worthwhile to hold an option on his position. While weighing the various intangibles and unpredictables, Bade received a report from General Rast. Rast was now noticing the same effect Kottek had reported.

Word came in that two more key-tools factories were now completed.

Intelligence reports of enemy atmospheric data showed an enormous "cold air mass moving down through Canada."

General Frotch, personally supervising high-altitude atmospheric tests, now somehow got involved in a

rushing high-level air stream. Having the power of concentrating his attention completely upon whatever he was doing, Frotch got bound up in the work and never realized the speed of the air stream until he came down again—just behind the enemy lines.

When Bade heard of this, he immediately went over the list of officers, and found no one to replace Frotch. Bade studied the latest scientific reports and the disposition of his forces, then ordered an immediate switching of troops and aircraft through the forceway network toward the place where Frotch had vanished. A sharp thrust with local forces cut into the enemy defense system, was followed up by heavy reinforcements flowing through the forceway network, and developed an overpowering local superiority that swamped the enemy defenses.

Runckel studied the resulting dispositions and said grimly, "Heaven help us if they hit us hard in the right place just now."

"Yes," said Bade, "and heaven help us if we don't get Frotch back." He continued his rapid switching of forces, and ordered General Kottek to embark all his troops, and set down near the main base.

Flyer Command meanwhile began to show signs of headless disorientation, the ground commanders peremptorily ordering the air forces around as nothing more than close-support and flying artillery. The enemy behind-the-lines communications network continued to function.

Runckel now reported to Bade that no reply had been received from Kottek's headquarters. Runckel was sending a ship to investigate.

Anguished complaints poured in from the technical divisions that their work was held up by the troops flooding the forceway network.

The map now showed Bade's men driving forward in what looked like a full-scale battle to break the enemy's whole defensive arrangements and thrust clear through to the sea. Reports came in that, with the enemy's outer defense belt smashed, signs of unbelievable weakness were evident. The enemy seemed to have nothing but local reserves and only a few of them. The general commanding on the spot announced that he could end the war if given a free hand.

Bade now wondered, if the enemy's reserves weren't there, where were they? He repeated his original orders.

Runckel now came over with the look of a half-drowned swimmer and motioned Bade to look at the two nearest viewscreens.

One of the viewscreens showed a scene in shades of white. A layer of white covered the ground, towering ships were plastered on one side with white, obstacles were heaped over with white, the air was filled with horizontal streaks of white. Everything on the screen was white or turning white.

"Kottek's base," said Runckel dully.

The other screen gave a view of

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the long narrow valley just outside. This "valley" was now a rushing torrent of foaming water, sweeping along chunks of floating debris that bobbed a hand's breadth under the power cables from the ships to Forceway Station 2.

The only good news that day and the next was the recapture of General Frotch. In the midst of crumbling disorder, Flyer Command returned to normal.

Bade sent off a specially-equipped mission to try and find out what had happened to General Kottek. Then he looked up to see General Rast walking wearily into the room. Rast conferred with Runckel in low dreary tones, then the two of them started over toward Bade.

Bade returned his attention to a chart showing the location of the key-tools factories and the forceway network.

A sort of groan announced the arrival of Rast and Runckel. Bade looked up. Rast saluted. Bade returned the salute. Rast said stiffly, "Sir, I have been defeated. My army no longer exists."

Bade looked Rast over quickly, studying his expression and bearing.

"It's a plain fact," said Rast. "Sir, I should be relieved of command."

"What's happened?" said Bade. "I have no reports of any new enemy attack."

"No," said Rast, "there won't be any formal report. The whole northern front is anaesthetized from one end to the other."

"Snow?" said Bade.

"White death," said Rast.

A messenger stepped past the two generals to hand Bade a report. It was from General Frotch:

"1) Aerial reconnaissance shows heavy enemy forces moving south on a wide front through the snow-covered region. No response or resistance has been noted on the part of our troops.

"2) Aerial reconnaissance shows light enemy forces moving in to ring General Kottek's position. The enemy appears to be moving with extreme caution.

"3) It has so far proved impossible to get in touch with General Kottek.

"4) It must be reported that on several occasions our ground troops have, as individuals, attempted to seize from our flyer pilots and crews, their special protective anti-reduced-degree-of-heat garments. This problem is becoming serious."

Bade looked up at Rast. "You're Ground Forces Commander, not commander of a single front."

"That's so," said Rast. "I should be. But all I command now is a kind of mob. I've tried to keep the troops in order, but they know one thing after another is going wrong. Naturally, they put the blame on their leaders."

The room seemed to Bade to grow unnaturally light and clear. He said, "Have you had an actual case of mutiny, Rast?"

Rast stiffened. "No, sir. But it is possible for troops to be so laggard-

ly and unwilling that the effect is the same. What I mean is that there is the steady growth of a cynical attitude everywhere. Not only in the troops but in the officers."

Bade looked off at the far corner of the room for a moment. He glanced at Runckel. "What's the state of the key-tools factories?"

"Almost all completed. But the northern ones are now in the reduced-degree-of-heat zone. Part of the forceway network is, too. Using the key-tools plants remaining, it might be possible to patch together some kind of a makeshift. But the reduced-degree-of-heat zone is still moving south."

A pale clerk apologized, stepped around the generals and handed Bade two messages. The first was from Intelligence:

"Enemy propaganda broadcasts beamed at our troops announce General Kottek's unconditional surrender with all his forces. We have no independent information on Kottek's actual situation."

The second message was from the commander of Number 1 Shock Infantry Division. This report boiled down to a miserable confession that the commanding officer found himself unable to prevent:

- 1) Fraternalization with the enemy.
- 2) The use of various liquid narcotics that rendered troops unfit for duty.
- 3) The unauthorized wearing of red, white, and blue buttons lettered, "Vote Republican."
- 4) An ugly game called "foot-

base," in which the troops separated into two long lines armed with bats, to hammer, pound, beat, and kick, a ball called "the officer," from one end of the field to the other.

Bade looked up at Rast. "How is it I only find out about this now?"

"Sir," said Rast, "each of the officers was ashamed to report it to his superior."

Bade handed the report to Runckel, who read it through and looked up somberly. "If it's hit the shock troops, the rest must have it worse."

"Yet," said Bade, "the troops fought well when we recaptured Frotch."

"Yes," said Rast, "but it's this damned planet that's driving them crazy. The natives are remarkable propagandists. And the men can plainly see that even when they win a victory, some freak like the exploding sickness, or some kind of atmospheric jugglery, is likely to take it right away from them. They're in a bad mood and the only thing that might snap them out of it is decisive action. But if they go the other way, we're finished."

"This," said Bade, "is no time for you to resign."

"Sir, it's a mess, and I'm responsible. I have to make the offer to resign."

"Well," said Bade, "I don't accept it. But we'll have to try to straighten out this mess." Bade pulled over several sheets of paper. On the first, he wrote:

"Official News Bureau: 1) Cate-
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gorically deny the capture of General Kottek and his base. State that General Kottek is in full control of Base North, that the enemy has succeeded in infiltrating troops into the general region under cover of snow, but that he has been repulsed with heavy losses in all attacks on the base itself.

"2) State that the enemy announcement of victory in the area is a desperation measure, timed to coincide with their almost unopposed advance through the evacuated Northern Front.

"3) The larger part of the troops in the Northern Front were withdrawn prior to the attack and switched by forceway network to launch a heavy feinting attack against the enemy. State that the enemy, caught by surprise, appears to be rushing reserves from his northern armies to cover the areas threatened by the feint.

"4) Devoted troops who held the Northern Front to make the deception succeed have now been overrun by the enemy advance under cover of the snow. Their heroic sacrifice will not be forgotten.

"5) The enemy now faces the snow time alone. His usual preventive measures have been drastically slowed down. His intended decisive attack has failed of its object. The snow this year is unusually severe, and is already working heavy punishment on the enemy.

"6) Secret measures are now for the first time being brought into the open that will place our troops

far beyond the reach of snow."

On the second sheet of paper, Bade wrote:

"Director of Protocol: Prepare immediately: 1) Supreme Commander's Citation for Extraordinary Bravery and Resourcefulness in Action: To be awarded General Kottek. 2) Supreme Commander's Citation for Extraordinary Devotion to Duty: To be awarded singly, to each soldier on duty during the enemy attack on the entire Northern Front. 3) These awards are both to be mentioned promptly in the Daily Notices."

Bade handed the papers to Runckel, "Send these out yourself." As Runckel started off, Bade looked at Rast, then was interrupted by a messenger who stepped past Rast, and handed Bade two slips of paper. With an effort of will, Bade extended his hand and took the papers. He read:

"Sir: Exploration Team South 3 has located ideal island base. Full details follow. Frotch."

"Sir: We have finally contacted General Kottek. He and his troops are dug into underground warrens of great complexity beneath his system of fortifications. Most of the ships above-ground are mere shells, all removable equipment having been stripped out and carried below for the comfort of the troops. Most of the ships' engines have also been disassembled one at a time, carried below, and set up to run the dampers—which are likewise below ground—and the 'heating units' devised by Kottek's technical personnel. His

troops appear to be in good order and high spirits. Skath, Col., A. F. C., forwarded by Frotch."

Bade sucked in a deep breath and gave silent thanks. Then he handed the two reports to Rast. Bade snapped on a microphone and got in touch with Frotch. "Listen, can you get pictures of Kottek and his men?"

Frotch held up a handful of pictures, spread like playing cards. "The men took them for souvenirs and gave me copies. You can have all you want."

Bade immediately called his photoprint division and gave orders for the pictures to be duplicated by the thousands. The photoprint division slaved all night, and the excited troops had the pictures on their bulletin boards by the next morning.

The Official News Service meanwhile was dinning Bade's propaganda into the troops' ears at every opportunity. The appearance of the pictures now plainly caught the enemy propaganda out on a limb. Doubting one thing the enemy propaganda had said, the troops suddenly doubted all. A violent revulsion of feeling took place. Before anything else could happen, Bade ordered the troops embarked.

By this time, the apparently harmless rain had produced a severe flood, which repeatedly threatened the power cables supplying the forceway network. The troops had to use this network to get to the ships in time.

As Bade's military engineers blast-

ed out alternate channels for the rising water, and a fervent headquarters group prayed for a drought, the troops poured through the still-operative forceway stations and marched into the ships with joyful shouts.

The enemy joined the celebration with a mammoth missile attack.

The embarkation, together with the disassembling of vital parts of the accessible key-tools factories, took several days. During this time, the enemy continued his steady methodical advance well behind the front of the cold air mass. The enemy however, made no sudden thrust on the ground to take advantage of the embarkation. Bade pondered this sign of tiredness, then sent up a ship to radio a query home. When the answer came, Bade sent a message to the enemy government. The message began:

"Sirs: This scouting expedition has now completed its mission. We are now withdrawing to winter quarters, which may be: a) an unspecified distant location; b) California; c) Florida. If you are prepared to accept certain temporary armistice conditions, we will choose a). Otherwise, you will understand we must choose b) or c). If you are prepared to consider these armistice conditions, you are strongly urged to send a plenipotentiary without delay. This plenipotentiary should be prepared to consider both the temporary armistice and the matters of mutual benefit to us."

Bade waited tensely for the reply.

He had before him two papers, one of which read:

"... the enemy-held peninsula of Florida has thus been found to be heavily infested with heartworm—parasites which live inside the heart, slow circulation, and lower vital activity sharply. While the enemy appears to be immune to infestation, our troops plainly are not. The four scouts who returned here have at last, we believe, been cured—but they have not as yet recovered their strength. The state of things in nearby Cuba is not yet known for certain. Possibly, the troops' enormous consumption of native 'rum' has interacted medicinally with our blood chemistry to retard infestation. If so, we have our choice of calamities. In any case, a landing in Florida would be ruinous."

As for California, the other report concluded:

"... Statistical studies based on past experience lead us to believe that, myth or no myth, immediately upon our landing in California, there will be a terrific earthquake."

Bade had no desire to go to Florida or California. He fervently hoped the enemy would not guess this.

At length the reply came, Bade read through ominous references to the growing might of the United States of the World, then came to the operative sentence:

"... Our plenipotentiary will be authorized to treat only with regard to an armistice; he is authorized only to transmit other information to his

government. He is not empowered to make any agreement whatever on matters other than an armistice."

The plenipotentiary was a tall thin native, who constantly sponged water off his neck and forehead, and who looked at Bade as if he would like to cram a nuclear missile down his throat. Getting an agreement was hard work. The plenipotentiary finally accepted Bade's first condition—that General Kottek not be attacked for the duration of the armistice—but flatly refused the second condition allowing the continued occupation of western Cuba. After a lengthy verbal wrestling match, the plenipotentiary at last agreed to a temporary continuation of the western Cuban occupation, provided that the Gulf of Mexico blockade be lifted. Bade agreed to this and the plenipotentiary departed mopping his forehead.

Bade immediately lifted ships and headed south. His ships came down to seize sections of Sumatra, Java, and Borneo, with outposts on the Christmas and Cocoa islands and on small islands in the Indonesian archipelago.

Bade's personal headquarters were on a pleasant little island conveniently located in the Sunda Strait between Java and Sumatra. The name of the island was Krakatoa.

Bade was under no illusion that the inhabitants of the islands welcomed his arrival. Fortunately, however, the armament of his troops out-

classed anything in the vicinity, with the possible exception of a bristly-looking place called Singapore. Bade's scouts, after studying Singapore carefully, concluded it was not mobile, and if they left it alone, it would leave them alone.

The enemy plenipotentiary now arrived in a large battleship, and was greeted in the islands with frenzied enthusiasm. Bade was too absorbed in reports of rapidly-improving morale, and highly-successful mass-swimming exercises to care about this welcome. Although an ominous document titled "War in the Islands: U. S.—Japan," sat among the translated volumes of history at Bade's elbow, and served as a constant reminder that this pleasant situation could not be expected to last forever, Bade intended to enjoy it while it did last.

Bade greeted the plenipotentiary in his pleasant headquarters on the leveled top of the tall picturesque cone-shaped hill that rose high above Krakatoa, then dropped off abruptly by the sea.

The plenipotentiary, on entering the headquarters, mopped his brow constantly, kept glancing furtively around, and was plainly ill at ease. The interpreters took their places, and the conversation opened.

"As you see," said Bade, "we are comfortably settled here for the winter."

The plenipotentiary looked around and gave a hollow laugh.

"We are," added Bade, "perfectly prepared to return next . . . ah . . .

'summer' . . . and take up where we left off."

"By next summer," said the plenipotentiary, "the United States will be a solid mass of guns from one coast to the other."

Bade shrugged, and the plenipotentiary added grimly, "And *missiles*."

Despite himself, Bade winced.

One of Bade's clerks, carrying a message across the far end of the room, became distracted in his effort to be sure he heard everything. The clerk was busy watching Bade when he banged into the back of a tall filing case. The case tilted off-balance, then started to fall forward.

A second clerk sprang up to catch the side of the case. There was a low heavy rumble as all the drawers slid out.

The plenipotentiary sprang to his feet, and looked wildly around.

The filing case twisted out of the hands of the clerk and came down on the floor with a thundering crash.

The plenipotentiary snapped his eyes tightly shut, clenched his teeth, and stood perfectly still.

Bade and Runckel looked blankly at each other.

The plenipotentiary slowly opened his eyes, looked wonderingly around the room, jumped as the two clerks heaved the filing case upright, turned around to stare at the clerks and the case, turned back to look sharply at Bade, then clamped his jaw.

Bade, his own face as calm as he could make it, decided this might be as good a time as any to throw in a

hard punch. He remarked, "You have two choices. You can make a mutually profitable agreement with us. Or you can force us to switch heavier forces and weapons to this planet and crush you. Which is it?"

"We," said the plenipotentiary coldly, "have the resources of the whole planet at our disposal. You have to bring everything from a distance. Moreover, we have captured a good deal of your equipment, which we may duplicate—"

"Lesser weapons," said Bade. "As if an enemy captured your rifles, duplicated them at great expense, and was then confronted with your nuclear bomb."

"This is our planet," said the plenipotentiary grimly, "and we will fight for it to the end."

"We don't want your planet."

The plenipotentiary's eyes widened. Then he burst into a string of invective that the translators couldn't follow. When he had finished, he took a deep breath and recapitulated the main point, "If you don't want it, what are you doing here?"

Bade said, "Your people are clearly warlike. After observing you for some time, a debate arose on our planet as to whether we should hit you or wait till you hit us. After a fierce debate, the first faction won."

"Wait a minute. How could *we* hit *you*? You come from another planet, don't you?"

"Yes, that's true. But it's also true that a baby shark is no great menace

to anyone. Except that he will grow up into a big shark. That is how our first faction looked on Earth.

The plenipotentiary scowled. "In other words, you'll kill the suspect before he has a chance to commit the crime. Then you justify it by saying the man would have committed a crime if he'd lived."

"We didn't intend to kill you—only to disarm you."

"How does all this square with your telling us you're just a scout party?"

"Are you under the impression," said Bade, "that this is the main invasion force? Would we attack without a full reconnaissance first? Do you think we would merely make one sizable landing, on *one* continent? How could we hope to conquer in that way?"

The plenipotentiary frowned, sucked in a deep breath, and mopped his forehead. "What's your offer?"

"Disarm yourselves voluntarily. All hostilities will end immediately."

The plenipotentiary gave a harsh laugh.

Bade said, "What's your answer?"

"What's your real offer?"

"As I remarked," said Bade, "there were two factions on our planet. One favored the attack, as self-preservation. The other faction opposed the attack, on moral and political grounds. The second faction at present holds that it is now impossible to remain aloof, as we had hoped to before the attack. One way or the other, we are now bound up with Earth. We either have to be enemies,

or friends. As it happens, I am a member of the bloc that opposed the attack. The bloc that favored the attack has lost support owing to the results of our initial operations. Because of this political shift, I have practically a free hand at the moment." Bade paused as the plenipotentiary turned his head slightly and leaned forward with an intent look.

Bade said, "Your country has suffered by far the most from our attack. Obviously, it should profit the most. We have a number of scientific advances to offer as bargaining counters. Our essential condition is that we retain some overt standing—some foothold—some way of knowing by direct observation that this planet—or any nation of it—won't attack us."

The plenipotentiary scowled. "Every nation on Earth is pretty closely allied as a result of your attack. We're a world of united states—all practically one nation. And all the land on the globe belongs to one of us or the other. While there's bound to be considerable regional rivalry even when we have peace, that's all. Otherwise we're united. As a result, there's not going to be any peace as long as you've got your foot on land belonging to any of us. That includes Java, Sumatra, and even this . . . er . . . mountain we're on now." He looked around uneasily, and added, "We might let you have a little base, somewhere . . . maybe in Antarctica but I doubt it. We won't want any foreign planet sticking its nose in our business."

Bade said, "My proposal allows for that."

"I don't see how it could," said the plenipotentiary. "What is it?"

Bade told him.

The plenipotentiary sat as if he had been hit over the head with a rock. Then he let out a mighty burst of laughter, banged his hand on his knee and said, "You're serious?"

"Absolutely."

The plenipotentiary sprang to his feet. "I'll have to get in touch with my government. Who knows? Maybe—Who knows?" He strode out briskly.

About this time, a number of fast ships arrived from home. These ships were much in use during the next months. Delegations from both planets flew in both directions.

Runckel was highly uneasy. Incessantly he demanded, "Will it work? What if they flood our planet with a whole mob—"

"I have it on good authority," said Bade, "that our planet is every bit as uncomfortable for them as theirs is for us. We almost lost one of their delegates straight down through the mud on the last visit. They have to use dozens of towels for handkerchiefs every day, and that trace of ammonia in the atmosphere doesn't seem to agree with them. Some of them have even gotten fog-sick."

"Why should they go along with the idea, then?"

"It fits in with their nature. Besides, where else are they going to get another one? As one of their

senators put it, 'Everything here on Earth is sewed up.' There's even a manifest destiny argument."

"Well, the idea has attractions, but—"

"Listen," said Bade, "I'm told not to prolong the war, because it's too costly and dangerous; not to leave behind a reservoir of fury to discharge on us in the future; not to surrender; not, in the present circumstances, to expect them to surrender. I am told to somehow keep a watch on them and bind their interests to ours; and not to forget the tie must be more than just on paper, it's got to be emotional as well as legal. On top of that, if possible, I'm supposed to open up commercial opportunities. Can you think of any other way?"

"Frankly, no," said Runckel.

There was a grumbling sound underneath them, and the room shivered slightly.

"What was that?" said Runckel.

Bade looked around, frowning. "I don't know."

A clerk came across the room and handed Runckel a message and Bade another message. Runckel looked up, scowling. "The sea water here is beginning to have an irritating effect on our men's skin."

"Never mind," said Bade, "their plenipotentiary is coming. We'll know one way or the other shortly."

Runckel looked worried, and began searching through his wastebasket.

The plenipotentiary came in grinning. "O.K.," he said, "the Russians

are a little burned up, and I don't think Texas is any too happy, but nobody can think of a better way out. You're in."

He and Bade shook hands fervently. Photographers rushed in to snap pictures. Outside, Bade's band was playing "The Star-Spangled Banner."

"Another state," said the plenipotentiary, grinning expansively. "How's it feel to be a citizen?"

Runckel erupted from his wastebasket and bolted across the room.

"Krakatoa is a *volcano!*" he shouted. "And here's what a volcano is!"

There was a faint but distinct rumble underfoot.

The room emptied fast.

On the way home, they were discussing things.

Bade was saying, "I don't claim it's perfect, but then our two planets are so mutually uncomfortable there's bound to be little travel either way till we have a chance to get used to each other. Yet, we *can* go back and forth. Who has a better right than a citizen? And there's a good chance of trade and mutual profit. There's a good emotional tie." He frowned. "There's just one thing—"

"What's that?" said Runckel.

Bade opened a translated book to a page he had turned down. He read silently. He looked up perplexedly.

"Runckel," he said, "there are certain technicalities involved in being a citizen."

Runckel tensed. "What do you mean?"

"Oh— Well, like this." He looked back at the book for a moment.

"What is it?" demanded Runckel.

"Well," said Bade, "what do you suppose 'income tax' is?"

Runckel looked relieved. He shrugged.

"Don't worry about it," he said. "It's too fantastic. Probably it's just a myth."

THE END



THE SHRINES OF EARTH

BY ROBERT SILVERBERG

It is really not smart to fight when you aren't prepared, don't like fighting, don't want to . . . and can induce someone else to do it for you anyway.

Illustrated by van Dongen

Master-poet Jorun Kedrik looked up at the nearly flawless blue sky and said, "Earth's a lovely world. It would be a pity if the Hrossai conquered it, wouldn't it?"

He was lying on a greenswarded, gently sloping hill just outside his current dwelling near ancient Paris. Earth no longer had cities, and nothing remained of old Paris, nothing but the one monstrosity of iron strutworks jutting nearly a thousand feet into the air half a mile away. Even at this distance, Kedrik's keen eyes picked out the bright robes of some tourists from New Gallia who were revisiting their ancestral shrine.

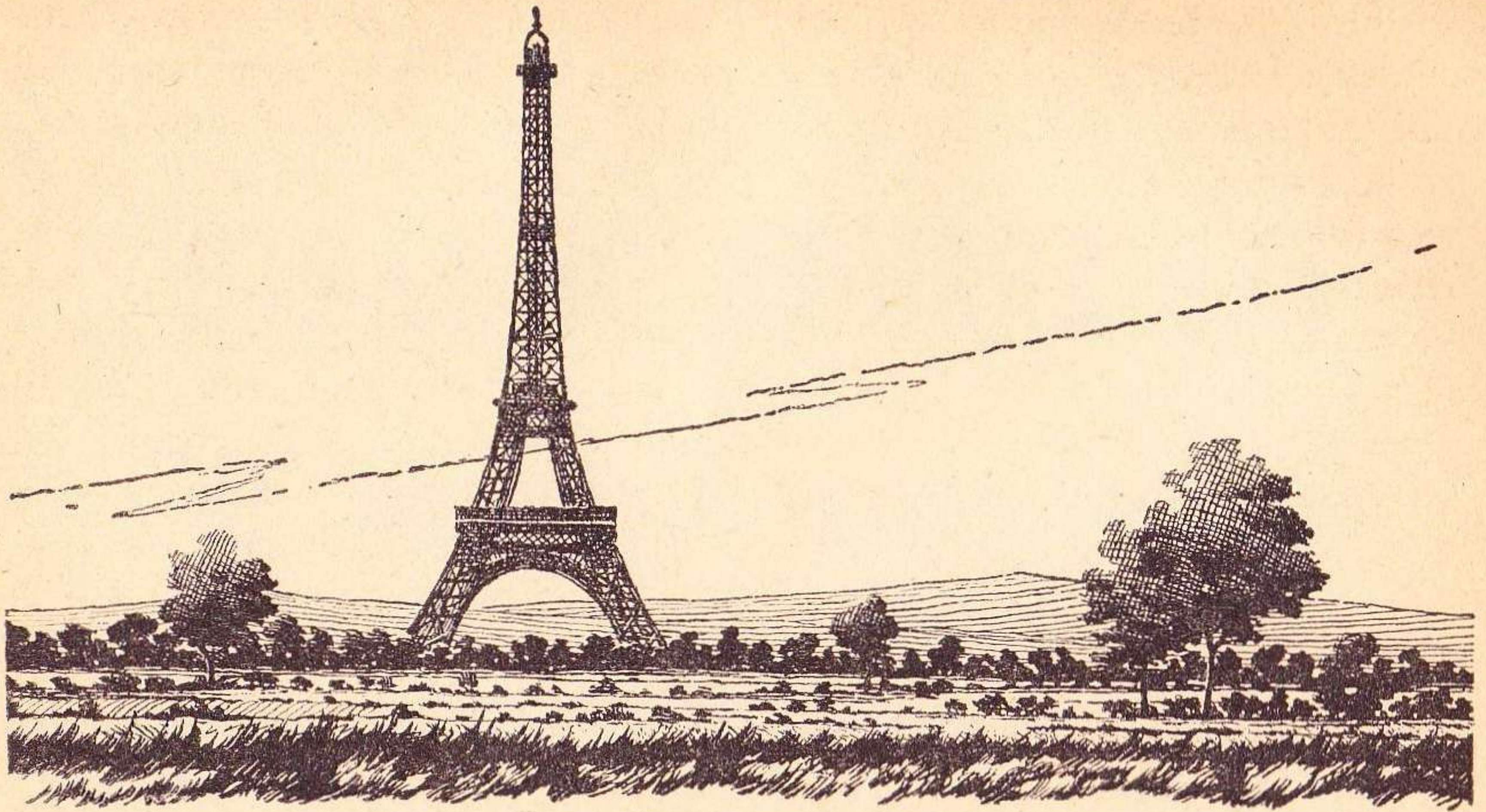
At his side, his companion, Musician-apprentice Levri Amsler, was stretched face-down on the grass.

Amsler, a long-legged, angular-featured Terran, said, "How certain is the invasion? When's it due?"

Kedrik shrugged. "Five years, six, maybe. Our best sociologists worked out the projection. The Hrossai will be coming down out of the Centauri system, and the first stop is Earth. It makes a convenient jumping-off point for their conquest of the galaxy."

"And they know they can knock us over without a fight," Amsler added mournfully. He rolled over, picked up his flute, and brushed a few strands of grass away from the mouthpiece. Pursing his lips, he played a brief, poignant melody, ending in a striking minor cadence.

"Nicely conceived," Kedrik said



approvingly. "Perhaps the Hrossai will keep us alive as court musicians—you, at least." Then he chuckled harshly. "No, that's not likely. There's little place in their scheme of things for flute players or poets. They'll be looking for soldiers."

"They won't find any here," the younger man said, putting down the flute. "There isn't a man on Earth who'd know which end of a gun to point if a Hross gave it to him."

Kedrik rose and stretched. "Three thousand years of peace! Three thousand years of contentment! Well, it couldn't last forever, Levri. We were once the galaxy's fiercest fighters; if we want to survive the Hrossai onslaught, we'll have to re-learn some of our ancient skills."

Amsler whitened. "No! Warfare, on Earth—again? I'd almost think it would be better to let the Hrossai destroy us, you know?"

"Faulty thinking," Kedrik said testily. "Contra-survival. Gutless. Foolish."

"What do you mean?"

"We were once the galaxy's most ruthless killers, when we needed to be," Kedrik said. "In the old days, we made the grubby little Hrossai look like saints." He grinned and added, "But we were also the galaxy's shrewdest intriguers. And *that's* a skill we haven't forgotten, I'd say?"

"What's on your mind, Jorun?"

"You'll see. Come: let's amble over to yonder ugly pile of metal and chat with those tourists from New Gallia. They always welcome a chance to gawk at the quaint pastoral types that inhabit their mother world."

New Gallia was a large, cheerful planet in the Albireo system. Lit by

a double star, fifth-magnitude blue and third-magnitude yellow, the colony never lacked for sunlight of one color or another; the brighter yellow sun supplied most of the heat, the fifth-magnitude blue providing that extra touch of color, the decorative flair, that the New Gallians loved so dearly.

New Gallia had been the second extrasolar planet to be settled by Terran colonists, during the years of the great exodus. The *Jules Verne* had brought five hundred hand-picked couples there in 2316, ten years after the United States had planted its colony, Columbia, in the Sirius system, and five years before the *Boris Godunov* deposited its cargo of ex-Muscovites on the steppes of Novaya Ruthenia, formerly Procyon VI.

The current Chief of State on New Gallia was a slim, dark-complexioned mathematician named Justin LeFebvre, whose term of office, barring a collapse of the government, had still eight months to go. LeFebvre would have loved nothing more greatly than the overthrow of his government; he longed to rid himself of the tiresome job and return to Theory of Sets.

But duty was duty, and *someone* had to do the job. Furthermore, pride was pride. It was a point of honor for a New Gallian premier to survive in office for the duration of a full one-year term, and, much as he hated the job, LeFebvre privately was doing his best not to lose it.

In his office on the seventy-second floor of the Bastille—named for some forgotten, legend-shrouded building of Earth—LeFebvre stared at the excited-looking man before him.

Frowning, the Chief of State said, "Slowly, my good man, slowly! Begin from the beginning, and tell me exactly what you heard, M. Dauzat."

M. Dauzat, a wealthy beet-farmer who had held the premiership a decade before, forced himself into a state of calm. "Very well, sir. As I said: my wife and I had decided at last to visit Earth, to see our ancestral world, the mother of our people. And, naturally, to pay our respects at the Tower."

"Naturally."

"We were, then, at the very base of the Tower, preparing to make the ascent, when a pair of natives approached us. Like all native Terrans, they were charming, simple people; they wore cloaks of gentle hues, carried musical instruments, and spoke in even more musical tones. Mme. Dauzat was quite taken with them."

"Of course," LeFebvre said impatiently. Now that he had slowed Dauzat down, there seemed to be no way of accelerating the pace of the narrative again. "We all know how charming the Terrans are. But go on."

"To be brief, we invited them to make the ascent of the Tower with us. We reached the top and gazed out over the peaceful green land

that had once been France"—an expansive smile spread over Dauzat's heavy jowls—"and then the older of the two Terrans said, in a voice muffled with sadness, that it was indeed a misfortune that the uncultured savages from Columbia planned to destroy our noble Tower."

"What?"

LeFebvre paled; he rose stiffly from his webchair and stared in horror at Dauzat. "Would you say that again, M. Dauzat?"

"I only repeat what the native told me. He informed me that it was generally feared that Columbia intended to destroy the Tower, as the first step in a possible campaign planned at beginning open war between our worlds."

"I see," Justin LeFebvre said numbly.

Relations between New Gallia and the American-settled planet Columbia had been, to say the least, strained, during the past four centuries—and only the existence of Novaya Ruthenia, the third major power in the galaxy, had kept the French and American colonies from war.

Right now, Novaya Ruthenia and New Gallia were enjoying uneasy "friendly relations" with each other, and both were on the outs with the Columbians. But in a war between New Gallia and Columbia, the Ruthenians would be sure to profit; the eager Russians would be quick to gobble up the best trade routes to

such minor neutral worlds as Xanadu and Britannia.

But still, an attack on the Tower, the symbol and focus-point of New Gallic life—! *Sacre bleu*, it was provocation for war!

Nodding to the fat man, LeFebvre said, "*Merci*, M. Dauzat. Your thoughtfulness in cutting short your vacation to return here with this disturbing news will not go unappreciated."

"I would have communicated with you direct," said Dauzat, "but the subradio channels are so uncertain, and I feared interception."

"You acted rightly." LeFebvre pushed the communicator stud on his desk and said, "An immediate Council meeting is called, top priority. Everyone is to be here. *Everyone*."

"The Radical ministers are holding a party caucus, M. LeFebvre," his secretary's emotionless voice informed him. "Shall I contact them?"

"By all means. Their caucus is of no importance now." Hoarsely he added, "Besides, they may be back in power by nightfall anyway. Only don't tell them that."

"Order, please, gentlemen. Order!"

LeFebvre pushed away the sheet of paper on which he had been calming himself with quadratics, and said once again, "*Order!*"

The room quieted. Seated to his left were seven ministers of his party, the Social Conservatives; to his right were the three Democratic

ASTOUNDING SCIENCE FICTION

Radical men he had chosen to include in his coalition government, plus four more Dem-Rads of high party standing but noncabinet status. He had invited them for the sake of equality; a crisis of this sort transcended mere party barriers.

"You've heard the story substantially as M. Dauzat gave it to me. Now, we all know and trust M. Dauzat—while those Terrans, of course, being inhabitants of France herself, were certainly telling the truth. Before we proceed, gentlemen, I'd like to call for a cabinet vote of confidence; I'll resign if it's your will."

The vote was seven for LeFebvre, three against. The four visiting Democratic Radicals, of course, did not vote. LeFebvre remained in office.

"Now, then. We're faced with the prospect of an attack on the Eiffel Tower itself, as the opening move in a war Columbia is obviously planning to declare. Are there any suggestions?"

M. de Villefosse, Secretary of Interworld Affairs, leaned forward and said, "Certainly. We must arm ourselves at once, and prepare for this war!"

M. Raval, Secretary of Home Defense, said, "A good thought! We hold our ships in readiness, and strike at Columbia the instant the Tower is attacked. We could also, in retaliation, destroy the Columbians' own shrine on Earth."

"The Washington Monument?" said M. Bournon, Secretary of Cul-

ture. "But why wipe out two monuments? Why not simply establish a guard over our own?"

"The Terrans would not care for an armed enclave of our men on their territory," LeFebvre pointed out. "They might protest. They might enlist the aid of the Ruthe-nians, and then we'd face attack from both sides." The Premier's fingers trembled; he had never anticipated a crisis of this magnitude.

"I have the solution, then," announced M. de Simon, the Democratic-Radical Secretary of the Economy. "We establish a permanent guard force in space, in constant orbit around Earth. Our ships will remain forever on the lookout for this attack from Columbia, and will be ready to defend our Tower when the time comes."

"An excellent suggestion," said LeFebvre. "The Earthmen won't object—I hope—and we won't be transgressing on anyone's national boundaries. We will, though, be able to defend the Tower. I call for a vote."

The vote was unanimous—the first time the New Gallian cabinet had so quickly agreed on anything in three hundred eighty-four years.

Deciding on the number of ships to be sent was a different matter. It took six hours, but at the end of that time it was officially determined that nine New Gallian ships of the line were to be sent to Earth as a defensive force, to protect New Gallia's most sacred shrine.

Premier LeFebvre slept soundly

that night, dreaming of surds and integrals. The crisis was averted—or, at least, postponed. The government had not fallen. And, *le bon Dieu* grant it, Columbia would not decide to start its war for at least eight months, by which time Lefebvre would be a private citizen once again.

Pyotr Alexandrovitch Miaskovski, Acting Czar of all Novaya Ruthenia, squinted myopically at the slip of paper in his stubby fingers, and sighed.

It was a report from one of the Ruthenian scouts who patrolled the sector of the galaxy that included Sol. The dispatch had just come in, over tight-beam subradio direct from the vicinity of Pluto. It said:

TO: Acting Czar Pyotr Alexandrovitch

FROM: Major-Colonel Ilya Ilyitch Tarantsev, First Scout Squadron

Excellency:

A fleet of nine New Gallian vessels observed taking up orbits round Sol III. They seem armed. They appear to be preparing for large-scale military enterprise. Please advise.

Miaskovski fingered the dispatch, made a sour face, and tapped his thumbs together unhappily. Somewhere, elsewhere in the royal palace, Czar Alexei lay peacefully sleeping, far removed from worldly cares.

Bozhe moi! Miaskovski thought dismally. The New Gallians were

taking position around Earth? *Why?* Did this presage a war, a breaking-down of the uneasy balance of power that had held between the three major worlds for so long?

And why did it have to happen now—now, when the Czar lay wrapped in impenetrable catatonia and the cares of the state devolved upon *him?*

Miaskovski squared his shoulders. An election was scheduled for the following week, to choose the successor to Alexei. Miaskovski had been planning to run. He didn't intend to let a minor crisis like this upset his ambitions.

He flicked on the visiscreen, and the square-set, pudgy face of his secretary appeared.

"Olga, have the Ambassador from New Gallia sent here at once, will you?"

"Certainly, Excellency. At once."

Miaskovski broke the circuit and sat back in his heavy chair. *Uneasy lies the head*, he thought—but the Czarship was a coveted plum despite the headaches. His handling of this situation would help to sway the electorate next week, he hoped.

"You wish to see me, Czar Pyotr?"

He looked up. The lean face of Ambassador Selevine gleamed at him from the door-visor.

"Ah . . . yes. Come in, please, Mr. Selevine."

The door slid back and the New Gallian diplomat entered—dressed impeccably, as always. Pyotr felt a

certain sense of inferiority; his thick, coarse garments appeared crude compared with the diplomatic costume the New Gallian affected.

The Acting Czar leaned back in his big chair, coughed, and said, "I'll be very blunt with you, M. Selevine. I want an explanation of this situation." He handed the New Gallian the scout's dispatch.

"But of course, Excellency."

Selevine took the sheet and scanned it rapidly. Miaskovski watched closely; the diplomat appeared to be somewhat ruffled.

Selevine folded the paper neatly in half and placed it on the Czar's desk. He smiled coldly, revealing perfect white teeth.

"Nine ships," he remarked idly.

"Ahem . . . yes. Nine ships. Does your government have any official explanation of this sudden entry into a neutral area?"

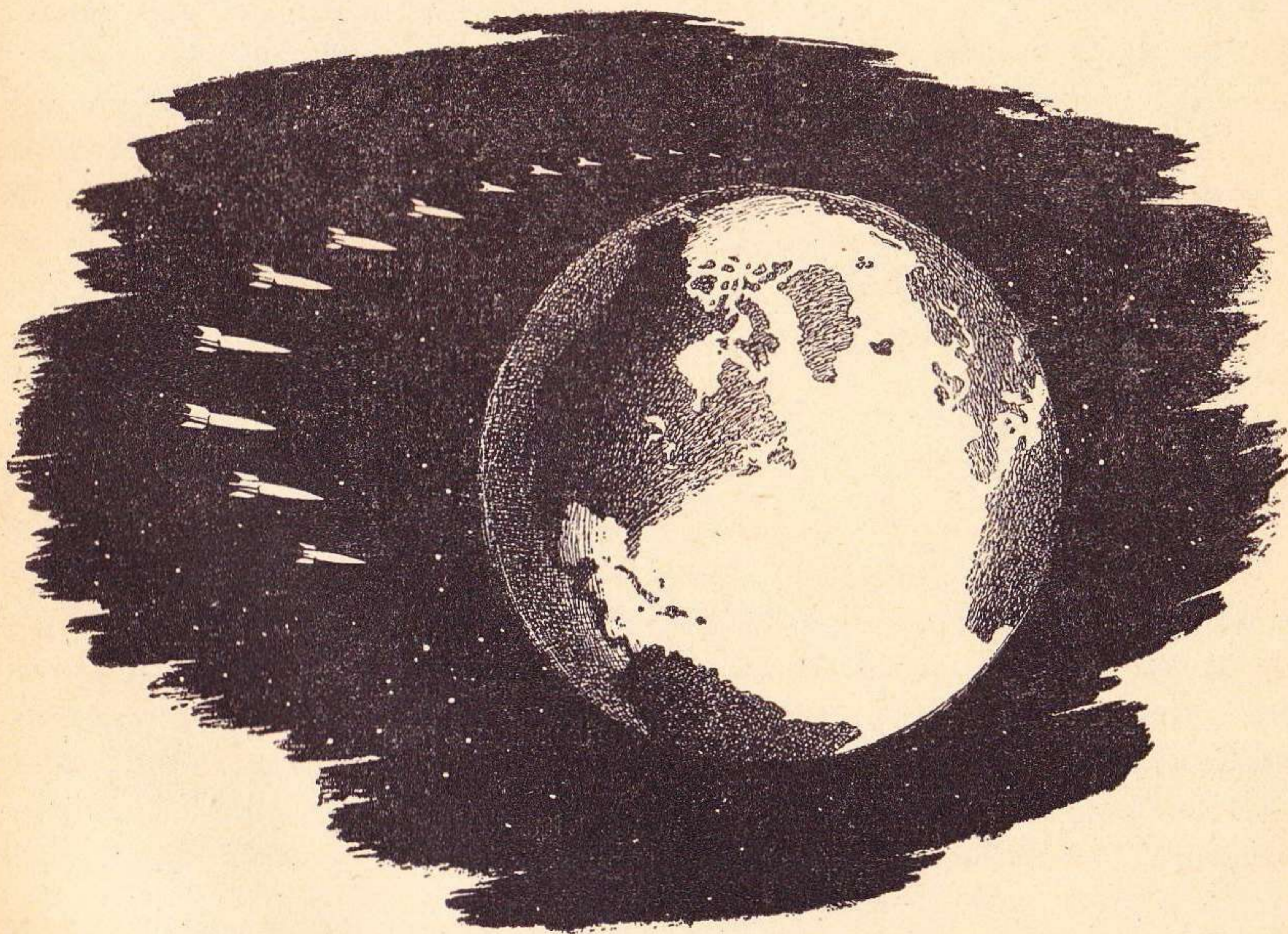
Selevine's smile vanished. "We do. The maneuver is strictly a defensive one, with no hostile intent whatever."

"Defensive? How so?"

"Be assured that the Free World of Novaya Ruthenia is not concerned in the matter, Czar Pyotr. It is strictly a matter between us and . . . and another planet, Excellency."

"Oh?" One of Pyotr's bushy eyebrows rose. "Would you care to expand on that theme, Mr. Selevine?"

The diplomat grinned frigidly. "One of my world's most revered shrines is located on Earth, Czar



Pyotr. I refer, of course, to the Eiffel Tower. We . . . ah . . . have been given to understand that a rival power in the galaxy has designs against this shrine of ours, for motives that are not yet clear to us. We are merely taking precautions."

"You mean that the Columbians are planning to blast your tower?" Pyotr asked in surprise.

"I mentioned no world specifically, Excellency."

"Ah . . . of course."

The Acting Czar scratched his forehead for a moment, squinting surreptitiously at the New Gallian and trying without success to peer behind his diplomatic mask. "Very well, then," Pyotr said finally. "If I have your assurance that your world plans no hostile action against Novaya Ruthenia—"

"You have that assurance, Excellency."

"Then we can consider the matter no concern of Novaya Ruthenia's, or of mine. Good day, Mr. Selevine."

"Good day, Excellency. And kindly accept my best wishes for the forthcoming election."

"Ah . . . certainly. Thank you very much, Mr. Selevine."

When the diplomat had left, Miaskovski leaned back, frowning, and stared at the textured stucco of the ceiling, sorting out what he had learned.

Columbia planned an attack on the Eiffel Tower. The New Gallians were establishing a defensive fleet

to prevent that. Well, that made sense.

But Novaya Ruthenia had a shrine on Earth too: the heavy-walled Kremlin, relic of the long-forgotten empire called Russia. Much as the Ruthenians wished to repudiate their undemocratic past, they yet revered the massive buildings of the Kremlin.

What if the Columbians planned an attack on that? Or suppose these New Gallian ships had some such hidden idea? It wouldn't sit well with the people—not at all. Assuming he were elected, his reign as Czar would be brief.

Fight fire with fire, Miaskovski thought.

"I want to talk to the Commissar of Security," he barked into the visiscreen.

And when the flat-featured face of Onegin, Commissar of Security, appeared on the screen, Czar Pyotr said, "Can you spare ten warships at once, Porfiry Mikheitch?"

The Commissar looked startled. "I . . . I suppose so, Excellency. But—"

"Good. I want ten fully-armed warships sent to the Sol sector at once. They're to be placed in orbit around Sol III—Earth—with an eye toward guarding against a possible New Gallian or Columbian attack on the Kremlin. And make sure your commanders know that this is strictly a defensive maneuver!"

"Certainly, Excellency," the Commissar said in a weak voice. "I'll tend to it at once."

There was a hubbub in the office of James Edgerly, President of the Republic of Columbia. Edgerly himself, a tall, spare man in his early eighties, prematurely grayed around the temples, stood at the center of the commotion, while assorted members of his staff tried to make themselves heard in spite of all the shouting.

"Quiet!" Edgerly finally roared. "Shut up!"

That did it. The president glared belligerently around the room and said, "All right. Let's hear those reports one at a time. McMahon, you're first."

The Chief of Intelligence smiled dourly. "Yes sir. As I think you may know, Mr. President, we picked up a subradio message from a Russian—I mean Ruthenian—scout last week. The message said the scout had discovered nine New Gallian ships in orbit around Earth. Later, a couple of Columbian tourists visiting ancient America confirmed this. They even saw one of the New Gallian ships circle the Washington Monument and disappear in the direction of the Atlantic."

"Fill me in on the Atlantic," President Edgerly ordered.

An aide named Goodman whose job this was immediately recited, "The Atlantic is the ocean separating the Eastern from the Western Hemispheres. America is at one side, and Europe on the other."

"O.K." Edgerly turned to Sheldrick, the Chief of Security. "Give me the scout report now, Sheldrick."

"Well, sir, as soon as we intercepted the message from that Ruthenian scout, I ordered a couple of our ships into the area to take a look. And sure enough, nine New Gallian ships were lined up in a neat little ring around Earth!"

Edgerly nodded. "That all?"

"No, sir. This morning my scout force reported that ten more ships have taken positions around the planet!"

"Ships of New Gallia?"

"Ruthenian ones, sir."

Edgerly moistened his lips and looked around the room, at the hodgepodge of Cabinet members, Congressional leaders, presidential aides, military men. He wouldn't have been at all surprised to learn that a couple of newsmen had sneaked into the conference, too.

"Nine New Gallian ships, ten Ruthenian ones," he repeated. "Just hanging up there in orbit? Not doing anything?"

"That's right, sir."

"O.K. Scram, all of you! This is a serious matter, and it has to be dealt with at once." He glanced at his watch. The time was 1300. Figure two hours for preparing his speech, he thought.

"You can announce that I'll address a special joint session of Congress at 1500 sharp," the president said.

Congress assembled. Congress listened. And when President Edgerly demanded special power to

deal with the crisis, Congress gave it to him.

"It's not that I'm anxious to plunge this world into war," he said ringingly. "But Columbia's pride must be upheld! Two alien powers are menacing the planet from which our ancestors sprang, the planet on which the finest form of government known to man evolved."

Applause.

"Many of us have visited Earth," Edgerly continued. "Many of us have stood before the gleaming shaft of marble that symbolizes for us the nation of our ancestors, the nation whose democratic traditions we uphold today. I speak, of course, of the Washington Monument."

Thunderous applause.

"This very moment, ships of alien worlds fly over Earth. Their reason for this occupation we have not yet determined; at present, their intent is unknown. But Columbia must not remain asleep! Our ships must be present there, too!"

Wild applause.

"It may be that the worlds of New Gallia and Novaya Ruthenia plan to coalesce against us; it may be that their aims are wholly peaceful. Perhaps our shrine on Earth will be destroyed—but it will not be destroyed with impunity!"

A standing ovation followed.

That evening, thirteen WZ-1 warp-drive warships left Columbia, armed to the teeth. The Columbians were determined to see at close range just what devious plans the foreigners were laying.

The Hrossai, who lived on the fourth world of Alpha Centauri, were a race of beetle-browed humanoids with dull, smoldering eyes and flaky grayish skin. As one of the few intelligent races of nonhumans in the galaxy, they were objects of a certain amount of mild curiosity, but no one paid much attention to their activities.

A team of Terran sociologists had studied them, and had prepared an interesting report on their characteristics and attitudes. The report was even more interesting when it was projected five or six years into the future—but, naturally, the Terrans never bothered to show the report to any authorities on Columbia, New Gallia, or Novaya Ruthenia. They wouldn't have taken it very seriously anyway; the Terrans were good flute-players and wrote some passable poetry, but their "science" was considered beneath contempt throughout the galaxy.

So when the Hrossai began their drive for galactic empire, the Terrans were the only ones who anticipated the attack. And Terra—the only prepared world—was the first to be assaulted.

The Hrossai, figuring the gentle people of Earth for a soft touch, sent only ten ships, and thought they were being extravagant at that.

But Terra was guarded—and had been for four years—by thirty-two fully-armed warships, each manned by a crew made trigger-happy by four years of political friction and nerve-grinding inaction.

"It was a short war," remarked Jorun Kedrik. He and his companion Amsler had taken a transatlantic jaunt just after the brief, spectacular duel in the skies, and now were staring upward at the towering bulk of the Washington Monument.

Amsler chuckled. "Shortest war on record, I'll bet. It couldn't have taken more than ten minutes for our protectors to destroy the Hrossai ships, eh?"

"Hm-m-m. Yes," Kedrik said. He studied the contours of the needle of marble before him. "It's certainly prettier than the Eiffel, anyway."

"Huh?"

"Just uttering aesthetic judgments, that's all." He grinned. "You'll have to admit the plan worked out perfectly, though. If we had appealed to any of the three colonies for help, they would have shrugged it off—or they might have sent a ship or two. But by shifting emphasis to their holy places, and by playing them off against each other, we managed to get a first-rate little space navy, free of charge! You know, Earth beat the Hrossai without ever firing a single shot?"

A tiny dot of black appeared against the bright blue far above them—and, as the sun's rays struck it, it glittered.

"What's that?" Amsler asked.

"Probably a Columbian ship,

guarding the Monument from Ruthenian attack," Kedrik said. "The saps *still* haven't caught wise, and I guess they're going to protect us forever. Well, it's simpler than maintaining fleets of our own, I suppose."

"Hey, mind if I snap a few photos?" a loud, rasping voice shouted suddenly.

The two Earthmen turned toward the newcomer. He was a tourist, broad, bulky, and heavily tanned—obviously a Columbian come to visit the Monument. He was waving a complex-looking stereocam at them.

"Shall we?" Amsler asked doubtfully.

"Of course! The tourist wants a few snapshots of us simple native folk. Why shouldn't we oblige him, so he'll have a record of our primitive pastoral ways?"

Kedrik started to laugh, and after a moment Amsler joined in.

The Columbian drew near, focusing his camera. "What's the joke?" he asked. "What's so funny?"

"Nothing," Kedrik gasped between chuckles. "Just—an old Ter-ran joke. Very obscure. You would not get it."

"I'll bet the joke's on me," the tourist said good-naturedly. "Well, I don't care. Would you mind standing over there, by the Monument? It'll make a nice shot to show back home."

THE END

SCIENCE FICTION IN A ROBOT'S EYE

BY JACK WILLIAMSON

After all, what could be more appropriate than to have a robot critic of science fiction . . . ?

The more supercilious literary critics have been fond of saying that most science fiction seems to have been written by robots. Whatever the basis for such remarks, some of them may be surprised to discover that their own craft is now in danger from the same sort of mechanized invasion.

The robot as literary critic, this iron-handed engine which threatens to relegate the merely human critic to the limbo of the buggy-whip maker, is a fairly new creation of communications theory. Its revolutionary critical technique is called content analysis.

Content analysis is a research device which the social scientists have designed for an objective study of the content of communication. In the terms of Irving L. Janis, it involves the "classification of sign vehicles." This sorting process yields numerical results, which may be analyzed statistically.

Fittingly, this remarkably science-fictional process of critical automation has recently been applied to science fiction itself, by Dr. Zoe Liles Treguboff. The results are described in her dissertation, "A Study of the Social Criticism in Popular Fiction: A Content Analysis of Science Fic-

tion," (University of California, Los Angeles, 1955).

The extent of Dr. Treguboff's own familiarity with current science fiction is perhaps indicated by her references, on the same page of her thesis, to the writer "Alous" Huxley and the science-fiction editor "Robert" Campbell. Even in her own field of the social sciences, Vernon L. Parrington's great work is cited as *Main Currents in American Thoughts*.

In spite of a few such little slips, however, her work can claim a unique place in the growing literature of science-fiction criticism. Her own knowledge of science fiction is in one sense an irrelevant question, because the techniques of content analysis promise to relieve the literary critic of the prescientific drudgery of reading.

But the critical robot is still imperfect. Fortunately for some of us old-fashioned readers who still enjoy human opinions, content analysis can't yet extract all the information in the communication. For at least a few years yet, there will be a place for Anthony Boucher and Damon Knight and P. Schuyler Miller.

Even in content analysis, at this primitive stage in its evolution, the "sign vehicles" must still be sorted by human beings. That means that the science-fiction stories selected for this study had to be submitted to a team of fourteen volunteer judges, whose task was to check answer sheets assigning the content of the stories to definite categories.

That dubious intrusion of human judgment appears to have been the weakest link in the entire study. Even though the fourteen judges had all been "trained beyond the bachelor's degree in one of the social sciences," Dr. Treguboff herself is forced to note their bewildering behavior.

Only five of the judges, as her statistics show, accounted for more than half of the total disagreements in the reliability study, and for sixty per cent of the decisions that the stories had no content of social criticism, in the analysis itself. The statistics indicate that, as she says, the judges may have represented "two different populations" in their judgment of the stories. "No plausible explanation," she confesses, "is available to explain this situation."

The seasoned science-fiction fan might have suspected that the five trouble-makers were disguised robots infiltrating the project—or else perhaps an uneasy human minority, matching wits against the mechanized majority!

In spite of all the unfortunate disagreements of those five inexplicable nonconformists, however, Dr. Treguboff found a number of critical statements about science fiction revealed in her statistics. By implication, her analysis makes significant revelations about the writers and the readers of science fiction as well. Interpreting the opinions of the robot, she says:

"Science fiction is a subject of

many popular misconceptions. It is believed, for example, that it is a form of pulp fiction, with no literary merit, whose content is about gadgets, space adventures, and monsters, and whose readers and authors are people of small education and smaller literary discriminations. Little, if any, factual basis exists for these beliefs." (Pages 24-25.)

That statement is more than any merely human judgment. It rests upon the statistical results obtained from the content analysis of a generous sample of recent science fiction. Defining science fiction in terms chosen to fit the comprehension of a robot, as the fiction printed in magazines whose titles contain the term "science fiction," Dr. Treguboff selected her stories from three contemporary magazines. *The Magazine of Fantasy and Science Fiction* had to be excluded, because of its confusing fantasy content. The random sample she analyzed consisted of one hundred three stories, chosen by the use of a table of random numbers from the issues of *Astounding Science Fiction*, *Galaxy Science Fiction*, and *If: Worlds of Science Fiction* for the three years, 1951-53. Serials were excluded. The sample was distributed proportionately, including forty-five stories from *Astounding*, fifty from *Galaxy*, and eight from *If*. When the answer sheets had all been processed and Dr. Treguboff read the verdicts of her robot critic, she found that it had settled several old debates.

Science fiction, for example, is

demonstrably prophetic. Stories of logical extrapolation make up the leading type. Of twelve different categories into which the sample stories had been sorted, including the "Space Opera Type" and the "Time Travel Type" and the "Gadget Type," the only one occurring more frequently than chance was the

"*Prediction Type*. A story which takes some social or psychological trend and extrapolates possible future developments of this trend; or which takes some physical science advance and extrapolates possible future social and psychological consequences of it. Includes stories about the final destiny of the human species, social commentaries on present culture as it will affect the future, et cetera." (Pages 211-212.)

The report states that thirty-five stories out of one hundred and five, or thirty-three per cent, were placed in that prophetic class. (The random sample, as originally described, contained only one hundred and three stories. That slight discrepancy suggests, perhaps, that even robots have their limitations. This one was a literary critic, not a mathematician.)

On another question, the analysis disposes of the familiar slander that science-fiction stories are all about "bug-eyed monsters." The five hundred ninety-two characters in the random sample were typically male Americans, of Anglo-Saxon stock and the Christian religion, between thirty and fifty years of age, and engaged in some occupation con-

nected with space flight, political administration, or the sciences. Nine of the characters were robots, and two of the robots were female. Robots included, there were relatively few nonhumans, and not even the robots were treated as monsters.

Dr. Treguboff compares these science-fiction characters with those in the "slick" magazines, as they have been revealed in another content analysis reported by Bernard B. Berelson and P. Salter. ("Majority and Minority Americans: An Analysis of Magazine Fiction," *Public Opinion Quarterly*, 10:168-180, 1946.) The verdict of this scientific criticism, as it should, favors science fiction.

Berelson and Salter were analyzing the treatment of minority groups. They studied the short stories in eight popular magazines, including *Cosmopolitan*, *True Stories*, and *The Saturday Evening Post*. Dividing the characters into two groups, Anglo-Saxons and foreigners, they found that the minorities were represented disproportionately, stereotyped unfavorably, and treated as inferiors.

Dr. Treguboff, on the other hand, reports no such unfavorable stereotyping of current ethnic minorities in science fiction. Even the robots and other nonhuman minorities receive fair treatment.

On yet another issue, the study should help establish the social significance of science fiction. Dr. Isaac Asimov, who as a presumably human author and critic has been defending the significance of what he calls

"social science fiction," should be pleased to know that this robotic critic has actually established the content of social criticism in science fiction.

Dr. Treguboff cites other content studies which show that the other media of mass communications, motion pictures and television as well as the mass magazines, all tend to support such traditional social institutions as war, nationalism, free competition, and various sorts of shackles on individual freedom. Science fiction, on the other hand, dares to question the *status quo*. The analysis reveals negative opinions of all those sacred institutions. "On this dimension," Dr. Treguboff says, "science fiction stands at an opposite pole from the mass fiction on which content analyses have been made."

Most science fiction stories, the critical robot suggests, propose to answer social problems in ways that are self-reliant and realistic, and which involve social progress. The values and attitudes found in science fiction, in fact, are often those of the professional social scientists themselves.

Content analysis, as Dr. Treguboff says, also tells something about the writers of fiction and the people who read it. The author, consciously or not, lays bare his own system of needs and beliefs and values. The readers, merely by selecting the fiction they read, also reveal themselves.

"Many of the authors," she finds, "are trained scientists and competent

writers who verbalize the intent to write about social problems, and who believe that science fiction has a significant function in current society." (Page 40.)

Turning to the science-fiction reader, she notes the implication that the stories in the sample analyzed were "written for technically and professionally trained men over thirty years of age." Since science fiction is devoted so largely to social criticism, she suggests that there may be many readers "who are undergoing a process of growing dissatisfaction with our current value system and our means of handling social

issues, and with the fiction which supports these."

Altogether, her study has laid down a substantial factual basis for several very pleasing statements about the social significance of science fiction, the competence of its writers, and the scientific and intellectual attainments of its readers. There is one alarming inference, however, which Dr. Treguboff fails to draw. Even while we talk about them, the robots are closing in. If the writers and critics of science fiction are already slipping into technological obsolescence, the readers will probably be next.

THE END

IN TIMES TO COME

The lead story next time will be "Precedent," by Robert Silverberg. In any field of human endeavor, there will be the level of theoretical ideals, and the level of practical application—the Science and the Engineering levels. In the case of the problems of legal matters, the science is Jurisprudence, and the engineering is called Law—and the problem is "What is Truth in this matter . . . and, if Truth be known, what, then, is Justice?"

Precedent is very important in Law . . . which is true in almost any engineering field. The difficulty arises, however, when one culture, with its laws and precedents, clashes with another; Jurisprudence would, ideally, be Universal—but getting a somewhat barbaric people to recognize that their Law and Tradition aren't the one and only possible concept of Jurisprudence is . . . well, apt to be difficult.

Bob Silverberg has a lovely little tale of how to mouse-trap the aliens into *wanting* their legal system superseded!

THE EDITOR.



ONE PER CENT INSPIRATION

BY EDWARD WELLEN

The gentleman never intended to start any big fuss about interstellar drives and such; he just had a personal problem that he wanted to solve, and being a typical New Englander, rather than a Chinese, he tinkered up a way

Illustrated by Freas

Far as we know, Ebenezer Davis never read up on Einstein or the theory of relativity or negatively-curving space. He just kind of took the universe for granted and never scratched his head over where it all came from, what it was doing here, or where it was going. That's not to say he didn't look up at the stars from time to time and silently marvel at them, because he did. But mostly he felt content after a wearying day to look up only as far as his wife Martha's eyes and then down again at a steaming bowl of, say, clam chowder.

Ebenezer lived in Cross Corners in New Hampshire, that state poking up like a finger into Quebec, and he was a farmer. A good farmer, mind you, but a farmer and not a physicist.

Still and all, it was Ebenezer Davis who, starting from scratch, out-relativized all the relativitists and made it possible for man to go zooming faster than light all around the universe, spreading the blessings of Earthly civilization beyond Earthly confines.

He worked out the principle of teleportation — the instantaneous transmission of matter across vast distances—one evening in 1998, when the air was giving, in sound and scent, promise of the coming of spring. That day he had felt it squelchy underfoot, saw mist over the thinning snow, heard the brook murmuring under the ice, and sensed beneath the smell of bark the smell of maple sap getting ready to flow upward.

It was a time for sharpening his auger, for cleaning the spouts, pails, and kettles he would use for the sap run.

But he stayed at the table after Martha cleared away the supper dishes and he took out of his hip pocket a folded piece of scratch paper and unfolded it and placed it on the table and smoothed it out flat. He scraped his long blue jaw and studied the scribbling on the paper. He drew out of his breast pocket a stub of pencil and made a mark here and there on the paper.

At first Martha thought he was only doing some bookkeeping. But she soon knew something else was up, the way Ebenezer was squirming and fidgeting.

Of course to an outsider Ebenezer would have seemed as unmoving as the Old Man of the Mountain. But to Martha he was fairly leaping, as if to one of those old-time rock and roll numbers.

She got so caught up in wondering what on earth he was up to that she soaped and rinsed the same plate twice. And when she saw that she made up her mind she'd best keep an eye on what she was doing and leave it to Ebenezer to tell her in his own good time what he was up to.

But after a while, without saying a word, Ebenezer folded the paper again, got up from the table, lit a lantern, and led his wavering shadow out to the shed. Three hours of clattering noises passed and he came

back into the house and put out the lantern and hung it up and got ready for bed.

The next morning while he went into town, Martha had an errand that took her into the shed. She looked around. But all she saw to show for last night's clattering was a tangle of batteries and horseshoe magnets and coils of wire.

Martha felt vaguely cheated. It was only some crazy contraption. But all the same it was maddening. She would never come right out and ask Ebenezer what in the world it was, and he had given no sign of telling.

That evening Ebenezer went out again to the shed, again without saying a word. He looked to be so deep in thought that Martha didn't break in to tell him he was forgetting to wear his ear muffs. Again there was about three hours of clattering.

And the next morning while he was out tramping over the south forty, Martha had an errand that took her into the shed. The contraption seemed to have grown considerably, though what it could possibly be passed Martha's understanding.

The same thing happened that night, only there was hammering in addition to the clattering, and the following morning Martha found that Ebenezer had encased the contraption, leaving only two small openings.

She bent to peer through the opening in one end but could see nothing, not even the opening at the opposite end. Inside was nothing but blackness. It was blacker even than

the blackest night she had ever seen. For no reason at all she felt cold all at once and she shivered.

She thought to move the box nearer the door, where there was more light and she might better see into the box. But when she tried to pick it up the box was so heavy she gasped in surprise, so heavy she could barely move it, much less lift it.

Exasperated, she thrust her right index finger through the opening to feel around. A buzzing noise startled her. She turned her body half away from the box with a frightened jerk.

Her finger suddenly felt queer. A strange tingling possessed it. Before she could even snatch it out she felt a tap on her left shoulder.

Her first thought was that Ebenezer had come back unexpectedly, though later, thinking back on it, she knew he could never come upon her without her hearing him, he walked so solidly. Her second thought, on looking around and seeing no one at all, was that a ghost was making known its presence.

But, ghost or no ghost, no one had the right to steal up behind a person and tap her on the shoulder like that. Of course Martha was much too sensible to really believe in such things as ghosts but she frowned and shook her finger at the empty air, just in case.

Right then she heard Ebenezer walking solidly on the path leading to the shed. She was a mite too flustered to remember exactly what

the errand she had come on was, but she still had enough presence of mind to pick up a galvanized tub, for which she had no earthly use at the moment, and be on her way out with it when Ebenezer reached the door. And she opened her eyes wide, as if his coming had surprised her.

Ebenezer shot his gaze past her. With unblinking eyes he looked from the box to Martha and back again two or three times, with side glances at the tub. But if he noticed that the box had shifted a fraction of an inch, because of Martha's trying to heft it, or if he thought there was anything out of the way in Martha's toting the tub, he said nothing.

He only stood aside and let Martha go by.

And outside of lifting her chin sharply and holding herself proudly stiff as she strode back to the house and opening and closing the door with somewhat more force than was absolutely necessary, she didn't reveal that anything was bothering her.

Now, Martha was the last person on earth you could call nosy or a busybody, but it was only natural for her to wonder desperately what the contraption was for. A wife is lacking in wifeliness if she fails to take an interest in her husband's work. On the other hand, if Ebenezer didn't feel like volunteering the information she desired, Martha wasn't the kind of woman to try to winkle it out of him. A wife is lacking in

wifeliness if she nags at her husband.

But that didn't mean Martha had no intention of unearthing what the blamed thing was for.

She found a use for the tub. She filled it with cold water and sat by the kitchen window peeling potatoes. From where she was sitting she had a good view of the shed and, by straining, through the window in the shed a dim view of the interior.

After a while, to rest her eyes, she gazed out beyond the shed, to where the rocks stood out black and wet in the pasture, around them the snow falling away as if they were hot coals. Wondering if Ebenezer was growing balmy along with the weather, she returned her gaze to the shed.

And what she saw then did nothing to reassure her. On the contrary. It made her stand up quickly. A dozen potatoes spilled out of her apron. Some skittered over the floor, the others plopped into the tub, splattering her beautifully spotless linoleum, but she paid all that no mind.

Because what she saw was Ebenezer Davis stripping himself bare.

Well, she twisted and craned to see what part the contraption played in this seeming madness. She twisted and craned so energetically that if Ebenezer had been watching her instead of it being the other way around he might well have thought Martha was the one touched.

But she couldn't tell what the contraption was up to because where the box rested was one spot she

couldn't quite reach. And so, throwing wifeliness to the winds, she stormed out of the house and made for the shed, bent on demanding of Ebenezer what in the world he thought he was doing.

Halfway down the path she stopped. An eerie sound sent a shiver along her spine. The contraption was sparking away like the scratching of an immense post-office pen.

Her fire turned to ice. She was afraid now. Ebenezer seemed to be fooling with forces he could have no conception of. He might be in mortal danger. She hurried on.

The door opened with a creak, but what with all that sparking noise Ebenezer didn't hear Martha slip in, or if he did he didn't bother to turn around.

Martha saw with a good deal of relief that Ebenezer had only stripped to the waist. He hadn't gone stark mad. She saw, too, that he had poked his finger into the opening in the box and that he had shut his eyes tight.

For a moment she didn't know whether he was squeezing them with pleasure or with pain, but remembering the odd tingling she herself had felt she thought pain was likelier.

But then Ebenezer sighed and she quickly changed her mind.

He sighed "Ah!" softly, but—as we all know—that almost inaudible sigh carried more weight than old Archimedes' yelling "Eureka!" at the top of his voice.

And right about then Martha saw something strange. If it wasn't so dim

in that shed, she'd have sworn she saw a ghostly fingertip floating in the air. Just that, a fingertip. As much of the finger as Ebenezer had poked into the box. What's more, the fingertip seemed to be tapping Ebenezer between the shoulder blades.

Martha's mouth opened. Whether she could have summoned voice enough to cry out she would never know, for at that moment a shadow forestalled her attempt.

She whirled nervously, and saw it was only their neighbor Charley Gibbs thrusting his head in. He had come over to borrow a file and finding no one at the house had trudged down to the shed, to which a strange noise drew him.

Charley must have seen what Martha had because his jaw went slack too and he wondered out loud what in tarnation was taking place.

That broke the spell. Ebenezer came to with a guilty start. He withdrew his finger—and at the same instant the floating fingertip vanished. Ebenezer struggled back into his clothes while Charley repeated his question.

Ebenezer tried to explain teleportation—though he had no such fancy name for it—but Martha pretended lofty indifference so well she failed to get much of what he said. Charley probably got as little of it as Martha, but it wasn't long before everyone in town heard all about the contraption.

And that's how a vacationing big

shot happened to get wind of it. He came out to see it for himself. And when he saw it really working he got excited and his call to Washington jolted five crows and twenty-five sparrows off the telephone wires. Things moved fast after that.

A battalion of United States Army troops swarmed over the Davis farm, flung up barbed wire everywhere, and patrolled the area. Tents dotted Ebenezer's fields like stacks of timothy. And scientists came and stared through thick lenses at the contraption and at Ebenezer and congratulated him on proving that space curves back upon itself. That kind of thing went on until spring of the following year, when the United States Government lifted security. The President announced to a stunned world that the United States now had flourishing colonies on planets of the stars Delta and Epsilon Ophiuchi and that spaceships were obsolete and that the United States would make the benefits of the Davis Teleporter available through the United Nations.

Ebenezer was glad that now he'd be able to get back to farming. But as soon as the lid was off a battalion of reporters swarmed over the Davis farm.

Martha didn't like it the least bit

to have those women reporters poking everywhere and shrilling "Quaint!" to one another. Damp and arm-weary from hanging up washing to dry, she was in no mood for assuming silly poses and answering silly questions. And Ebenezer got terribly tired of reporters muttering "Yankee ingenuity!" to themselves and writing it down as if they had just made it up.

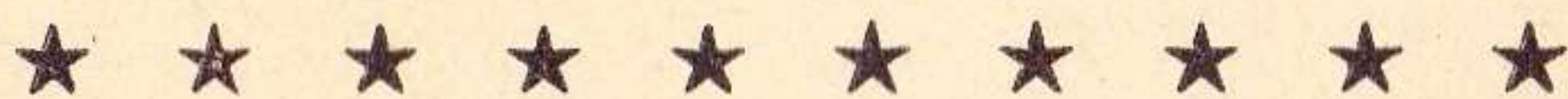
Finally he reared up and said in a way that told them he meant it that they could ask one more questions and then they'd better get.

The air vibrated to a great batting of eyelashes and a girl came forward. "Tell us, Mr. Davis," she said—gushed, Martha thought—"what inspired you to make your marvelous discovery?"

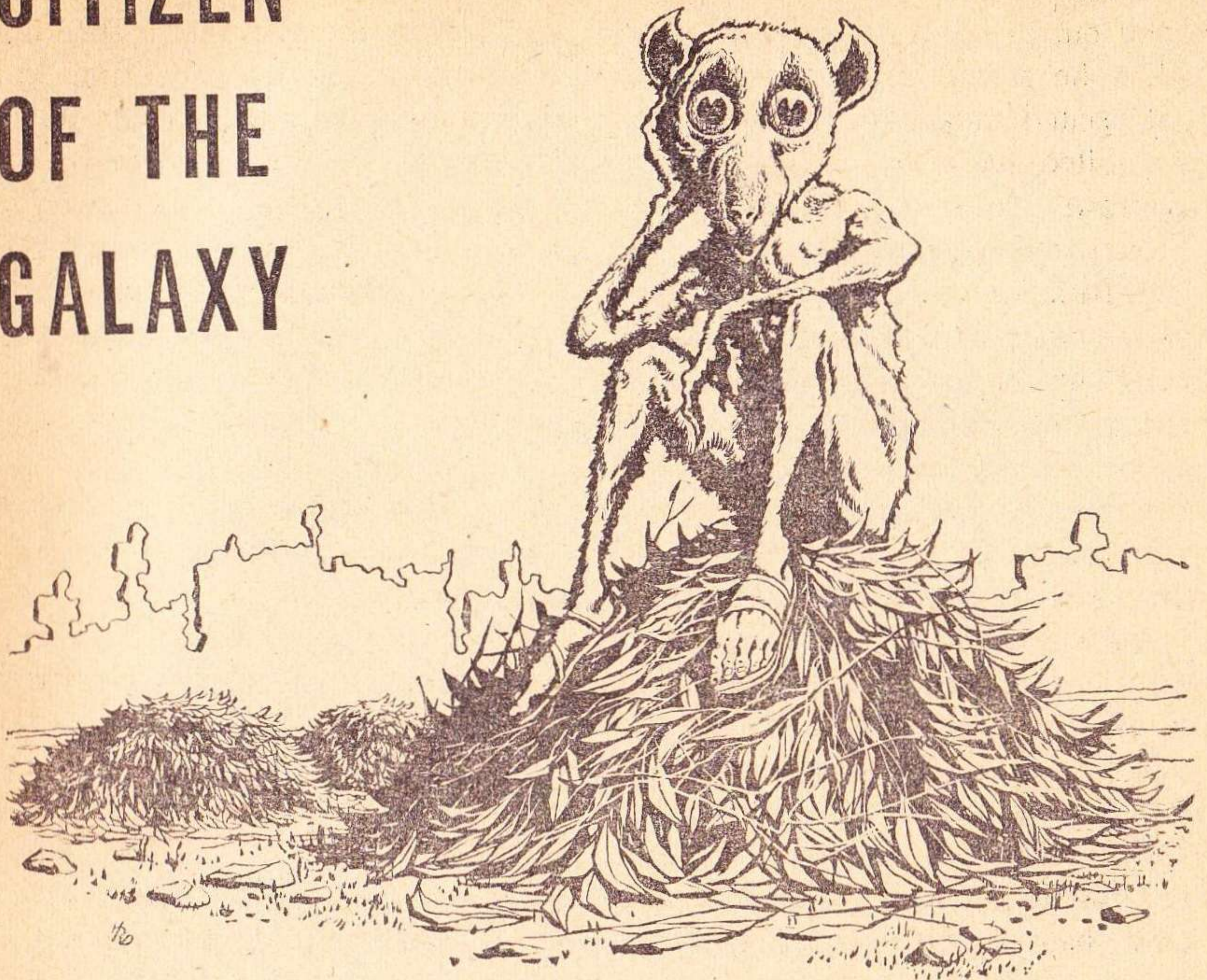
Everyone fell silent. There was a great hush, nothing but the sound of hens scratching for grain. Even Martha felt something of awe, awaiting his answer. She had never thought of that question.

Ebenezer sat there looking like the Great Stone Face itself. For a moment it seemed to Martha as though his eyes held something like the gleaming of mica in granite. Then he pointed to where his long winter underwear was hanging. He said, "Itch."

THE END



CITIZEN OF THE GALAXY



BY ROBERT A. HEINLEIN

Part III of IV. Thorby only thought he knew what slavery was — as, in the fullness of experience, he gradually discovered . . . !

Illustrated by van Dongen

SYNOPSIS

A slave auction was going on in the Great Plaza of Jubbulpore. The merchandise now on the block was almost worthless—a young boy, starved and covered with sores, feral from too many masters and too many whips, ground-sick after light-years in the hold of a slaver. The auctioneer knocked down this damaged chattel for small change to an old beggar, rather than annoy nobles and ladies by holding up the sale.

BASLIM THE BEGGAR (one-eyed, one-legged, gaunt and aged) took his slave home to a burrow under the ruins of the old amphitheater. He washed, bandaged, and fed the child, won his confidence, learned that his name was THORBY—but that was all, for THORBY, even under hypnosis, knew nothing of his people or his planet. His only identification was a slave-factor's serial number tattooed on a thigh. Years of abuse had made the boy jumpy as a stray dog, beset by nightmares; BASLIM slowly straightened him out with hypnotherapy and firm kindness.

BASLIM trained THORBY as a beggar. Daily they made their pitch together in the Great Plaza of Jubbulpore.

Jubbulpore is a metropolis almost unknown to civilization; there has been little or no intercourse with any of the Nine Worlds since they broke with the mother planet. But Jubbulpore is the Sargon's capital and is a big and bustling place, techni-

cally advanced and politically decadent, corrupt throughout.

As a beggar THORBY learned the ways of an underworld, but in the privacy of their hideaway BASLIM taught him many other things—languages, mathematics, science, history, and galactography. BASLIM sternly and forcefully required THORBY to study and helped him along both through advanced training aids and through the ancient Ter-ran mental discipline of "renshawing." Under such tutoring THORBY acquired an exceptionally broad education.

THORBY was too young when this started to see anything strange in a penniless old beggar owning expensive teaching equipment, or in his being able to tutor complex subjects. As the years passed he gradually became aware of these contradictions but they did not worry him—Pop was Pop and could do anything. THORBY made the same adjustment to his discovery that Pop had other activities besides begging, business which took him out at night disguised as a nobleman, complete with false leg, false eye, and finery. Anyone more sophisticated would have known that BASLIM was engaged in something illegal and probably treasonable to the Sargon; to THORBY, anything Pop did was all right. BASLIM—or "Pop"—was the foundation of his world.

BASLIM used THORBY as a secret courier inside the city and also to deliver messages to skippers of FREE TRADERS, tramp merchant

ASTOUNDING SCIENCE FICTION

starships which visit not only ports of the Nine Worlds but also ports throughout the frontiers of the explored sector of the galaxy including colony worlds of the Terran Hegemony. BASLIM tried to arrange to have THORBY shipped out to a free world via one of these tramp ships, but THORBY bitterly refused—he did not want to leave Pop.

BASLIM was much worried about what would happen to his adopted son on his death. Unable to persuade the boy to leave him, he took two steps: he granted his slave manumission and had him recorded as a freedman—and he implanted in THORBY a message which must be delivered to any one of five skippers of FREE TRADERS after BASLIM'S death. The message was in a language not known to THORBY; the old man used hypnopedia to make him letter perfect.

When THORBY had reached gangling adolescence, man-tall but not filled out, a dust-up occurred in which he was almost captured by the Sargon's police while trying to deliver one of BASLIM'S secret messages to a man in the Sargon's starship dockyards. The incident did not worry THORBY—as a gutter rat a brush with the snoopies was all in the day's work to him—but it caused the old beggar to hurry home and start destroying records. That night he implanted a very long message in code in the boy's brain by hypnopedia.

The next day BASLIM was ab-

sent; THORBY made his pitch in the Plaza alone. For years it had always been his responsibility, in Pop's absence, to keep careful track of slave auctions and of the arrivals and departures of starships, especially slavers. That day the Free Trader SISU grounded; it was not a slaver but its skipper was one of the five to whom THORBY must deliver a message—someday, when BASLIM was dead. THORBY decided to go home and tell Pop of its arrival.

He found the ruins in which they lived staked out by police; THORBY evaded them and reached their underground home. It had been searched and wrecked—and Pop's false leg lay smashed on the floor.

Once the first stunning shock had worn off THORBY undertook the impossible task of finding Pop and freeing him from the Sargon's police. He sneaked back to the honky-tonk area between the Plaza and the spaceport—only to receive a worse shock there, for he learned that BASLIM was already dead, having suicided before the police could question him.

The additional fact that there was now a reward out on THORBY'S head as well hardly made an impression on him—save that he must, somehow, avoid arrest until he could deliver BASLIM'S message to the skipper of Starship SISU.

THORBY managed to hide with MOTHER SHAUM, disreputable owner of an even less reputable hotel; for the sake of her old friend BASLIM she arranged a meeting

with the skipper of the SISU. CAPTAIN KRAUSA was shocked and incredulous to hear that BASLIM was dead. He interrupted THORBY'S reciting of the message. "Is that true?"

"Is what true?" demanded MOTHER SHAUM. "I don't understand that yammer."

"Oh, sorry—it's my own language. The lad is telling me that an old beggar who called himself 'Baslim the Cripple' is dead. Well?"

"Oh. Of course it's true. And a sorry thing it is, too."

"Yes. It is." CAPTAIN KRAUSA looked at THORBY. "'Debts are always paid,'" he said slowly. "BASLIM says that I am to take you with me. Are you ready?"

THORBY gulped. "Yes, sir. If that's what Pop wanted."

MOTHER SHAUM looked shocked. "Are you two crazy? The street is crawling with police!"

MOTHER SHAUM, CAPTAIN KRAUSA, and much bribery got THORBY aboard the SISU—crated as a bale of verga leaves.

In only a few million miles THORBY became convinced that he had made a mistake. His stateroom in the Starship Sisu was luxurious and the food served to him there was wonderful—but nobody spoke to him; they looked right through him.

This was the lowest he had ever sunk. Even a slave has equals.

Sisu's only passenger DR. MARGARET MADER, an anthropologist from inside the Terran Hegemony, explained the matter to THORBY.

The FREE TRADERS are an in-group as tight and as proud as has ever been seen. They classify the human race as "The People" (themselves) and "fraki" (everybody else)—a term more insulting than "pig" or "louse" and carrying the connotation of "earthcrawler," one who never goes into space. Since THORBY himself was a "fraki" he was more thoroughly untouchable than a leper of Biblical times.

But before THORBY could fret too much about this he found himself suddenly and with impressive ritual adopted into "The People" as a foster son of CAPTAIN KRAUSA, by order of GRANDMOTHER KRAUSA, CHIEF OFFICER of Sisu, a grim bedridden old tyrant. Unknown to THORBY, BASLIM'S message to CAPTAIN KRAUSA could be construed as a request to do this—and debts are always paid; Sisu always pays debts in full. So THORBY found himself not only no longer "fraki" but also fairly senior in the clan and sept of Sisu.

A FREE TRADER ship is organized both as a family and as a ship; both forms of organization are enormously important to "The People" and are complicated by ritualistic obligations and obligatory forms of address. The anthropologist DR. MARGARET MADER helped THORBY to get straightened out in these matters by letting him use the scientific notes and charts she had prepared—she then explained to him that these excessive formalities,

which the born members of Sisu family seemed to use almost by instinct, were the necessary lubrication of a society so artificial, so tightly packed into a ship, so constantly in each others' company, that without them they would be at each others' throats. As it was, Sisu was a smoothly working family and family business.

She pointed out to him that the laws of the People required a man to marry outside his immediate relatives but inside the People—THORBY could marry any female in the ship who had been adopted into it but not a female born inside the ship. She pointed out to him on the clan chart the females who were not taboo to him.

Her explanations greatly speeded up his understanding of the odd society he was in, but the notion that he was expected, eventually, to marry one of the non-taboo females just made him nervous. He had no time to worry, however, as he was put hard at work in training for fire-controlman on the starboard ballistic computer. The ships of "The People," like all starships, are powered by fusion reaction and are capable of enormous acceleration, necessary to let them get quickly up to speed-of-light and pass into irrational, multi-dimensional space. Since they operate out beyond the law of the Terran Hegemony there is always the possibility that they may be jumped, before reaching speed-of-light, by a bandit-slavetrader; the FREE TRADERS, like many before them in the

bloody history of the human race, are armed merchantmen.

The sound training BASLIM had given him in higher mathematics caused THORBY to be chosen for training for this awesome and indispensable job. His teacher was his foster nephew JERI KINGSOLVER, who, with his younger sister MATA, manned the starboard fire-control room. JERI and MATA were junior to THORBY in family rank, senior to him in ship's rank—and he was never allowed to forget either relationship. Worse than this, this pretty little girl who sat beside THORBY at gunnery drills was a crack fire-controlman, able to do easily and perfectly the almost-impossible problems of sub-light-speed ballistics—problems which THORBY was finding almost superhumanly difficult.

The grueling fact that MATA regularly beat THORBY at combat drill finally caused him to blow his top—and earned him nothing but a thorough eating-out by his nephew JERI and some extra drill. For days thereafter THORBY was stiffly formal with MATA and JERI—ships' ranks at drill, family ranks at other times, all behind a wall of ritual as prescribed in the Laws of Sisu.

Little MATA broke the ice by humbly asking her "uncle" to play spat ball with her one day during recreation hours. THORBY loosened up, got better at his work, spent much social time with MATA—and eventually qualified as a junior fire-controlman . . . and all three of

them got back on first-name terms again.

On the planet Losian, which is inhabited by nonhuman civilized creatures, THORBY's "FATHER" CAPTAIN KRAUSA took him dirtside on a business trip and talked with him. CAPTAIN KRAUSA is worried because BASLIM's injunction had required him to try to identify this orphan boy and to restore him to his own blood by entrusting THORBY at first opportunity to a ship of the Hegemonic Guard—and it was now becoming evident to him that his mother, the CHIEF OFFICER, had no intention of parting with THORBY. THORBY was already old enough to be (barely) eligible for marriage; it would be confoundedly awkward if the lad married before he, KRAUSA, had a chance to carry out the rest of BASLIM's injunction!

But he could not speak of these matters to his foster son because the CHIEF OFFICER held a different opinion. CAPTAIN KRAUSA let it go with suggesting to THORBY that he not get himself tied down to one girl until he had a chance to meet other girls at the coming Great Gathering—an occasion at ten-year intervals when as many ships of the People as possible make rendezvous for business and pleasure.

This suited THORBY; he had no matrimonial intentions at all.

When they returned to the ship, THORBY found his foster nephew JERI acting glum; he demanded to know why.

"MATA has been swapped."

The news shocked THORBY. "Why? When? What happened?"

"While you were dirtside. To El Nido, of course; she's the only ship of the People in port. Grandmother just swapped her—no warning at all."

"But why?"

JERI looked scornful. "You can't figure it out? You are the reason my sister got swapped!"

"Me?"

"Who else? She's been chasing you, you dim wit—and it's just not possible; it's taboo."

THORBY took his troubles to DR. MARGARET MADER, found her preparing to leave also; she was about to go home via El Nido. He got explanations from her, but little comfort. Yes, it was true that little MATA had been no blood relationship to him; nevertheless she was taboo under the laws of the People . . . and GRANDMOTHER KRAUSA had been perfectly right in shipping out a girl who seemed in danger of breaking the taboos. There was no such thing as a "little" break in taboo; the social system and the very safety of the ship lay in holding fast to their traditions. It did not matter that THORBY had never had any slightest intention toward MATA; the only safe thing to do was to place some light-years between them.

THORBY did not understand it and DR. MADER quit trying to explain. "I doubt if your Grandmother understands it either—she just knows

what is good for her family and her ship. THORBY . . . I once thought that you would adjust to this life. Now I'm not sure—you've been free too long. Freedom is a hard habit to break."

"Hub?"

"You've had violent dislocations. Your first foster father, BASLIM THE WISE, bought you as a slave and made you free, as free as he was. Now CAPTAIN KRAUSA, with the best intentions, adopted you and thereby made you a slave."

"Why, that's preposterous!"

"Is it? Oh, 'The People' are free . . . more free than the stars; this old galaxy has never seen such freedom. But at what price? I'll tell you: freedom itself. The People have bought freedom for themselves as a people at the price of the loss of individual freedom for each and every one of you. I am beginning to be afraid that you will never get used to it, THORBY; you've been free too long. If you ever find that you agree with me, wait until Sisu touches down at some planet that is free and democratic and human—then hit dirt and run! But do it before Grandmother decides to marry you off—because if you wait that long, you're lost!"

PART 3

XII

Losian to Finster, Finster to Thoth IV, Thoth IV to Woolamurra, Sisu

went skipping around a globe of space nine hundred light-years in diameter, the center of which was legendary Terra, cradle of mankind. Sisu had never been to Terra; the People operate out where pickings are rich, police protection nonexistent, and a man can dicker without being hampered by finicky regulations.

Ship's history alleged that the original Sisu had been built on Terra and that the first Captain Krausa had been born there, a—whisper it—fraki. But that was six ships ago and ship's history was true in essence, rather than fiddlin' fact. The Sisu whose steel now protected the blood was registered out of New Finlandia, Shiva III . . . another port she had never visited but whose fees were worth paying in order to have legal right to go about her on occasions whenever, in pursuit of profit, Sisu went inside the globe of civilization. Shiva III was very understanding of the needs of Free Traders, not fussy about inspections, reports, and the like as long as omissions were repaired by paying penalties; many ships found her registration convenient.

On Finster Thorby learned another method of trading. The native fraki, known to science by a pseudo-Latin name and called "Those confounded slugs!" by the People, live in telepathic symbiosis with lemurlike creatures possessed of delicate, many-boned hands—"telepathy" is a conclusion; it is believed that the slow, monstrous, dominant creatures sup-

ply the brains and the lemuroids the manipulation.

The planet offers beautifully carved gem stones, raw copper, and a weed from which is derived an alkaloid used in psychotherapy. What else it could supply is a matter of conjecture; the natives have neither speech nor writing, communication is difficult.

This occasions the method of trading new to Thorby—the silent auction invented by the trading Phoenicians when the shores of Africa ran beyond the known world.

Around *Siszu* in piles were placed what the traders had to offer: heavy metals the natives needed, everlasting clocks they had learned to need, and trade goods the Family hoped to teach them to need. Then the humans went inside.

Thorby said to Senior Clerk Arly Krausa-Drotar, "We just leave that stuff lying around? If you did that on Jubbul, it would disappear as you turned your back."

"Didn't you see them rig the top gun this morning?"

"I was down in the lower hold."

"It's rigged and manned. These creatures have no morals but they're smart. They'll be as honest as a cashier with the boss watching."

"What happens now?"

"We wait. They look over the goods. After a while . . . a day, maybe two . . . they pile stuff by our piles. We wait. Maybe they make their piles higher. Maybe they shift things around and offer us something else—and possibly we have outsmart-

ed ourselves and missed something we would like through holding out. Or maybe we take one of our piles and split it into two, meaning we like the stuff but not the price.

"Oh maybe we don't want it at any price. So we move our piles close to something they have offered that we do like. But we still don't touch their stuff; we wait.

"Eventually nobody has moved anything in quite a while. So, where the price suits us, we take in what they offer and leave our stuff. They come and take our offering away. We take in any of our own stuff where the price isn't right; they take away the stuff we turn down.

"But that doesn't end it. Now both sides know what the other one wants and what he will pay. They start making the offers; we start bidding with what we know they will accept. More deals are made. When we are through this second time, we have unloaded anything they want for stuff of theirs that we want at prices satisfactory to both. No trouble. I wonder if we do better on planets where we can talk."

"Yes, but doesn't this waste a lot of time?"

"Know anything we've got more of?"

The slow-motion auction moved without a hitch on goods having established value; deals were spottier on experimental offerings—gadgets which had seemed a good buy on Losian mostly failed to interest the Finstera. Six gross of folding knives actually intended for Woolamurra

brought high prices. But the star item was not properly goods of any sort.

Grandmother Krausa, although bedfast, occasionally insisted on being carried on inspection tours; somebody always suffered. Shortly before arrival at Finster her ire had centered on nursery and bachelor quarters. In the first her eye lit on a stack of lurid picture books. She ordered them confiscated; they were "fraki trash."

The bachelors were inspected when word had gone out that she intended to hit only nursery, purdah, and galley; Grandmother saw their bunkies before they could hide their pin-up pictures.

Grandmother was shocked! Not only did pin-up pictures follow comic books, but a search was made for the magazines from which they had been clipped. The contraband was sent to auxiliary engineering, there to give up identities into elemental particles.

The Supercargo saw them there and got an idea; they joined the offerings outside the ship.

Strangely carved native jewels appeared beside the waste paper—chrysoberyl and garnet and opal and quartz.

The Supercargo blinked at the gauds and sent word to the captain.

The booklets and magazines were redistributed, each as a separate offering. More jewels—

Finally each item was broken down into pages; each sheet was placed alone. An agreement was

reached: one brightly colored sheet, one jewel. At that point, bachelors who had managed to hide cherished girlie books found patriotism and instinct for trade outweighing possessiveness—after all they could restock at the next civilized port. The nursery was combed for more adventure comics.

For the first time in history comic books and pin-up magazines brought many times their weights in fine jewelry.

Thoth IV was followed by Woolamurra and each jump zigzagged closer to the coming Great Gathering of the People; the ship was seized with carnival fever. Crew members were excused from work to practice on musical instruments, watches were rearranged to permit quartets to sing together, a training table was formed for athletes and they were excused from all watches save battle stations in order to train themselves into exhausted sleep. Headaches and tempers developed over plans for hospitality fit to support the exalted pride of *Sisu*.

Long messages flitted through n-space and the Chief Engineer protested the scandalous waste of power with sharp comments on the high price of tritium. But the Chief Officer cheerfully O.K'd the charge vouchers. As the time approached, she developed a smile that creased her wrinkles in unaccustomed directions, as if she knew something but wasn't talking. Twice Thorby caught her smiling at him and it worried

him; it was better not to catch Grandmother's attention. He had had her full attention once lately and had not enjoyed it—he had been honored by eating with her, for having burned a raider.

The bogie had appeared on *Sisu's* screens during the lift from Finster—an unexpected place to be attacked since there was not much traffic there. The alarm had come only four hours out, when *Sisu* had attained barely five per cent of speed-of-light and had no hope of running for it.

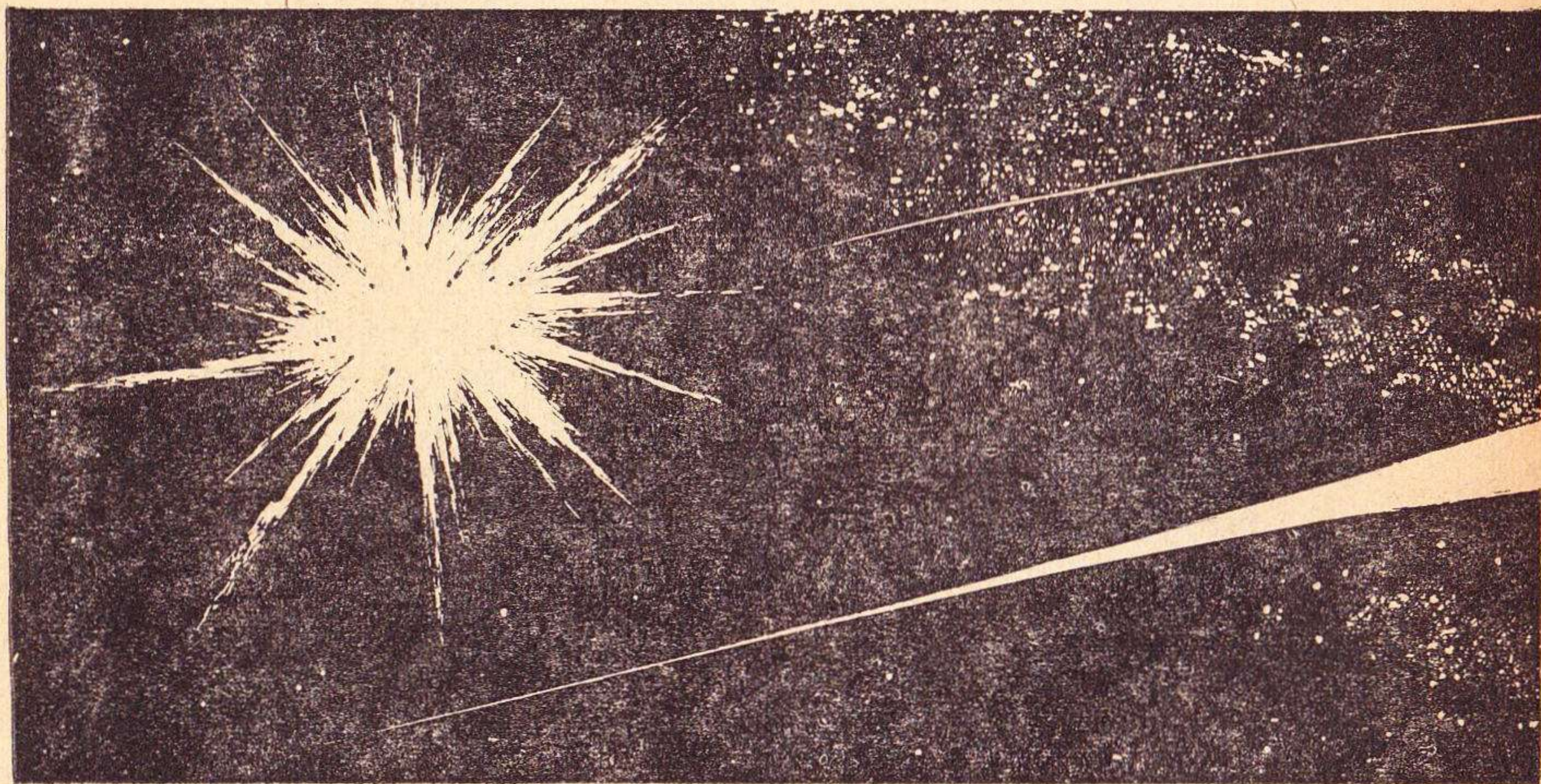
The matter landed in Thorby's lap; the portside computer was disabled—it had a "nervous breakdown" and the ship's electronics men had been sweating over it since jump. Thorby's nephew Jeri had returned to astrogation, the new trainee having qualified on the long jump from Losian—he was a strip-ling in whom Thorby had little confidence, but Thorby did not argue

when Jeri decided that Kenan Drotar was ready for a watch even though he had never experienced a "real one." Jeri was anxious to go back to the control room for two reasons, status, and an unmentioned impponderable: the computer room was where Jeri had served with his missing kid sister.

So when the raider popped up, it was up to Thorby.

He felt shaky when he first started to test the problem, being acutely aware that the portside computer was out. The greatest comfort to a fire-controlman is faith in the superman abilities of the team on the other side, a feeling of "Well, even if I goof, those bulging brains will nail him," while that team is thinking the same thing. It helps to produce all-important relaxation.

This time Thorby did not have that spiritual safety net. Nor any other. The Finstera are not a spacefaring



people; there was no possibility that the bogie would be identified as theirs. Nor could he be a trader; he had too many gravities in his tail. Nor a Hegemonic Guard; Finster was many light-years outside civilization. Thorby knew with sick certainty that sometime in the next hour his guesses must produce an answer; he must launch and hit—or shortly thereafter he would be a slave again and all his family with him.

It spoiled his timing, it slowed his thoughts.

But presently he forgot the portside computer, forgot the Family, forgot even the raider as such. The raider's movements became just data pouring into his board and the problem something he had been trained to do. His teammate slammed in and strapped himself into the other chair while General Quarters was still clanging, demanded to know the score. Thorby didn't hear him, nor

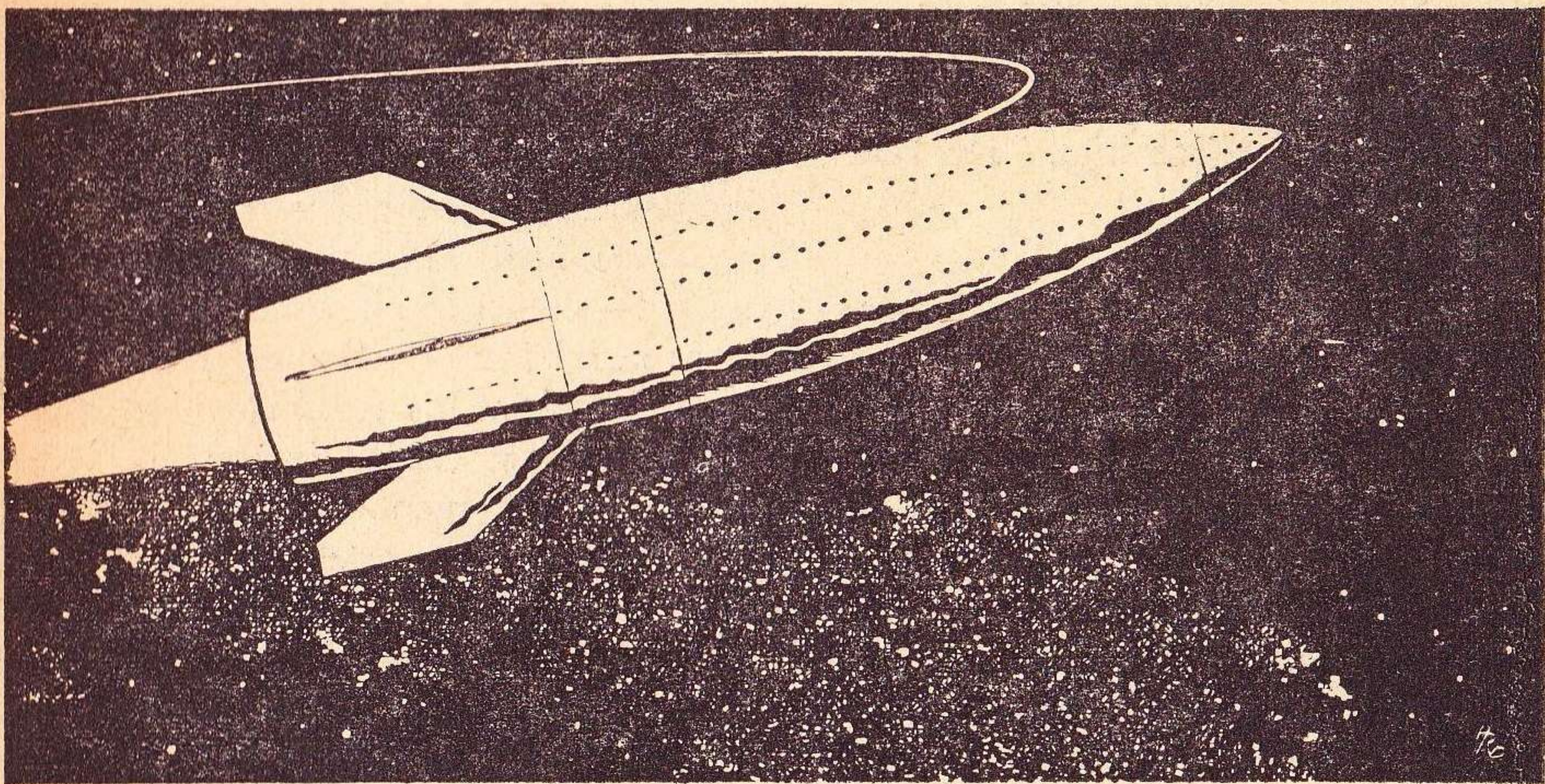
did he hear the clanging stop. Jeri came in thereafter, having been sent down by the captain; Thorby never saw him. Jeri motioned the youngster out of the twin seat, got into it himself, noted that the switch had Thorby's board in control, did not touch it. Without speaking he glanced over Thorby's setup and began working alternate solutions, ready to back him up by slapping the selector switch as soon as Thorby launched and then launch again, differently. Thorby never noticed.

Presently Krausa's strong bass came over the squawk line. "Starboard tracker . . . can I assist you by maneuvering?"

Thorby never heard it. Jeri glanced at him and answered, "I do not advise it, Captain."

"Very well."

The Senior Portside Fire-controlman, in gross violation of regulations, came in and watched the silent



struggle, sweat greasing his face. Thorby did not know it. Nothing existed but knobs, switches, and buttons, all extensions of his nervous system. He became possessed of an overwhelming need to sneeze—repressed it without realizing it.

Thorby made infinitesimal adjustments up to the last moment, then absent-mindedly touched the button that told the computer to launch as the projected curve maximized. Two heartbeats later an atomic missile was on its way.

Jeri reached for the selector switch—stopped as he saw Thorby go into frenzied activity, telling his board to launch again on the assumption that the target had cut power. Then incoming data stopped as the ship went blind. Paralysis hit them.

Post-analysis showed that the paralyzing beam was on them seventy-one seconds. Jeri came out of it when it ceased; he saw Thorby looking dazedly at his board . . . then become violently active as he tried to work a new solution based on the last data.

Jeri put a hand on him. "The run is over, Thorby."

"Huh?"

"You got him. A sweet run. Mata would be proud of you."

Sisu was blind for a day, while repairs were made in her n-space eyes. The captain continued to boost; there was nothing else to do. But presently she could see again and two days later she plunged into the comforting darkness of multi-space. The

dinner in Thorby's honor was that night.

Grandmother made the usual speech, giving thanks that the Family was again spared, and noting that the son of *Sisu* beside her was the instrument of that happy but eminently deserved outcome. Then she lay back and gobbled her food, with her daughter-in-law hovering over her.

Thorby did not enjoy the honor. He had no clear recollection of the run; it felt as if he were being honored by mistake. He had been in semishock afterwards, then his imagination started working.

They were only pirates, he knew that. Pirates and slavers, they had tried to steal *Sisu*, had meant to enslave the Family. Thorby had hated slavers before he could remember—nothing so impersonal as the institution of slavery, he hated slavers in his baby bones before he knew the word.

He was sure that Pop approved of him; he knew that Pop, gentle as he was, would have shortened every slaver in the galaxy without a tear.

Nevertheless Thorby did not feel happy. He kept thinking about a live ship—suddenly all dead, gone forever in a burst of radiance. Then he would look at his forefinger and wonder. He was caught in the old dilemma of the man with unintegrated values, who eats meat but would rather somebody else did the butchering.

When the dinner in his honor arrived he was three nights short on

sleep and looked it. He pecked at his food.

Midway in the meal he became aware that Grandmother was glaring; he promptly spilled food on his dress jacket. "Well!" she snarled. "Have a nice nap?"

"Uh, I'm sorry, Grandmother. Did you speak to me?"

He caught his Mother's warning look but it was too late; Grandmother was off. "I was waiting for *you* to say something to *me*!"

"Uh . . . it's a nice day."

"I had not noticed that it was unusual. It rarely rains in space."

"I mean it's a nice party. Yes, a real nice party. Thank you for giving it, Grandmother."

"That's better. Young man, it is customary, when a gentleman dines with a lady, to offer her polite conversation. This may not be the custom among fraki, but it is invariable among People."

"Yes, Grandmother. Thank you, Grandmother."

"Let's start again. It's a nice party, yes. We try to make everyone feel equal, while recognizing the merits of each. It is gratifying to have a chance—at last—to join with our Family in noting a virtue in you . . . one commendable if not exceptional. Congratulations. Now it's your turn."

Thorby slowly turned purple.

She sniffed and said, "What are you doing to get ready for the Gathering?"

"Uh, I don't know, Grandmother. You see, I don't sing, or play, or

dance—and the only games I know are chess and spat ball and . . . well, I've never seen a Gathering. I don't know what they're like."

"Hm-m-m! So you haven't."

Thorby felt guilty. He said, "Grandmother . . . you must have been to lots of Gatherings. Would you tell me about them?"

That did it. She relaxed and said in hushed voice, "They don't have the Gatherings nowadays that they had when I was a girl . . ." Thorby did not have to speak again, other than sounds of awed interest. Long after the rest were waiting for Grandmother's permission to rise, she was saying, ". . . And I had my choice of a hundred ships, let me tell you. I was a pert young thing, with a tiny foot and a saucy nose, and my Grandmother got offers for me throughout the People. But I knew *Sisn* was for me and I stood up to her. Oh, I was a lively one! Dance all night and as fresh for the games next day as a—"

While it was not a merry occasion, it was not a failure.

Since Thorby had no talent he became an actor.

Aunt Athena Krausa-Fogarth, Chief of Commissary and superlative cook, had the literary disease in its acute form; she had written a play. It was the life of the first Captain Krausa, showing the sterling nobility of the Krausa line. The first Krausa had been a saint with heart of steel. Disgusted with the evil ways of fraki, he had built *Sisn*—single-handed—

staffed it with his wife—named Fogarth in draft, changed to Grandmother's maiden name before the script got to her—and with their remarkable children. As the play ends they jump off into space, to spread culture and wealth through the galaxy.

Thorby played the first Krausa. He was dumfounded, having tried out because he was told to. Aunt Athena seemed almost as surprised; there was a catch in her voice when she announced his name. But Grandmother seemed pleased. She showed up for rehearsals and made suggestions which were happily adopted.

The star playing opposite Thorby was Loen Garcia, late of *El Nido*. He had not become chummy with Mata's exchange; he had nothing against her but had not felt like it. But he found Loen easy to know. She was a dark, soft beauty, with an intimate manner. When Thorby was required to ignore taboo and *kiss* her, in front of Grandmother and everybody, he blew his lines.

But he tried. Grandmother snorted in disgust. "What are you trying to do! Bite her? And don't let go as if she were radioactive. She's your wife, stupid. You've just carried her into your ship. You're alone with her, you love her. Now do it . . . no, no, no! Athena!"

Thorby looked wildly around. It did not help to catch sight of Fritz with eyes on the overhead, a beatific smile on his face.

"Athena! Come here, Daughter, and show this damp young hulk how

a woman should be kissed. Kiss him yourself and then have him try again. Places, everyone."

Aunt Athena, twice Thorby's age, did not upset him so much. He complied clumsily with her instructions, then managed to kiss Loen without falling over her feet.

It must have been a good play; it satisfied Grandmother. She looked forward to seeing it at the Gathering.

But she died on Woolamurra.

XIII

Woolamurra is a lush pioneer planet barely inside the Terran Hegemony; it was *Sisn's* last stop before diving deeper for the Gathering. Rich in food and raw materials, the fraki were anxious to buy manufactured articles. *Sisn* sold out of Losian artifacts and disposed of many Finsteran jewels. But Woolamurra offered little which would bring a profit and money was tight in terms of power metal—Woolamurra had not prospected much and was anxious to keep what radioactives it had for its infant industry.

So *Sisn* accepted a little uranium and a lot of choice meats and luxury foods. *Sisn* always picked up gourmet delicacies; this time she stocked tons more than the Family could consume, but valuable for swank at the Gathering.

The balance was paid in tritium and deuterium. A hydrogen-isotopes plant is maintained there for Hegemonic ships but it will sell to others. *Sisn* had last been able to fuel at

Jubbul—Losian ships use a different nuclear reaction.

Thorby was taken dirtside by his father several times in New Melbourne, the port. The local language is System English, which Krausa understood, but the fraki spoke it with clipped haste and an odd vowel shift; Captain Krausa found it baffling. It did not sound strange to Thorby; it was as if he heard it before. So Krausa took him to help out.

This day they went out to complete the fuel transaction and sign a waiver required for private sales. The commercial tenders accepted by *Sisw* had to be certified by the central bank, then be taken to the fuel plant. After papers were stamped and fees paid, the captain sat and chatted with the director. Krausa could be friendly with a fraki on terms of complete equality, never hinting at the enormous social difference between them.

While they chatted, Thorby worried. The fraki was talking about Woolamurra. "Any cobber with strong arms and enough brain to hold his ears apart can go outback and make a fortune."

"No doubt," agreed the captain. "I've seen your beef animals. Magnificent."

Thorby agreed. Woolamurra might be short on pavement, arts, and plumbing; the planet was bursting with opportunity. Besides that, it was a pleasant, decent world, comfortably loose. It matched Dr. Mader's recipe: "Wait until your

ship calls at a planet that is democratic, free, and human—then run!"

Life in *Sisw* had become more pleasant even though he was now conscious of the all-enveloping, personally-restricting quality of life with the Family. He was beginning to enjoy being an actor; it was fun to hold the stage. He had even learned to handle the clinch in a manner to win from Grandmother a smile; furthermore, even though it was play-acting, Loeen was a pleasant armful. She would kiss him and murmur: "My husband! My noble husband! We will roam the galaxy together."

It gave Thorby goose bumps. He decided that Loeen was a great actress.

They became quite friendly. Loeen was curious about what a fire-controlman did, so, under the eye of Great Aunt Tora, Thorby showed her the computer room. She looked prettily confused. "Just what is n-space? Length, breadth, and thickness are all you see . . . how about these other dimensions?"

"By logic. You see four dimensions . . . those three, and time. Oh, you can't *see* a year, but you can measure it."

"Yes, but how can logic—"

"Easy as can be. What is a point? A location in space. But suppose there isn't any space, not even the four ordinary dimensions. No space. Is a point conceivable?"

"Well, I'm thinking about one."

"Not without thinking about

space. If you think about a point, you think about it *somewhere*. If you have a line, you can imagine a point somewhere on it. But a point is just a location and if there isn't anywhere for it to be located, it's nothing. Follow me?"

Great Aunt Tora interrupted. "Could you children continue this in the lounge? My feet hurt."

"Sorry, Great Aunt. Will you take my arm?"

Back in the lounge Thorby said, "Did you soak up that about a point needing a line to hold it?"

"Uh, I think so. Take away its location and it isn't there at all."

"Think about a line. If it isn't in a surface, does it exist?"

"Uh, that's harder."

"If you get past that, you've got it. A line is an ordered sequence of points. But where does the order come from? From being in a surface. If a line isn't held by a surface, then it could collapse into itself. It hasn't any width. You wouldn't even know it had collapsed . . . nothing to compare it with. But every point would be just as close to every other point, no 'ordered sequence.' Chaos. Still with me?"

"Maybe."

"A point needs a line. A line needs a surface. A surface has to be part of solid space, or its structure vanishes. And a solid needs hyperspace to hold it . . . and so on up. Each dimension demands one higher, or geometry ceases to exist. The universe ceases to exist." He slapped the table. "But it's here, so we know

that multi-space still functions . . . even though we can't see it, any more than we can see a passing second."

"But where does it all stop?"

"It can't. Endless dimensions."

She shivered. "It scares me."

"Don't worry. Even the Chief Engineer only has to fret about the first dozen dimensions. And—look, you know we turn inside out when the ship goes irrational. Can you feel it?"

"No. And I'm not sure I believe it."

"It doesn't matter, because we aren't equipped to feel it. It can happen while eating soup and you never spill a drop, even though the soup turns inside out, too. So far as we are concerned it's just a mathematical concept, like the square root of minus one—which we tangle with when we pass speed-of-light. It's that way with all multi-dimensionality. You don't have to feel it, see it, understand it; you just have to work logical symbols about it. But it's real, if 'real' means anything. Nobody has ever seen an electron. Nor a thought. You can't see a thought, you can't measure, weigh, nor taste it—but thoughts are the most real things in the galaxy." Thorby was quoting Baslim.

She looked at him admiringly. "You must be awfully brainy, Thorby. 'Nobody ever saw a thought.' I like that."

Thorby graciously accepted the praise.

When he went to his bunkie, he

found Fritz reading in bed. Thorby was feeling the warm glow that comes from giving the word to an eager mind. "Hi, Fritz! Studying? Or wasting your youth?"

"Hi. Studying. Studying art."

Thorby glanced over. "Don't let Grandmother catch you."

"Got to have something to trade those confounded slugs next time we touch Finster." Woolamurra was "civilization"; the bachelors had replenished their art. "You look as if you had squeezed a bonus out of a Losian. What clicks?"

"Oh, just talking with Loen. I was introducing her to n-space . . . and darn if she didn't catch on fast."

Fritz looked judicial. "Yes, she's bright." He added, "When is Grandmother posting the bans?"

"What are you talking about!"

"No bans?"

"Don't be silly."

"Hm-m-m . . . you find her good company. Bright, too. Want to know how bright?"

"Well?"

"So bright that she taught in *El Nido's* school. Her specialty was math. Multi-dimensional geometry, in fact."

"I don't believe it!"

"Happens I transcribed her record. But ask her."

"I shall! Why isn't she teaching math here?"

"Ask Grandmother. Thorby, my skinny and retarded brother—I think you were dropped on your head. But, sorry as you are, I love

you for the fumbling grace with which you wipe drool off your chin. Want a hint from an older and wiser head?"

"Go ahead. You will anyhow."

"Thanks. Loen is a fine girl and it might be fun to solve equations with her for life. But I hate to see a man leap into a sale before he checks the market. If you just hold off through this next jump, you'll find that the People have several young girls. Several thousand."

"I'm not looking for a wife!"

"Tut, tut! It's a man's duty. But wait for the Gathering and we'll shop. Now shut up, I want to study art."

"Who's talking?"

Thorby did not ask Loen what she had done in *El Nido*, but it did open his eyes to the fact that he was playing the leading role in a courtship without having known it. It scared him. Dr. Mader's words haunted his sleep ". . . Before Grandmother decides to marry you to someone . . . if you wait that long—you're lost!"

Father and the Woolamurra official gossiped while Thorby fretted. Should he leave *Sisu*? If he wasn't willing to be a trader all his life he had to get out while still a bachelor. Of course, he could stall—look at Fritz. Not that he had anything against Loen, even if she had made a fool of him. Loen was all right, if you liked 'em curvy.

But if he was going to leave—and he had doubts as to whether he

could stand the custom-ridden monotonous life forever—then Woolamurra was the best chance he might have in years. No castes, no guilds, no poverty, no immigration laws—why, they even accepted mutants! Thorby had seen hexadactyls, hirsutes, albinos, lupine ears, giants, and other changes. If a man could work, Woolamurra could use him.

What should he do? Say, "Excuse me, please," leave the room—then start running? Stay lost until *Sisuu* jumped? He couldn't do *that*! Not to Father, not to *Sisuu*; he owed them too much.

What, then? Tell Grandmother he wanted off? If she let him off, it would probably be some chilly spot between stars! Grandmother would regard ingratitude to *Sisuu* as the unforgivable sin.

And besides . . . The Gathering was coming. He felt a great itch to see it. And it wouldn't be right to walk out on the play. He was not consciously rationalizing; although stagestruck, he still thought that he did not want to play the hero in a melodrama—whereas he could hardly wait.

So he avoided his dilemma by postponing it.

Captain Krausa touched his shoulder. "We're leaving."

"Oh. Sorry, Father. I was thinking."

"Keep it up, it's good exercise. Good-by, Director, and thanks. I look forward to seeing you next time we call."

"You won't find me, Captain. I'm

going to line me out a station, as far as eye can reach. Land of me own. If you ever get tired of steel decks, there's room here for you. And your boy."

Captain Krausa's face did not show his revulsion. "Thanks. But we wouldn't know which end of a plough to grab. We're traders."

"Each cat his own rat."

When they were outside Thorby said, "What did he mean, Father? I've seen cats, but what is a rat?"

"A rat is a sorci, only thinner and meaner. He meant that each man has his proper place."

"Oh." They walked in silence. Thorby was wondering if he had as yet found his proper place.

Captain Krausa was wondering the same thing. There was a ship just beyond *Sisuu*; its presence was a reproach. It was a mail courier, an official Hegemonic vessel, crewed by Guardsmen. Baslim's words rang accusingly in his mind: ". . . When opportunity presents, I ask that you deliver him to the commander of any Hegemonic military vessel."

This was not a "military" vessel. But that was a quibble; Baslim's intentions were plain and this ship would serve. Debts must be paid. Unfortunately Mother interpreted the words strictly. Oh, he knew why; she was determined to show off the boy at the Gathering. She intended to squeeze all possible status out of the fact that *Sisuu* had paid the People's debt. Well, that was understandable.

But it wasn't fair to the boy!

Or was it? For his own reasons Krausa was anxious to take the lad to the Gathering. He was certain now that Thorby's ancestry must be of the People—and in the commodore's files he expected to prove it.

On the other hand— He had agreed with Mother over Mata Kingsolver; a minx should not be allowed to back a taboo lad into a corner, better to ship her at once. But didn't Mother think he could see what she was up to now?

He wouldn't permit it! By *Sisu*, he wouldn't! The boy was too young and he would forbid it . . . at least until he proved that the boy was of the People, in which case the debt to Baslim was paid.

But that mail courier out there whispered that he was being as unwilling to acknowledge honest debt as he was accusing Mother of being.

But it was for the lad's own good! What is justice?

Well, there was one fair way. Take the lad and have a showdown with Mother. Tell the lad *all* of Baslim's message. Tell him that he could take passage in the courier to the central worlds, tell him how to go about finding his family. But tell him, too, that he, the Krausa, believed that Thorby was of the People and that the possibility could and should be checked first. Yes, and tell him bluntly that Mother was trying to tie him down with a wife. Mother would scream and quote the Laws—but this was not in the Chief Officer's jurisdiction; Baslim had

laid the injunction on *him*. And besides, it was right; the boy himself should choose.

Spine stiffened but quaking, Captain Krausa strode back to face his Mother.

As the hoist delivered them up the Deck Master was waiting. "Chief Officer's respects and she wishes to see the captain, sir."

"That's a coincidence," Krausa said grimly. "Come, Son. We'll both see her."

"Yes, Father."

They went around the passageway, reached the Chief Officer's cabin. Krausa's wife was outside. "Hello, my dear. The Decker said that Mother had sent for me."

"I sent for you."

"He got the message garbled. Whatever it is, make it quick, please. I am anxious to see Mother anyhow."

"He did not get it garbled; the Chief Officer did send for you."

"Eh?"

"Captain, your mother is dead."

Krausa listened with blank face, then it sank in and he slapped the door aside, ran to his mother's bed, threw himself down, clutched the tiny, wasted form laid out in state, and began to weep racking, terrible sounds, the grief of a man steeled against emotion, who cannot handle it when he breaks.

Thorby watched with awed distress, then went to his bunkie and thought. He tried to figure out why he felt so badly. He had not loved

Grandmother—he hadn't even *liked* her.

Then why did he feel so lost?

It was almost like when Pop died. He loved Pop—but not her.

He found that he was not alone; the entire ship was in shock. There was not one who could remember, or imagine, *Sisu* without her. She *was Sisu*. Like the undying fire that moved the ship, Grandmother had been an unfailing force, dynamic, indispensable, basic. Now suddenly she was gone.

She had taken her nap as usual, grumbling because Woolamurra's day fitted their schedule so poorly—typical fraki inefficiency. But she had gone to sleep with iron discipline that had adapted itself to a hundred time schedules.

When her daughter-in-law went to wake her, she could not be waked.

Her bedside scratch pad held many notes: Speak to Son about this. Tell Tora to do that. Jack up the C. E. about temperature control. Go over banquet menus with Athena. Rhoda Krausa tore out the page, put it away for reference, straightened her, then ordered the Deck Master to notify her husband.

The captain was not at dinner. Grandmother's couch had been removed; the Chief Officer sat where it had been. In the captain's absence the Chief Officer signaled the Chief Engineer; he offered the prayer for the dead, she gave the responses. Then they ate in silence. No funeral would be held until Gathering.

The Chief Officer stood up pres-

ently. "The captain wishes to announce," she said quietly, "that he thanks those who attempted to call on him. He will be available tomorrow." She paused. "The atoms come out of space and to space they return. The spirit of *Sisu* goes on.'"

Thorby suddenly no longer felt lost.

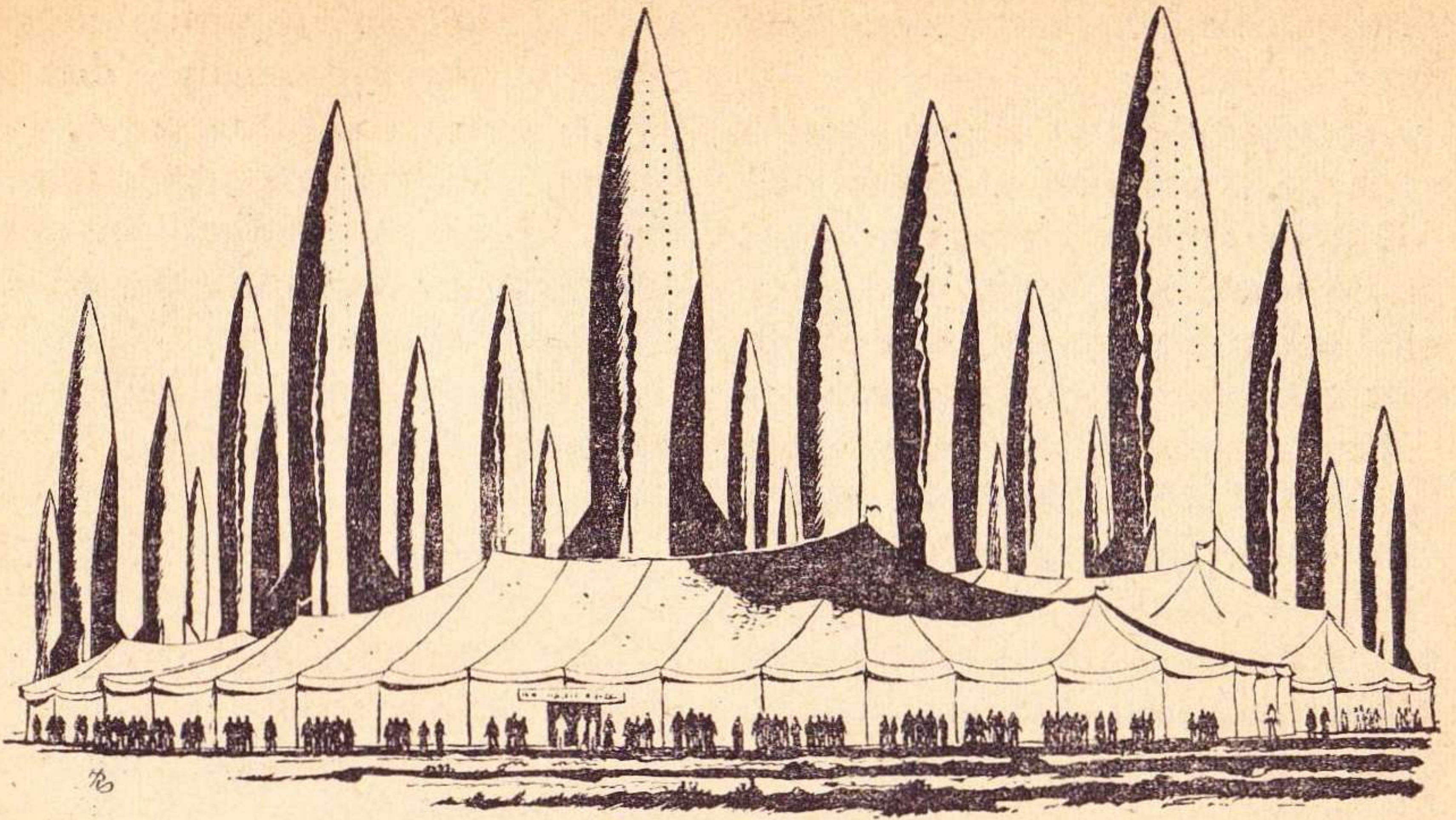
XIV

The Great Gathering was even more than Thorby had imagined.

Mile after mile of ships, more than eight hundred bulky Free Traders arranged in concentric ranks around a circus four miles across . . . *Sisu* in the innermost circle—which seemed to please Thorby's mother—then more ships than Thorby knew existed: *Kraken*, *Deimos*, *James B. Quinn*, *Firefly*, *Bon Marché*, *Dom Pedro*, *Cee Squared*, *Omega*, *El Nido*—Thorby resolved to see how Mata was doing—*Saint Christopher*, *Vega*, *Vega Prime*, *Galactic Banker*, *Romany Lass* . . . Thorby made note to get a berthing chart . . . *Saturn*, *Chiang*, *Country Store*, *Joseph Smith*, *Aloha* . . .

There were too many. If he visited ten ships a day, he might see most of them. But there was too much to do and see; Thorby gave up the notion.

Inside the circle was a great temporary stadium, larger than the New Amphitheater at Jubbulpore. Here elections would be held, funerals and weddings, athletic contests, entertainments, concerts—Thorby re-



called that "Spirit of *Sisu*" would be performed there and trembled with stage fright.

Between stadium and ships was a midway—booths, rides, games, exhibits educational and entertaining, one-man pitches, dance halls that never closed, displays of engineering gadgets, fortunetellers, gambling for prizes and cash, open-air bars, soft drink counters offering anything from berry juices of the Pleiades worlds to a brown brew certified to be the ancient, authentic Terran Coca-Cola as licensed for bottling on Hekate.

When he saw this maelstrom Thorby felt that he had wandered into Joy Street—bigger, brighter, and seven times busier than Joy Street with the fleet in. This was the fraki's chance to turn fairly honest credit while making suckers of the shrewdest businessmen in the galaxy; this was the day, with the

lid off and the Trader without his guards up—they'd sell you your own hat if you laid it on the counter.

Fritz took Thorby dirtside to keep him out of trouble, although Fritz's sophistication was hardly complete, since he had seen just one Great Gathering. The Chief Officer lectured the young people before granting hit-dirt, reminding them that *Sisu* had a reputation for proper behavior, and then issued each a hundred credits with a warning that it must last throughout the Gathering.



Fritz advised Thorby to cache most of it. "When we go broke, we can sweet-talk Father out of pocket money. But it's not smart to take it all."

Thorby agreed. He was not surprised when he felt the touch of a pickpocket; he grabbed a wrist to find out what he had landed.

First he recovered his wallet. Then he looked at the thief. He was a dirty-faced young fraki who reminded Thorby poignantly of Ziggy, except that this kid had two hands. "Better luck next time," he consoled him. "You don't have the touch yet."

The kid seemed about to cry. Thorby started to turn him loose, then said, "Fritz, check your wallet."

Fritz did so, it was gone. "Well, I'll be—"

"Hand it over, kid."

"I didn't take it! You let me go!"

"Cough up . . . before I unscrew your skull."

The kid surrendered Fritz's wallet; Thorby turned him loose. Fritz said, "Why did you do that? I was trying to spot a cop."

"That's why."

"Huh? Talk sense."

"I tried to learn that profession once. It's not easy."

"You? A poor joke, Thorby."

"Remember me? The ex-fraki, the beggar's boy? That clumsy attempt to equalize the wealth made me homesick. Fritz, where I come from, a pickpocket has status. I was merely a beggar."

"Don't let Mother hear that."

"I shan't. But I am what I am

and I know what I was and I don't intend to forget. I never learned the pickpocket art, but I was a good beggar, I was taught by the best. My Pop. Baslim the Cripple. I'm not ashamed of him and all the Laws of *Siszu* can't make me."

"I did not intend to make you ashamed," Fritz said quietly.

They walked on, savoring the crowd and the fun. Presently Thorby said, "Shall we try that wheel? I've spotted the gimmick."

Fritz shook his head. "Look at those so-called prizes."

"O.K. I was interested in how it was rigged."

"Thorby—"

"Yeah? Why the solemn phiz?"

"You know who Baslim the Cripple really was?"

Thorby considered it. "He was my Pop. If he had wanted me to know anything else, he would have told me."

"Hm-m-m . . . I suppose so."

"But you know?"

"Some."

"Uh, I am curious about one thing. What was the debt that made Grandmother willing to adopt me?"

"Uh, 'I have said enough.'"

"You know best."

"Oh, confound it, the rest of the People know! It's bound to come up at this Gathering."

"Don't let me talk you into anything, Fritz."

"Well . . . look, Baslim wasn't always a beggar."

"So I long since figured out."

"What he was is not for me to say. A lot of People kept his secret for years; nobody has told me that it is all right to talk. But one fact is no secret among the People . . . and you're one of the People. A long time ago, Baslim saved a whole family. The People have never forgotten it. The *Hanseas*, it was . . . the *New Hanseas* is sitting right over there. The one with the shield painted on her. I can't tell you more, because a taboo was placed on it—the thing was so shameful that we never talk about it. I have said enough. But if you could go over to the *New Hanseas* and ask to look through her old logs. If you identified yourself—who you are in relation to Baslim—they couldn't refuse. Though the Chief Officer might go to her cabin afterwards and have weeping hysterics."

"Hm-m-m . . . I don't want to know badly enough to make a lady cry. Fritz? Let's try this ride." So they did—and after speeds in excess of light and accelerations up to one hundred gravities, Thorby found a roller coaster too exciting. He almost lost his lunch.

A Great Gathering, although a time of fun and renewed friendships, has its serious purposes. In addition to funerals, memorial services for lost ships, weddings, and much transferring of young females, there is also business affecting the whole People and, most important, the paramount matter of buying ships.

Hekate has the finest shipyards in

the explored galaxy. Men and women have children; ships spawn, too. *Siszu* was gravid with people, fat with profit in uranium and thorium; it was time that the Family split up. At least a third of the families had the same need to trade wealth for living room; fraki ship brokers were rubbing their hands, mentally figuring commissions. Starships do not sell like cold drinks; ship brokers and salesmen often live on dreams. But perhaps a hundred ships would be sold in a few weeks.

Some would be new ships from the yards of Galactic Transport, Ltd., daughter corporation of civilization-wide Galactic Enterprises, or built by Space Engineers Corporation, or Hekate Ships, or Propulsion, Inc., or Hascomb & Sons—all giants in the trade. But there was cake for everyone. The broker who did not speak for a builder might have an exclusive on a second-hand ship, or a line to a rumor of a hint that the owners of a suitable ship might listen if the price was right—a man could make a fortune if he kept his eyes open and his ear to the ground. It was a time to by-pass mails and invest in expensive n-space messages; the feast would soon be over.

A family in need of space had two choices: either buy another ship, split and become two families, or a ship could join with another in purchasing a third, to be staffed from each. Twinning gave much status. It was proof that the family which managed it were master traders, able to give their kids a start in the world

without help. But in practice the choice usually dwindled to one: join with another ship and split the expense, and even then it was often necessary to pledge all three ships against a mortgage on the new one.

It had been thirty years since *Sisn* had split up. She had had three decades of prosperity; she should have been able to twin. But ten years ago, at the last Great Gathering, Grandmother had caused *Sisn* to guarantee along with parent ships the mortgage against a ship newly born. The new ship gave a banquet honoring *Sisn*, then jumped off into dark and never came back. Space is vast. Remember her name at Gathering.

The result was that *Sisn* paid off one-third of forty per cent of the cost of the lost ship; the blow hurt. The parent ships would reimburse *Sisn*—debts are always paid—but they had left the last Gathering lean from having spawned; coughing up each its own liability had left them skin and bones. You don't dun a sick man; you wait.

Grandmother had not been stupid. The parent ships, *Caesar Augustus* and *Dupont*, were related to *Sisn*; one takes care of one's own. Besides, it was good business; a trader unwilling to lend credit will discover that he has none. As it was, *Sisn* could write a draft on any Free Trader anywhere and be certain that it would be honored.

But it left *Sisn* with less cash than otherwise at a time when the Family should split.

Captain Krausa hit dirt the first day and went to the Commodore's Flag, *Norbert Wiener*. His wife stayed aboard but was not idle; since her succession to Chief Officer, she hardly slept. Today she worked at her desk, stopping for face-to-face talks with other chief officers via the phone exchange set up by city services for the Gathering. When her lunch was fetched, she motioned to put it down; it was still untouched when her husband returned. He came in and sat down wearily. She was reading a slide rule and checked her answer on a calculator before she spoke. "Based on a Hascomb F-two ship, the mortgage would run just over fifty per cent."

"Rhoda, you know *Sisn* can't finance a ship unassisted."

"Don't be hasty, dear. Both *Gus* and *Dupont* would co-sign . . . in their case, it's the same as cash."

"If their credit will stretch."

"And *New Hansea* would jump at it — under the circumstances — and . . ."

"Rhoda! You were young, two Gatherings ago, but you are aware that the debt lies equally on all . . . not just *Hansea*. That was unanimous."

"I was old enough to be your wife, Fjalar. Don't read the Laws to me. But *New Hansea* would jump at the chance . . . under a secrecy taboo binding till the end of time. Nevertheless the carrying charges would eat too much. Did you get to see a *Galactic Lambda*?"

"I don't need to; I've seen the specs. No legs."

"You men! I wouldn't call eighty gravities 'no legs.'"

"You would if you had to sit in the worry seat. *Lambda* class were designed for slow freight inside the Hegemonic sphere; that's all they're good for."

"You're too conservative, Fjalar."

"And I'll continue to be where safety of a ship is concerned."

"No doubt. And I'll have to find solutions that fit your prejudices. However, *Lambda* class is just a possibility. There is also you-know-which. She'll go cheap."

He frowned. "An unlucky ship."

"It will take powerful cleansing to get those bad thoughts out. But think of the price."

"It's more than bad thoughts in you-know-which-ship. I never heard of a chief officer suiciding before. Or a captain going crazy. I'm surprised they got here."

"So am I. But she's here and she'll be up for sale. And any ship can be cleansed."

"I wonder."

"Don't be superstitious, dear. It's a matter of enough care with the rituals, which is my worry. However, you can forget the you-know-which-one. I think we'll split with another ship."

"I thought you were set on doing it alone?"

"I've merely been exploring our strength. But there are things more important than setting up a new ship single-handed."

"There certainly are! Power, a good weapons system, working capital, blooded officers in key spots—why, we can't man two ships. Take fire-controlmen alone. If—"

"Stop fretting. We could handle those. Fjalar, how would you like to be Deputy Commodore?"

He braked at full power. "Rhoda! Are you feverish?"

"No."

"There are dozens of skippers more likely to be tapped. I'll never be Commodore—and what's more, I don't want it."

"I may settle for Reserve Deputy, since Commodore Denbo intends to resign after the new deputy is elected. Never mind; you will be Commodore at the next Gathering."

"Preposterous!"

"Why are men so impractical? Fjalar, all you think about is your control room and business. If I hadn't kept pushing, you would never have reached Deputy Captain."

"Have you ever gone hungry?"

"I'm not complaining, dear. It was a great day for me when I was adopted by *Sisu*. But listen. We have favors coming from many sources, not just *Gus* and *Dupont*. Whatever ship we join with will help. I intend to leave the matter open until after election—and I've had tentative offers all morning, strong ships, well connected. And finally, there's *New Hansea*."

"What about *New Hansea*?"

"Timed properly, with the Hanseatics proposing your name, you'll be elected by acclamation."

"Rhoda!"

"You won't have to touch it. And neither will Thorby. You two will simply appear in public and be your charming, male, nonpolitical selves. I'll handle it. By the way, it's too late to pull Loen out of the play, but I'm going to break that up fast. Your mother did not see the whole picture. I want my sons married—but it is essential that Thorby *not* be married, nor paired off, until *after* the election. Now . . . did you go to the flagship?"

"Certainly."

"What ship was he born in? It could be important."

Krausa gave a sigh. "Thorby was not born of the People."

"What? Nonsense! You mean that identification is not certain. Hm-m-m . . . which missing ships are possibilities?"

"I said he was not of the People! There is not a ship missing, nor a child missing from a ship, which can be matched with his case. He would have to be much older, or much younger, than he is."

She shook her head. "I don't believe it."

"You mean you don't want to!"

"I *don't* believe it. He's People. You can tell it in his walk, his manner, his good mind, everything about him. Hm-m-m . . . I'll look at the files myself."

"Go ahead. Since you don't believe *me*."

"Now, Fjalar, I didn't say—"

"Oh, yes, you did. If I told you it

was raining dirtside, and you didn't want rain, you—"

"Please, dear! You know it never rains this time of year on Hekate. I was just—"

"*Sky around us!*"

"There's no need to lose your temper. It doesn't become a captain."

"It doesn't become a captain to have his word doubted in his own ship, either!"

"I'm sorry, Fjalar." She went on quietly, "It won't hurt to look. If I widened the search, or looked through unfiled material—you know how clerks are with dead-file data. Hm-m-m . . . it would help if I knew who Thorby's parents were—before election. While I shan't permit him to marry before then, I might line up important support if it was assumed that immediately after, a wedding could be expected—"

"Rhoda."

"What, dear? The entire *Vega* group could be swayed, *if* a presumption could be established about Thorby's birth . . . *if* an eligible daughter of theirs—"

"Rhoda!"

"I was talking, dear."

"For a moment, I'll talk—the captain. Wife, he's fraki blood. Furthermore, Baslim knew it . . . and laid a strict injunction on me to help him find his family. I had hoped—yes, and believed—that the files would show that Baslim was mistaken." He frowned and chewed his lip. "A Hegemonic cruiser is due here in two weeks. That ought to give you time to assure yourself that

I can search files as well as any clerk."

"What do you mean?"

"Is there doubt? Debts are always paid . . . and there is one more payment due."

She stared. "Husband, are you out of your mind?"

"I don't like it any better than you do. He's not only a fine boy; he's the most brilliant tracker we've ever had."

"Trackers!" she said bitterly. "Who cares about that? Fjalar, if you think that I will permit one of my sons to be turned over to *fraki*—" She choked up.

"He *is* *fraki*."

"He is *not*. He is *Sisuu*, just as I am. I was adopted, so was he. We are both *Sisuu*, we will always be."

"Have it your way. I hope he will always be *Sisuu* in his heart. But the last payment must be made."

"That debt was paid in full, long ago!"

"The ledger doesn't show it."

"Nonsense! Baslim wanted the boy returned to his family. Some *fraki* family—if *fraki* have families. So we gave him a family—our own, clan and sept. Is that not better payment than some flea-bitten *fraki* litter? Or do you think so little of *Sisuu*?"

She glared up at him, and the Krausa thought bitterly that there must be something to the belief that the pure blood of the People produced better brains. In dickering with *fraki* he never lost his temper. But Mother—and now Rhoda—

could always put him in the wrong.

At least Mother, hard as she had been, had never asked the impossible. But Rhoda . . . well, Wife was new to the job. He said tensely, "Chief Officer, this injunction was laid on me personally, not on *Sisuu*. I have no choice."

"So? Very well, Captain—we'll speak of it later. And now, with all respect to you, sir, I have work to do."

Thorby had a wonderful time at the Gathering but not as much fun as he expected; repeatedly Mother required him to help entertain chief officers of other ships. Often a visitor brought a daughter or granddaughter along and Thorby had to keep the girl busy while the elders talked. He did his best and even acquired facility in the half-insulting small talk of his age group. He learned something that he called dancing which would have done credit to any man with two left feet and knees that bent backwards. He could now put his arm around a girl when music called for it without chills and fever.

Mother's visitors quizzed him about Pop. He tried to be polite but it annoyed him that everyone knew more about Pop than he did—except the things that were important.

But it did seem that duty could be shared. Thorby realized that he was junior son, but Fritz was unmarried, too. He suggested that if Fritz were to volunteer, the favor could be returned later.

Fritz gave a raucous laugh. "What can you offer that can repay me for dirtside time at Gathering?"

"Well—"

"Precisely. Seriously, old knucklehead, Mother wouldn't listen, even if I were insane enough to offer. She says you, she means you." Fritz yawned. "Man, am I dead! Little redhead off the *Saint Louis* wanted to dance all night. Get out and let me sleep before the banquet."

"Can you spare a dress jacket?"

"Do your own laundry. And cut the noise."

But on this morning one month after ground Thorby was hitting dirt with Father, with no chance that Mother would change their minds; she was out of the ship. It was the Day of Remembrance. Services did not start until noon but Mother left early for something to do with the election tomorrow.

Thorby's mind was filled with other matters. The services would end with a memorial to Pop. Father had told him that he would coach him in what to do, but it worried him, and his nerves were not soothed by the fact that "Spirit of *Sisu*" would be staged that evening.

His nerves over the play had increased when he discovered that Fritz had a copy and was studying it. Fritz had said gruffly, "Sure, I'm learning your part! Father thought it would be a good idea in case you fainted or broke your leg. I'm not trying to steal your glory; it's intended to let you relax—if you can

relax with thousands staring while you smooch Loen."

"Well, could you?"

Fritz looked thoughtful. "I could try. Loen looks cuddly. Maybe I should break your leg myself."

"Bare hands?"

"Don't tempt me. Thorby, this is just precaution, like having two trackers. But nothing less than a broken leg can excuse you from strutting your stuff."

Thorby and his father left *Sisu* two hours before the services. Captain Krausa said, "We might as well enjoy ourselves. Remembrance is a happy occasion if you think of it the right way—but those seats are hard and it's going to be a long day."

"Uh, Father . . . just what is it I'll have to do when it comes time for Pop . . . for Baslim?"

"Nothing much. You sit up front during the sermon and give responses in the Prayer for the Dead. You know how, don't you?"

"I'm not sure."

"I'll write it out for you. As for the rest . . . well, you'll see me do the same for my mother . . . your grandmother. You watch and when it comes your turn, you do the same."

"All right, Father."

"Now let's relax."

To Thorby's surprise Captain Krausa took a slideway outside the Gathering, then whistled down a ground-car. It seemed faster than those Thorby had seen on Jubbul and almost as frantic as the Losians.

They reached the rail station with nothing more than an exchange of compliments between their driver and another, but the ride was so exciting that Thorby saw little of the City of Artemis.

He was again surprised when Father bought tickets. "Where are we going?"

"A ride in the country." The captain glanced at his watch. "Plenty of time."

The monorail gave a fine sensation of speed. "How fast are we going, Father?"

"Two hundred kilometers an hour, at a guess." Krausa had to raise his voice.

"It seems faster."

"Fast enough to break your neck. That's as fast as a speed can be."

They rode for half an hour. The countryside was torn up by steel mills and factories for the great yards, but it was new and different; Thorby stared and decided that the Sargon's reserve was a puny enterprise compared with this. The station where they got off lay outside a long, high wall; Thorby could see spaceships beyond it. "Where are we?"

"Military field. I have to see a man—and today there is just time." They walked toward a gate. Krausa stopped, looked around; they were alone. "Thorby—"

"Yes, Father?"

"Do you remember the message from Baslim you delivered to me?"

"Sir?"

"Can you repeat it?"

"Huh? Why, I don't know, Father. It's been a long time."

"Try it. Start in: 'To Captain Fjalar Krausa, master of Starship *Sisu*, from Baslim the Cripple: Greetings, old friend!'"

"'Greetings, old friend,'" Thorby repeated. "'Greetings to your family, clan, and sib, and' . . . why, I understand it!"

"Of course," the Krausa said gently, "this is the Day of Remembrance. Go on."

Thorby went on. Tears started down his cheeks as he heard Pop's voice coming from his own throat: ". . . And my humblest respects to your revered mother. I am speaking to you through the mouth of my adopted son. He does not understand Suomic' . . . oh, but I *do*!"

"Go on."

When Thorby reached: "'I am already dead—'" he broke down. Krausa blew his nose vigorously, told him to proceed. Thorby managed to get to the end, though his voice was shaking. Then Krausa let him cry a moment before telling him sternly to wipe his face and brace up. "Son . . . you heard the middle part? You understood it?"

"Yes . . . uh, yes. I guess so."

"Then you know what I have to do."

"You mean . . . I have to leave *Sisu*?"

"What did Baslim say? 'When opportunity presents—' This is the first opportunity I've had . . . and I've had to squeeze to get it. It's

almost certainly the last. Baslim didn't make me a gift of you, Son—just a loan. And now I must pay back the loan. You see that, don't you?"

"Uh . . . I guess so."

"Then let's get on with it." Krausa reached inside his jacket, pulled out a sheaf of bills and shoved them at Thorby. "Put this in your pocket. I would have made it more, but it was all I could draw without attracting your mother's suspicions. Perhaps I can send you more before you jump."

Thorby held it without looking at it, although it was more money than he had ever touched before. "Father . . . you mean I've *already left Sisu*?"

Krausa had turned. He stopped. "Better so, Son. Good-by's are not comfort; only remembrance is a comfort. Besides, it has to be this way."

Thorby swallowed. "Yes, sir."

"Let's go."

They walked quickly toward the guarded gate. They were almost there when Thorby stopped. "Father . . . I don't want to go!"

Krausa looked at him without expression. "You don't have to."

"I thought you said I did have to?"

"No. The injunction laid on me was to deliver you and to pass on the message Baslim sent to me. But there my duty ends, my debt is paid. I won't order you to leave the Family. The rest was Baslim's idea . . . conceived, I am sure, with the best of intentions for your welfare. But whether or not you are obligated

to carry out his wishes is something between you and Baslim. I can't decide it for you. Whatever debt you may or may not owe Baslim, it is separate from the debt the People owed to him."

Krausa waited while Thorby stood mute, trying to think. What had Pop expected of him? What had he told him to do? "*Can I depend on you? You won't goof off and forget it?*" Yes, but *what*, Pop? "*Don't burn any offerings . . . just deliver a message, and then one thing more: do whatever this man suggests.*" Yes, Pop, but the man won't *tell* me!

Krausa said urgently, "We haven't much time. I have to get back. But, Son, whatever you decide, it's final. If you don't leave *Sisu* today, you won't get a second chance. I'm sure of that."

"*It's the very last thing that I want from you, Son . . . can I depend on you?*" Pop said urgently, inside his head.

Thorby sighed. "I guess I have to, Father."

"I think so, too. Now let's hurry."

The gate pass office could not be hurried, especially as Captain Krausa, although identifying himself and son by ship's papers, declined to state his business with the commander of Guard Cruiser *Hydra* other than to say that it was "urgent and official."

But eventually they were escorted by a smart, armed fraki to the cruiser's hoist and turned over to another. They were handed along inside the ship and reached an office

marked "Ship's Secretary — Enter Without Knocking." Thorby concluded that *Sisii* was smaller than he had thought and he had never seen so much polished metal in his life. He was rapidly regretting his decision.

The Ship's Secretary was a polite, scrubbed young man with the lace orbits of a lieutenant. He was also very firm. "I'm sorry, Captain, but you will have to tell me your business . . . if you expect to see the Commanding Officer."

Captain Krausa said nothing and sat tight.

The nice young man colored, drummed on his desk. He got up. "Excuse me a moment."

He came back and said tonelessly, "The Commanding Officer can give you five minutes." He led them into a larger office and left them. An older man was there, seated at a paper-heaped desk. He had his blouse off and showed no insignia of rank. He got up, put out his hand, and said, "Captain Krausa? Of Free Trader . . . *Seezoo*, is it? I'm Colonel Brisby, commanding."

"Glad to be aboard, Skipper."

"Glad to have you. How's business?" He glanced at Thorby. "One of your officers?"

"Yes and no."

"Eh?"

"Colonel? May I ask in what class you graduated?"

"What? Oh-Eight. Why do you ask?"

"I think you can answer that. This lad is Thorby Baslim, adopted son

of Colonel Richard Baslim. The colonel asked me to deliver him to you."

XV

"*What?*"

"The name means something to you?"

"Of course it does." He stared at Thorby. "There's no resemblance."

"'Adopted' I said. The colonel adopted him on Jubbul."

Colonel Brisby closed the door. Then he said to Krausa, "Colonel Baslim is dead. Or 'missing and presumed dead,' these past two years."

"I know. The boy has been with me. I can report some details of the colonel's death, if they are not known."

"You were one of his couriers?"

"Yes."

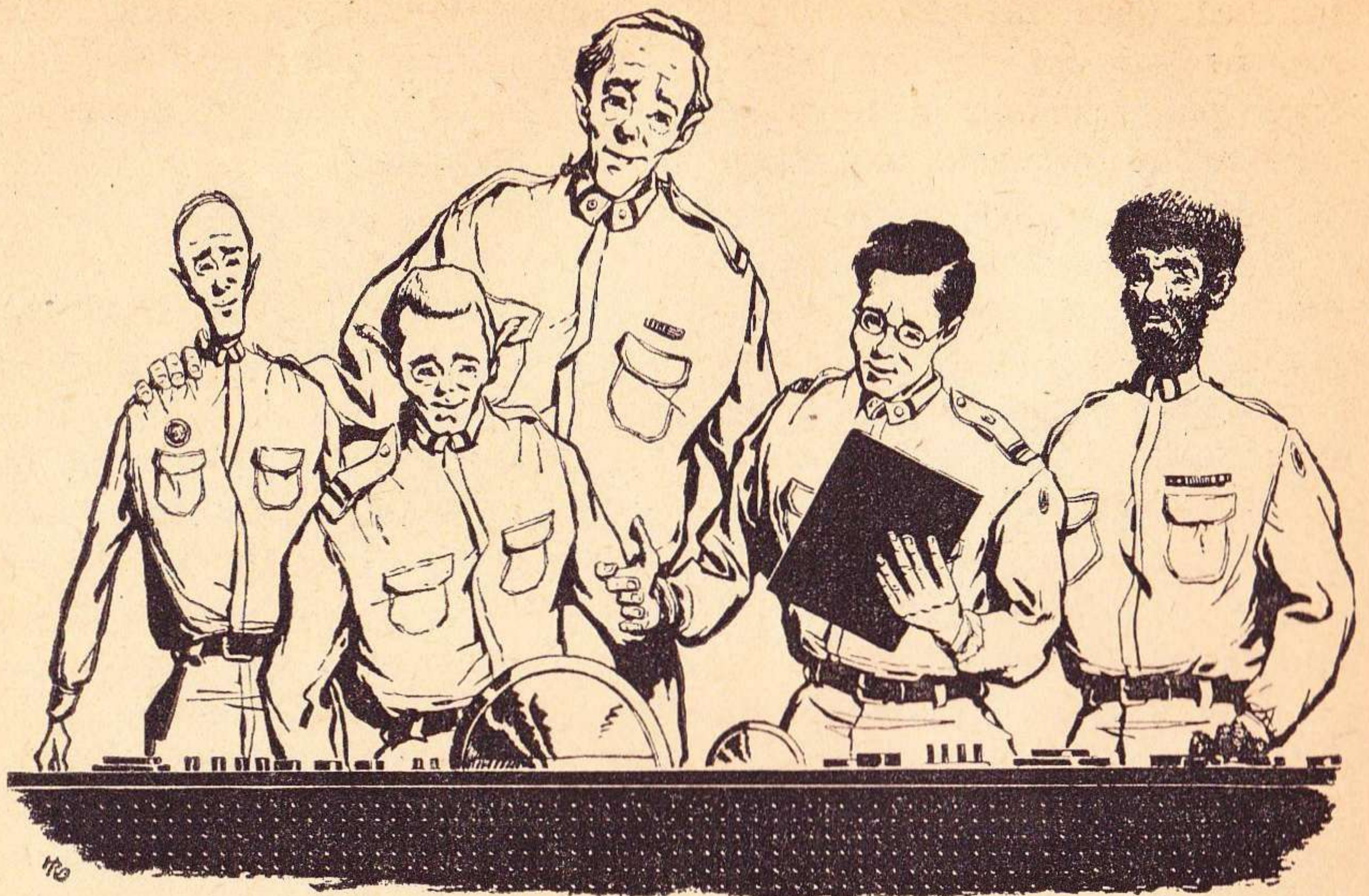
"You can prove it?"

"X three oh seven nine code FT."

"That can be checked. We'll assume it is for the moment. By what means do you identify . . . Thorby Baslim?"

Thorby did not follow the conversation. There was a buzzing in his ears, as if the tracker was being fed too much power, and the room was swelling and then growing smaller. He did figure out that this officer knew Pop, which was good . . . but what was this about Pop being a colonel? Pop was Baslim the Cripple, licensed mendicant under the mercy of . . . under the mercy—

Colonel Brisby told him sharply to



sit down, which he was glad to do. Then the colonel speeded up the air blower. He turned to Captain Krausa. "All right, I'm sold. I don't know what regulation I'm authorized to do it under . . . we are required to give assistance to 'X' Corps people, but this is not quite that. But I can't let Colonel Baslim down."

"'Distressed citizen,'" suggested Krausa.

"Eh? I don't see how that can be stretched to fit a person on a planet under the Hegemony, who is obviously not distressed—other than a little white around the gills, I mean. But I'll do it."

"Thank you, Skipper." Krausa glanced at his watch. "May I go? In fact I must."

"Just a second. You're simply leaving him with me?"

"I'm afraid that's the way it must be."

Brisby shrugged. "As you say. But stay for lunch. I want to find out more about Colonel Baslim."

"I'm sorry, I can't. You can reach me at the Gathering, if you need to."

"I will. Well, coffee at least." The ship commander reached for a button.

"Skipper," Krausa said with distress, looking again at his watch, "I must leave *now*. Today is our Remembrance . . . and my mother's funeral is in fifty minutes."

"What? Why didn't you say so? Goodness, man! You'll never make it."

"I'm very much afraid so . . . but I *had* to do this."

"We'll fix that." The colonel

snatched open the door. "Eddie! An air car for Captain Krausa. Speed run. Take him off the top and put him down where he says. Crash!"

"Aye aye, Skipper!"

Brisby turned back, raised his eyebrows, then stepped into the outer office. Krausa was facing Thorby, his mouth working painfully. "Come here, Son."

"Yes, Father."

"I have to go now. Maybe you can manage to be at a Gathering . . . some day."

"I'll try, Father!"

"If not . . . well, the blood stays in the steel, the steel stays in the blood. You're still *Sisu*."

"The steel stays in the blood."

"Good business, Son. Be a good boy."

"Good . . . business! Oh, Father!"

"Stop it! You'll have me doing it. Listen, I'll take your responses this afternoon. You must not show up."

"Yes, sir."

"Your mother loves you . . . and so do I."

Brisby tapped on the open door. "Your car is waiting, Captain."

"Coming, Skipper." Krausa kissed Thorby on both cheeks and turned suddenly away, so that all Thorby saw was his broad back.

Colonel Brisby returned presently, sat down, looked at Thorby and said, "I don't know quite what to do with you. But we'll manage." He touched a switch. "Have some one dig up the berthing master-at-arms,

Eddie." He turned to Thorby. "We'll make out, if you're not too fussy. You traders live pretty luxuriously, I understand."

"Sir?"

"Yes?"

"Baslim was a colonel? Of your service?"

"Well . . . yes."

Thorby had now had a few minutes to think—and old memories had been stirred mightily. He said hesitantly, "I have a message for you . . . I think."

"From Colonel Baslim?"

"Yes, sir. I'm supposed to be in a light trance. But I think I can start it." Carefully, Thorby recited a few code groups. "Is this for you?"

Colonel Brisby again hastily closed the door. Then he said earnestly, "Don't *ever* use that code unless you are certain everyone in earshot is cleared for it and the room has been debugged."

"I'm sorry, sir."

"No harm done. But anything in that code is hot. I just hope that it hasn't cooled off in two years." He touched the talker switch again. "Eddie, cancel the master-at-arms. Get me the psych officer. If he's out of the ship, have him chased down." He looked at Thorby. "I still don't know what to do with you. I ought to lock you in the safe."

The long message was squeezed out of Thorby in the presence only of Colonel Brisby, his Executive Officer Vice Colonel "Stinky"

Stancke, and the ship's psychologist Medical-Captain Isadore Krishnamurti. The session went slowly; Dr. Kris did not often use hypnotherapy, Thorby was so tense that he resisted, and the Exec had a blasphemous time with recording equipment. But at last the psychologist straightened up and wiped his face. "That's all, I think," he said wearily. "But what is it?"

"Forget you heard it, Doc," advised Brisby. "Better yet, cut your throat."

"Gee, thanks, Boss."

Stancke said, "Pappy, let's run him through again. I've got this mad scientist's dream working better. His accent may have garbled it."

"Nonsense. The kid speaks pure Terran."

"O.K., so it's my ears. I've been exposed to bad influences—been aboard too long."

"If," Brisby answered calmly, "that is a slur on your commanding officer's pure speech, I consider the source. Stinkpot, is it true that you Riffs write down anything you want understood?"

"Only with Araleshi . . . sir. Nothing personal, you asked. Well, how about it? I've got the noise filtered out."

"Doc?"

"Hm-m-m. . . . The subject is fatigued. Is this your only opportunity?"

"Eh? He'll be with us quite a while. All right, wake him."

Shortly Thorby was handed over to the berthing P.O. Several liters

of coffee, a tray of sandwiches, and one skipped meal later the colonel and his second in command had recorded in clear the thousands of words of old Baslim the Beggar's final report. Stancke sat back and whistled. "You can relax, Pappy. This stuff didn't cool off—a half-life of a century, on a guess."

Brisby answered soberly, "Yes, and a lot of good boys will die before it does."

"You ain't foolin'. What gets me is that trader kid—running around the galaxy with all that 'burn-before-reading' between his ears. Shall I slide down and poison him?"

"What, and have to fill out all those copies?"

"Well, maybe Kris can wipe it out of his tender gray matter without resorting to a trans-orbital."

"Anybody touches that kid and Colonel Baslim will rise up out of his grave and strangle him, is my guess. Did you know Baslim, Stinky?"

"One course under him in psychological weapons, my last year at the Academy. Just before he went 'X' Corps. Most brilliant mind I've ever met—except yours, of course, Pappy, sir, boss."

"Don't strain yourself. No doubt he was a brilliant teacher—he would be tops at anything. But you should have known him before he was on limited duty. I was privileged to serve under him. Now that I have a ship of my own I just ask myself: 'What would Baslim do?' He was the best commanding officer a ship

ever had. It was during his second crack at colonel—he had been up to wing marshal and put in for reduction to have a ship again, to get away from a desk.”

Stancke shook his head. “I can’t wait for a nice cushy desk, where I can write recommendations nobody will read.”

“You aren’t Baslim. If it wasn’t hard, he didn’t like it.”

“I’m no hero. I’m more the salt of the earth. Pappy, were you with him in the rescue of the *Hanse*?”

“You think I would fail to wear the ribbon? No, thank goodness; I had been transferred. That was a hand-weapons job. Messy.”

“Maybe you would have had the sense not to volunteer.”

“Stinky, even you would volunteer, fat and lazy as you are—if Baslim asked for volunteers.”

“I’m not lazy, I’m efficient. But riddle me this: what was a C.O. doing leading a landing party?”

“The Old Man followed regulations only when he agreed with them. He wanted a crack at slavers with his own hands—he hated slavers with a cold passion. So he comes back a hero and what can the Department do? Wait until he gets out of hospital and court-martial him? Stinky, even top brass can be sensible when they have their noses rubbed in it. So they cited him for above-and-beyond under unique circumstances and put him on limited duty. But from here on, when ‘unique circumstances’ arise, every commanding officer knows that he

can’t thumb through the book for an alibi. It’ll be up to him to continue the example.”

“Not me,” Stancke said firmly.

“You. When you’re a C.O. and comes time to do something unpleasant, there you’ll be, trying to get your tummy in and your chest out, with your chubby little face set in hero lines. You won’t be able to help it. The Baslim conditioned-reflex will hit you.”

Around dawn they got to bed. Brisby intended to sleep late but long habit took him to his desk only minutes late. He was not surprised to find his professedly-lazy Exec already at work.

His Paymaster-Lieutenant was waiting. The fiscal officer was holding a message form; Brisby recognized it. The night before, after hours of dividing Baslim’s report into phrases, then recoding it to be sent by split routes, he had realized that there was one more chore before he could sleep: arrange for identification search on Colonel Baslim’s adopted son. Brisby had no confidence that a waif picked up on Jubbul could be traced in the vital records of the Hegemony—but if the Old Man sent for a bucket of space, that was what he wanted and no excuses. Toward Baslim, dead or not, Colonel Brisby maintained the attitudes of a junior officer. So he had written a dispatch and left word with the duty officer to have Thorby fingerprinted and the prints coded at reveille. Then he could sleep.

Brisby looked at the message. "Hasn't this gone out?" he demanded.

"The photo lab is coding the prints now, Skipper. But the Comm Officer brought it to me for a charge, since it is for service outside the ship."

"Well, assign it. Do I have to be bothered with every routine matter?"

The paymaster decided that the Old Man had been missing sleep again. "Bad news, Skipper."

"O.K., spill it."

"I don't know of a charge to cover it. I doubt if there is an appropriation to fit it even if we could figure out a likely-sounding charge."

"I don't care what charge. Pick one and get that message moving. Use that general one. Oh-oh-something."

"'Unpredictable Overhead, Administrative.' It won't work, Skipper. Making an identity search on a civilian cannot be construed as ship's overhead. Oh, I can put that charge number on and you'll get an answer. But—"

"That's what I want. An answer."

"Yes, sir. But eventually it reaches the General Accounting Office and the wheels go around and a card pops out with a red tag. Then my pay is checked until I pay it back. That's why they make us blokes study law as well as accounting."

"You're breaking my heart. O.K., Pay, if you're too sissy to sign it, tell me what charge number that overhead thing is; I'll write it in and sign my name and rank. O.K.?"

"Yes, sir. But, Skipper—"

"Pay, I've had a hard night."

"Yes, sir. I'm required by law to advise you. You don't have to take it, of course."

"Of course," Brisby agreed grimly.

"Skipper, have you any notion how expensive an identification search can be?"

"It can't be much. I can't see why you are making such an aching issue of it. I want a clerk to get off his fundament and look in the files. I doubt if they'll bill us. Routine courtesy."

"I wish I thought so, sir. But you've made this an unlimited search. Since you haven't named a planet, first it will go to Tycho City, live files and dead. Or do you want to limit it to live files?"

Brisby thought. If Colonel Baslim had believed that this young man had come from inside civilization, then it was likely that the kid's family thought he was dead. "No."

"Too bad. Dead files are three times as big as the live. So they search at Tycho. It takes a while, even with machines—over twenty billion entries. Suppose you get a null result. A coded inquiry goes to vital bureaus on all planets, since Great Archives are never up to date and some planetary governments don't send in records anyhow. Now the cost mounts, especially if you use n-space routing; exact coding on a fingerprint set is a fair-sized book. Of course if you take one planet at a time and use mail—"

"No."

"Well . . . Skipper, why not put a limit on it? A thousand credits, or whatever you can afford if—I mean 'when'—they check your pay."

"A thousand credits? Ridiculous!"

"If I'm wrong, the limitation won't matter. If I'm right—and I am, a thousand credits could just be a starter—then your neck isn't out too far."

Brisby scowled. "Pay, you aren't working for me to tell me I can't do things."

"Yes, sir."

"You're here to tell me how I *can* do what I'm going to do anyhow. So start digging through your books and find out how. Legally. And free."

"Aye aye, sir."

Brisby did not go right to work. He was fuming—some day they would get the service so fouled up in red tape they'd never get a ship off the ground. He bet that the Old Man had gone into the Exotic Corps with a feeling of relief—"X" Corps agents didn't have red tape; one of 'em finds it necessary to spend money, he just did so, ten credits or ten million. That was how to operate—pick your men, then trust them. No regular reports, no forms, no nothing—just do what needs to be done.

Whereupon he picked up the ship's quarterly fuel and engineering report. He put it down, reached for a message form, wrote a follow-up on Baslim's report, informing Exotic

Bureau that the unclassified courier who had delivered report was still in jurisdiction of signer and in signer's opinion additional data could be had if signer were authorized to discuss report with courier at discretion.

He decided not to turn it over to the code and cipher group; he opened his safe and set about coding it. He had just finished when the Paymaster knocked. Brisby looked up. "So you found the paragraph."

"Perhaps, Skipper. I've been talking with the Executive Officer."

"Shoot."

"I see we have subject person aboard."

"Now don't tell me I need a charge for that!"

"Not at all, Skipper. I'll absorb his ration in the rush. You keep him aboard forever and I won't notice. Things don't get awkward until they get on the books. But how long do you expect to keep him? It must be more than a day or two, or you wouldn't want an identity search."

The commanding officer frowned. "It may be quite a while. First I've got to find out who he is, where he's from. Then, if we're going that way, I intend to give him an unlogged lift. If we aren't—well, I'll pass him along to a ship that is. Too complicated to explain, Pay—but necessary."

"O.K. Then why not enlist him?"

"Huh?"

"It would clear up everything."

Brisby frowned. "I see. I could

take him along legally . . . and arrange a transfer. And it would give you a charge number. But . . . well, suppose Shiva III is the spot—and his enlistment is not up. Can't just tell him to desert. Besides I don't know that he wants to enlist."

"You can ask him. How old is he?"

"I doubt if he knows. He's a waif."

"So much the better. You ship him. Then when you find out where he has to go, you discover an error in his age . . . and correct it. It turns out that he reaches his majority in time to be paid off on his home planet."

Brisby blinked. "Pay, are all paymasters dishonest?"

"Only the good ones. You don't like it, sir?"

"I love it. O.K., I'll check. And I'll hold up that dispatch. We'll send it later."

The paymaster looked innocent. "Oh, no, sir, we won't ever send it."

"How's that?"

"It won't be necessary. We enlist him to fill vacancy in complement. We send in records to BuPersonnel. They make the routine check, name and home planet—Hekate, I suppose, since we got him here. By then we're long gone. They don't find him registered here. Now they turn it over to BuSecurity, who sends us a priority telling us not to permit subject personnel to serve in sensitive capacity. But that's all, because it's possible that this poor innocent citi-

zen never got registered. But they can't take chances, so they start the very search you want, first Tycho, then everywhere else, security priority. So they identify him and unless he's wanted for murder it's a routine muddle. Or they can't identify him and have to make up their minds whether to register him, or give him twenty-four hours to get out of the galaxy—seven to two they decide to forget it—except that someone aboard is told to watch him and report suspicious behavior. But the real beauty of it is that the job carries a BuSecurity cost charge."

"Pay, do you think that Security has agents in this vessel I don't know about?"

"Skipper, what do you think?"

"Hm-m-m . . . I don't know—but if I were Chief of Security I would have! Confound it, if I lift a civilian from here to the Rim, that'll be reported too—no matter what I log."

"Shouldn't be surprised, sir."

"Get out of here! I'll see if the lad will buy it." He flipped a switch. "Eddie!"

Instead of sending for Thorby, Brisby directed the surgeon to examine him, since it was pointless to pressure him to enlist without determining whether or not he could. Medical-Major Stein, accompanied by Medical-Captain Krishnamurti, reported to Brisby before lunch.

"Well?"

"No physical objection, Skipper.

I'll let the Psych Officer speak for himself."

"All right. By the way, how old is he?"

"He doesn't know."

"Yes, yes," Brisby agreed impatiently, "but how old do you think he is?"

Dr. Stein shrugged. "What's his genetic picture? What environment? Any age-factor mutations? High or low gravity planet? Planetary metabolic index? He could be as young as ten standard years, as old as thirty, on physical appearance. I can assign a fictional adjusted age, on the assumption of no significant mutations and Terra-equivalent environment—an unjustified assumption until they build babies with data plates—an adjusted age of not less than fourteen standard years, not more than twenty-two."

"Would an adjusted age of eighteen fit?"

"That's what I said."

"O.K., make it just under that—minority enlistment."

"There's a tattoo on him," Dr. Krishnamurti offered, "which might give a clue. A slave mark."

"The deuce you say!" Colonel Brisby reflected that his follow-up dispatch to "X" Corps was justified. "Dated?"

"Just the manumission—a Sargonese date which fits his story. The mark is a factor's mark. No date."

"Too bad. Well, now that he is clear with Medical, I'll send for him."

"Colonel."

"Eh? Yes, Kris?"

"I cannot recommend enlistment."

"Huh? He's as sane as you are."

"Surely. But he is a poor risk."

"Why?"

"I interviewed subject under light trance this morning. Colonel, did you ever keep a dog?"

"No. Not many where I come from."

"Very useful laboratory animals, they parallel many human characteristics. Take a puppy, abuse him, kick him, mistreat him—he'll revert to feral carnivore. Take his litter brother, pet him, talk to him, let him sleep with you, but train him—he's a happy, well-behaved house pet. Take another from that same litter, pet him on even days and kick him on odd days. You'll have him so confused that he'll be ruined for either role; he can't survive as a wild animal and he doesn't understand what is expected of a pet. Pretty soon he won't eat, he won't sleep, he can't control his functions; he just cowers and shivers."

"Hm-m-m . . . do you psychologists do such things often?"

"I never have. But it's in the literature . . . and this lad's case parallels it. He's undergone a series of traumatic experiences in his formative years, the latest of which was yesterday. He's confused and depressed. Like that dog, he may snarl and bite at any time. He ought not to be exposed to new pressures; he should be cared for where he can be given psychotherapy."

"Phooey!"

The psychological officer shrugged. Colonel Brisby added, "I apologize, doctor. But I know something about this case, with all respect to your training. This lad has been in a good environment the past couple of years." Brisby recalled the farewell he had unwillingly witnessed. "And before that, he was in the hands of Colonel Richard Baslim. Heard of him?"

"I know his reputation."

"If there is any fact I would stake my ship on, it is that Colonel Baslim would *never* ruin a boy. O.K., so the kid has had a rough time. But he has also been succored by one of the toughest, sanest, most humane men ever to wear our uniform. You bet on your dogs; I'll back Colonel Richard Baslim. Now . . . are you advising me not to enlist him?"

The psychologist hesitated. Brisby said, "Well?"

Major Stein interrupted. "Take it easy, Kris; I'm overriding you."

Brisby said, "I want a straight answer, then *I'll* decide."

Dr. Krishnamurti said slowly, "Suppose I record my opinions but state that there are no certain grounds for refusing enlistment?"

"Why?"

"Obviously you want to enlist this boy. But if he gets into trouble—well, my endorsement could get him a medical discharge instead of a sentence. He's had enough bad breaks."

Colonel Brisby clapped him on the shoulder. "Good boy, Kris! That's all, gentlemen."

Thorby spent an unhappy night. The master-at-arms billeted him in senior P.O.s quarters and he was well treated, but embarrassingly aware of the polite way in which those around him did not stare at his gaudy *Sisw* dress uniform. Up till then he had been proud of the way *Sisw's* dress stood out; now he was learning painfully that clothing has its proper background. That night he was conscious of snores around him . . . strangers . . . fraki—and he yearned to be back among People, where he was known, understood, recognized.

He tossed on a harder bed than he was used to and wondered who would get his own?

He found himself wondering whether anyone had ever claimed the hole he still thought of as "home." Would they repair the door? Would they keep it clean and decent the way Pop liked? *What would they do with Pop's leg?*

Asleep, he dreamed of Pop and of *Sisw*, all mixed up. At last, with Grandmother shortened and a raider bearing down, Pop whispered, "*No more bad dreams, Thorby. Never again, Son. Just happy dreams.*"

He slept peacefully then—and awoke in this forbidding place with gabbling fraki all around him. Breakfast was substantial but not up to Aunt Athena's high standards; however he was not hungry.

After breakfast he was quietly tasting his misery when he was required to undress and submit to in-

dignities. It was his first experience with medical men's offhand behavior with human flesh—he loathed the poking and prodding.

When the commanding officer sent for him Thorby was not even cheered by seeing the man who knew Pop. This room was where he had had to say a last "good-business" to Father; the thoughts lingering there were not good.

He listened listlessly while Brisby explained. He woke up a little when he understood that he was being offered status—not much, he gathered. But status. The fraki had status among themselves. It had never occurred to him that fraki status could matter even to fraki.

"You don't have to," Colonel Brisby concluded, "but it will make simpler the thing Colonel Baslim wanted me to do—find your family, I mean. You would like that, wouldn't you?"

Thorby almost said that he knew where his Family was. But he knew what the colonel meant: his own sib, whose existence he had never quite been able to imagine. Did he really have blood relatives somewhere?

"I suppose so," he answered slowly. "I don't know."

"Hm-m-m . . ." Brisby wondered what it was like to have no frame to your picture. "Colonel Baslim was anxious to have me locate your family. I can handle it easier if you are officially one of us. Well? It's Guardsman Third Class . . . thirty credits a month, all you can eat and

not enough sleep. And glory. A meager amount."

Thorby looked up. "This is the same Fam . . . service my Pop . . . Colonel Baslim, you call him . . . was in? He really was?"

"Yes. Senior to what you will be. But the same service. I think you started to say 'family.' We like to think of the Service as one enormous family. Colonel Baslim was one of the more distinguished members of it."

"Then I want to be adopted."

"Enlisted."

"Whatever the word is."

XVI

Fraki weren't bad when you got to know them.

They had their secret language, even though they thought they talked Interlingua. Thorby added a few dozen verbs and a few hundred nouns as he heard them; after that he tripped over an occasional idiom. He learned that his light-years as a trader were respected, even though the People were considered odd. He didn't argue; fraki couldn't know better.

H. G. C. *Hydra* lifted from Hekate, bound for the Rim worlds. Just before jump a money order arrived accompanied by a supercargo's form which showed the draft to be one eighty-third of *Sisu's* appreciation from Jubbulpore to Hekate—as if, thought Thorby, he were a girl being swapped. It was an uncomfortably large sum and Thorby

could find no entry charging him interest against a capital share of the ship—which he felt should be there for proper accounting; it wasn't as if he had been born in the ship. Life among the People had made the beggar boy conscious of money in a sense that alms never could—books must balance and debts must be paid.

He wondered what Pop would think of all that money. He felt easier when he learned that he could deposit it with the Paymaster.

With the draft was a warm note, wishing him good business wherever he went and signed: "Love, Mother." It made Thorby feel better and much worse.

A package of belongings arrived with a note from Fritz: "Dear Brother, Nobody briefed me about recent mysterious happenings, but things were crisp around the old ship for a few days. If such were not unthinkable, I would say there had been a difference of opinion at highest level. Me, I have no opinions, except that I miss your idle chatter and blank expressions. Have fun and be sure to count your change. Fritz.

"P.S. The play was an artistic success—and Loen *is* cuddly."

Thorby stored his *Sisn* belongings; he was trying to be a Guardsman and they made him uncomfortable. He discovered that the guard was not the closed corporation the People were; it required no magic to make a Guardsman if a man had what it took, because nobody cared where a man came from or what he had been.

The *Hydra* drew its company from many planets; there were machines in BuPersonnel to ensure this. Thorby's shipmates were tall and short, bird-boned and rugged, smooth and hairy, mutated and superficially unmutated. Thorby hit close to norm and his Free Trader background was merely an acceptable eccentricity; it made him a spaceman of sorts even though a recruit.

In fact, the only hurdle was that he was a raw recruit. "Guardsman 3/c" he might be but a boot he would remain until he proved himself, most especially since he had not had boot training.

But he was no more handicapped than any recruit in a military outfit having proud *esprit de corps*. He was assigned a bunk, a mess, a working station, and a petty officer to tell him what to do. His work was compartment cleaning, his battle station was runner for the Weapons Officer in case battle phones should fail—it meant that he was available to fetch coffee.

Otherwise he was left in peace. He was free to join a bull session as long as he let his seniors sound off, he was invited into card games when a player was needed, he was not shut out of gossip, and he was privileged to lend jumpers and socks to seniors who happened to be short. Thorby had had experience at being junior; it was not difficult.

The *Hydra* was heading out for patrol duty; the mess talk centered around "hunting" prospects. The

Hydra had fast "legs," three hundred gravities; she sought action with outlaws where a merchantman such as the *Sisu* would avoid it if possible. Despite her large complement and heavy weapons, the *Hydra* was mostly power plant and fuel tanks.

Thorby's table was headed by his petty officer, Ordnanceman 2/c Peebie, known as "Decibel." Thorby was eating one day with his ears tuned down, while he debated visiting the library after dinner or attending the stereo show in the messroom, when he heard his nickname: "Isn't that right, Trader?"

Thorby was proud of the nickname. He did not like it in Peebie's mouth but Peebie was a self-appointed wit—he would greet Thorby with the nickname, inquire solicitously, "How's business?" and make gestures of counting money. So far, Thorby had ignored it.

"Isn't what right?"

"Why'n't y'keep y're ears open? Can't you hear anything but rustle and clink? I was telling 'em what I told the Weapons Officer: the way to rack up more kills is to go after 'em, not pretend to be a trader, too scared to fight and too fat to run."

Thorby felt a simmer. "Who," he said, "told you that traders were scared to fight?"

"Quit pushin' that stuff! Whoever heard of a trader burning a bandit?"

Peebie may have been sincere; kills made by traders received no

publicity. But Thorby's burn increased. "I have."

Thorby meant that he had heard of traders' burning raiders; Peebie took it as a boast. "Oh, you did, did you? Listen to that, men—our peddler is a hero. He's burned a bandit all by his own little self! Tell us about it. Did you set fire to his hair? Or drop potassium in his beer?"

"I used," Thorby stated, "a Mark XIX one-stage target-seeker, made by Bethlehem-Antares and armed with a 20 megaton plutonium warhead. I launched a timed shot on closing to beaming range on a collision-curve prediction."

There was silence. Finally Peebie said coldly, "Where did you read that?"

"It's what the tape showed after the engagement. I was senior starboard fire-controlman. The portside computer was out—so I know it was my shot that burned him."

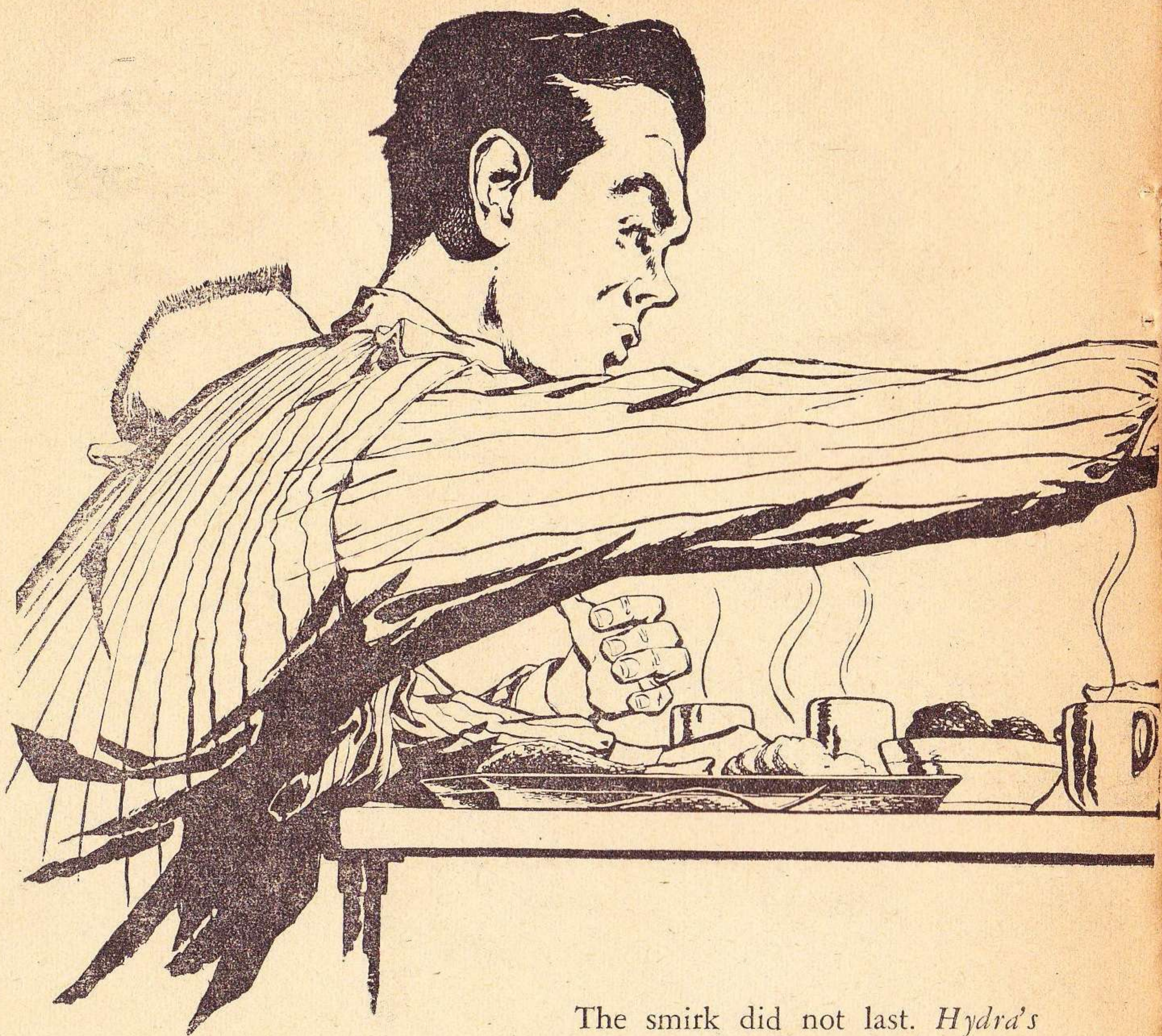
"Now he's a weapons officer! Peddler, don't peddle it here."

Thorby shrugged. "I used to be. A weapons control officer, rather. I never learned much about ordnance."

"Modest, isn't he? Talk is cheap, Trader."

"You should know, Decibel."

Peebie was halted by his nickname; Thorby did not rate such familiarity. Another voice cut in, saying sweetly, "Sure, Decibel, talk is cheap. Now you tell about the big kills you've made. Go ahead." The speaker was nonrated but was a clerk in the execu-



tive office and immune to Peebie's displeasure.

Peebie glowered. "Enough of this prattle," he growled. "Baslim, I'll see you at oh eight hundred in combat control—we'll find out how much you know about fire-control."

Thorby was not anxious to be tested; he knew nothing about the *Hydra's* equipment. But an order is an order; he was facing Peebie's smirk at the appointed time.

The smirk did not last. *Hydra's* instruments bore no resemblance to those in the *Sisu*, but the principles were the same and the senior gunnery sergeant—cybernetics—seemed to find nothing unlikely in an ex-trader knowing how to shoot. He was always looking for talent; people to handle ballistic trackers for the preposterous problems of combat at sub-light-speed were as scarce among Guardsmen as among the People.

He questioned Thorby about the computer he had handled. Presently he nodded. "I've never seen anything



but schematics on a Dusseldorr tandem rig; that approach is obsolete. But if you can get a hit with that junk, we can use you." The sergeant turned to Peebie. "Thanks, Decibel. I'll mention it to the Weapons Officer. Stick around, Baslim."

Peebie looked astonished. "He's got work to do, Sarge."

Sergeant Luter shrugged. "Tell your leading P.O. that I need Baslim here."

Thorby had been shocked to hear *Sisu's* beautiful computers called "junk." But shortly he knew what

Luter meant; the massive brain that fought for the *Hydra* was a genius among computers. Thorby would never control it alone—but soon he was an acting Ordnanceman 3/c (cybernetics) and relatively safe from Peebie's wit. He began to feel like a Guardsman—very junior but an accepted shipmate.

Hydra was cruising above speed-of-light toward the Rim world Ultima Thule, where she would refuel and start prowling for outlaws.

No query had reached the ship concerning Thorby's identity. He was contented with his status in Pop's old outfit; it made him proud to feel that Pop would be proud of him. He did miss *Sisu*, but a ship with no women was simpler to live in; compared with *Sisu* the *Hydra* had no restrictive regulations.

But Colonel Brisby did not let Thorby forget why he had been enlisted. Commanding Officers are many linkages away from a recruit; a nonrated man might not lay eyes on his skipper except at inspections. But Brisby sent for Thorby repeatedly.

Brisby received authorization from the Exotic Corps to discuss Colonel Baslim's report with Baslim's courier, bearing in mind the critical classification of the subject. So Brisby called Thorby in.

Thorby was first warned of the necessity of keeping his mouth shut. Brisby told him that the punishment for blabbing would be as heavy as a court-martial could hand out. "But that's not the point. We have to be sure that the question never arises. Otherwise we can't discuss it."

Thorby hesitated. "How can I know that I'll keep my mouth shut when I don't know what it is?"

Brisby looked annoyed. "I can order you to."

"Yes, sir. And I'll say, 'Aye aye, sir.' But does that make you certain that I wouldn't risk a court-martial?"

"But— This is ridiculous! I want to talk about Colonel Baslim's work.

But you're to keep your yap shut, you understand me? If you don't, I'll tear you to pieces with my bare hands. No young punk is going to quibble with me where the Old Man's work is concerned!"

Thorby looked relieved. "Why didn't you say it was that, Skipper? I wouldn't blab about anything of Pop's—why, that was the first thing he taught me."

"Oh." Brisby grinned. "I should have known. O.K."

"I suppose," Thorby added thoughtfully, "that it's all right to talk to *you*."

Brisby looked startled. "I hadn't realized that this cuts two ways. But it does. I can show you a dispatch from his corps, telling me to discuss his report with you. Would that convince you?"

Brisby found himself showing a "Most Secret" dispatch to his most junior, acting petty officer, to convince said junior that his C.O. was entitled to talk with him. At the time it seemed reasonable; it was not until later that the colonel wondered.

Thorby read the translated dispatch and nodded. "Anything you want, Skipper. I'm sure Pop would agree."

"O.K. You know what he was doing?"

"Well . . . yes and no. I saw some of it. I know what sort of things he was interested in having me notice and remember. I used to carry messages for him and it was always very secret. But I never knew why."

Thorby frowned. "They said he was a spy."

"Intelligence agent sounds better."

Thorby shrugged. "If he was spying, he'd call it that. Pop never minced words."

"No, he never minced words," Brisby agreed, wincing as he recalled being scorched right through his uniform by a dressing-down. "Let me explain. Hm-m-m . . . know any Terran history?"

"Uh, not much."

"It's a miniature history of the race. Long before space travel, when we hadn't even filled up Terra, there used to be dirtside frontiers. Every time new territory was found, you always got three phenomena: traders ranging out ahead and taking their chances, outlaws preying on the honest men—and a traffic in slaves. It happens the same way today, when we're pushing through space instead of across oceans and prairies. Frontier traders are adventurers taking great risks for great profits. Outlaws, whether hill bands or sea pirates or the raiders in space, crop up in any area not under police protection. Both are temporary. But slavery is another matter—the most vicious habit humans fall into and the hardest to break. It starts up in every new land and it's terribly hard to root out. After a culture falls ill of it, it gets rooted in the economic system and laws, in men's habits and attitudes. You abolish it; you drive it underground—there it lurks, ready to spring up again, in the minds of

people who think it is their 'natural' right to own other people. You can't reason with them; you can kill them but you can't change their minds."

Brisby sighed: "Baslim, the Guard is just the policeman and the mailman; we haven't had a major war in two centuries. What we do work at is the impossible job of maintaining order on the frontier, a globe three thousand light-years in circumference—no one can understand how big that is; the mind can't swallow it.

"Nor can human beings police it. It gets bigger every year. Dirtside police eventually close the gaps. But with us, the longer we try the more there is. So to most of us it's a job, an honest job, but one that can never be finished.

"But to Colonel Richard Baslim it was a passion. Especially he hated the slave trade, the thought of it could make him sick at his stomach—I've seen. He lost his leg and an eye—I suppose you know—while rescuing a shipload of people from a slaving compound.

"That would satisfy most officers—go home and retire. Not old Spit-and-Polish! He taught a few years, then he went to the one corps that might take him, chewed up as he was, and presented a plan.

"The Nine Worlds are the backbone of the slave trade. The Sargony was colonized a long time ago, mostly Hindus and Chinese and Irish—those are Terran tribes—and they never accepted Hegemony after they

broke off as colonies. The Nine Worlds don't qualify on human rights and don't want to qualify. So we can't travel there and they can't visit our worlds.

"Colonel Baslim decided that the traffic could be rendered uneconomic if we knew how it worked in the Sargony. He reasoned that slavers had to have ships, had to have bases, had to have markets, that it was not just a vice but a business. So he decided to go there and study it.

"This was preposterous—one man against a nine-planet empire . . . but the Exotic Corps deals in preposterous notions. Even they would probably not have made him an agent if he had not had a scheme to get his reports out. An agent couldn't travel back and forth, nor could he use the mails—there aren't any between us and them—and he certainly couldn't set up an n-space communicator; that would be as conspicuous as a brass band.

"But Baslim had an idea. The *only* people who visit both the Nine Worlds and our own are Free Traders. But they avoid politics like poison, as you know better than I, and they go to great lengths not to offend local customs. However Colonel Baslim had a personal 'in' to them.

"I suppose you know that those people he rescued were Free Traders. He told 'X' Corps that he could report back through his friends. So they let him try. It's my guess that no one knew that he intended to pose as a beggar—I doubt if he planned

it; he was always great at improvising. But he got in and for years he observed and got his reports out.

"That's the background and now I want to squeeze every possible fact out of you. You can tell us about methods—the report I forwarded never said a word about methods. Another agent might be able to use his methods."

Thorby said soberly, "I'll tell you anything I can. I don't know much."

"You know more than you think you do. Would you let the psych officer put you under again and see if we can work total recall?"

"Anything is O.K. if it'll help Pop's work."

"It should. Another thing—" Brisby crossed his cabin, held up a sheet on which was the silhouette of a spaceship. "What ship is this?"

Thorby's eyes widened. "A Sargonese cruiser."

Brisby snatched up another one. "This?"

"Uh, it looks like a slaver that called at Jubbulpore twice a year."

"Neither one," Brisby said savagely, "is anything of the sort. These are recognition patterns out of my files—of ships built by our biggest shipbuilder. If you saw them in Jubbulpore, they were either copies, or bought from us!"

Thorby considered it. "They build ships there."

"So I've been told. But Colonel Baslim reported ships' serial numbers—how he got them I couldn't guess; maybe you can. He claims that the slave trade is getting help from our

own worlds!" Brisby looked unbearably disgusted.

Thorby reported regularly to the Cabin, sometimes to see Brisby, sometimes to be interviewed under hypnosis by Dr. Krishnamurti. Brisby always mentioned the search for Thorby's identity and told him not to be discouraged; such a search took a long time. Repeated mention changed Thorby's attitude about it from something impossible to something which was going to be true soon; he began thinking about his family, wondering who he was? It was going to be nice to know, to be like other people.

Brisby was reassuring himself; he had been notified to keep Thorby off sensitive work the very day the ship jumped from Hekate when he had hoped that Thorby would be identified at once. He kept the news to himself holding fast to his conviction that Colonel Baslim was never wrong and that the matter would be cleared up.

When Thorby was shifted to Combat Control, Brisby worried when the order passed across his desk—that was a "security" area, never open to visitors—then he told himself that a man with no special training couldn't learn anything there that could really affect security and that he was already using the lad in much more sensitive work. Brisby felt that he was learning things of importance—that the Old Man, for example, had used the cover personality of a one-legged beggar to hide two-

legged activities . . . but had actually been a beggar; he and the boy had lived only on alms. Brisby admired such artistic perfection—it should be an example to other agents.

But the Old Man always had been a shining example.

So Brisby left Thorby in combat control. He omitted to make permanent Thorby's acting promotion in order that the record of change in rating need not be forwarded to Bu-Personnel. But he became anxious to receive the dispatch that would tell him who Thorby was.

His executive was with him when it came in. It was in code, but Brisby recognized Thorby's serial number; he had written it many times in reports to 'X' Corps. "Look at this, Stinky! This tells us who our foundling is. Grab the machine; the safe is open."

Ten minutes later they had processed it; it read:

"NULL RESULT FULL IDENT-SEARCH BASLIM THORBY GDSMAN THIRD. AUTH & DRT TRANSFER ANY RECEIVING STATION RETRANSFER HEKATE INVESTIGATION DISPOSITION—CHFBUPERS."

"Stinky, ain't that a mess?"

Stancke shrugged. "It's how the dice roll, Boss."

"I feel as if I had let the Old Man down. He was sure the kid was a citizen."

"I misdoubt there are millions of citizens who would have a bad time proving who they are. Colonel Bas-

lim may have been right—and still it can't be proved."

"I hate to transfer him. I feel responsible."

"Not your fault."

"You never served under Colonel Baslim. He was easy to please . . . all he wanted was one-hundred-per cent perfection. And this doesn't feel like it."

"Quit blaming yourself. You have to accept the record."

"Might as well get it over with. Eddie! I want to see Ordnanceman Baslim."

Thorby noticed that the Skipper looked grim—but then he often did. "Acting Ordnanceman Third Class Baslim reporting, sir."

"Thorby—"

"Yes, sir?" Thorby was startled. The Skipper sometimes used his first name because that was what he answered to under hypnosis—but this was not such a time.

"The identification report on you came."

"Huh?" Thorby was startled out of military manners. He felt a surge of joy—he was going to know who he was!

"They can't identify you." Brisby waited, then said sharply, "Did you understand?"

Thorby swallowed. "Yes, sir. They don't know who I am. I'm not . . . anybody."

"Nonsense! You're still yourself."

"Yes, sir. Is that all, sir? May I go?"

"Just a moment. I have to transfer you back to Hekate." He added

hastily, seeing Thorby's expression, "Don't worry. They'll probably let you serve out your enlistment if you want to. In any case, they can't do anything to you; you haven't done anything wrong."

"Yes, sir," Thorby repeated dully.

Nothing and nobody—He had a blinding image of an old, old nightmare . . . standing on the block, hearing an auctioneer chant his description, while cold eyes stared at him. But he pulled himself together and was merely quiet the rest of the day. It was not until the compartment was dark that he bit his pillow and whispered brokenly, "Pop . . . oh, *Pop!*"

The Guards uniform covered Thorby's legs, but in the showers the tattoo on his left thigh could be noticed. When this happened, Thorby explained without embarrassment what it signified. Responses varied from curiosity, through half disbelief, to awed surprise that here was a man who had been through it—capture, sale, servitude, and miraculously, free again. Most civilians did not realize that slavery still existed; Guardsmen knew better.

No one was nasty about it.

But the day after the null report on identification Thorby encountered "Decibel" Peebie in the showers. Thorby did not speak; they had not spoken much since Thorby had been moved out from under Peebie, even though they sat at the same table. But now Peebie spoke. "Hi, Trader!"

"Hi." Thorby started to bathe.

"What's on your leg? Dirt?"

"Where?"

"On your thigh. Hold still. Let's see."

"Keep your hands to yourself!"

"Don't be so touchy. Turn around to the light. What is it?"

"It's a slaver's mark," Thorby explained curtly.

"No foolin'? So you're a slave?"

"I used to be."

"They put chains on you? Make you kiss your master's foot?"

"Don't be silly!"

"Look who's talking! You know what, Trader boy? I heard about that mark—and I think you had it tattooed yourself. To make big talk. Like that one about how you blasted a bandit ship."

Thorby cut his shower short and got out.

At dinner Thorby was helping himself from a bowl of mashed potatoes. He heard Peebie call out something but his ears filtered out "Decibel's" endless noise.

Peebie repeated it. "Hey, Slave! Pass the potatoes! You know who I mean! Dig the dirt out of your ears!"

Thorby passed him the potatoes, bowl and all, in a flat trajectory, open face of the bowl plus potatoes making perfect contact with the open face of Decibel.

The charge against Thorby was "Assaulting a Superior Officer, the Ship then being in Space in a Condition of Combat Readiness." Peebie appeared as complaining witness.

Colonel Brisby stared over the

mast desk and his jaw muscles worked. He listened to Peebie's account: "I asked him to pass the potatoes . . . and he hit me in the face with them."

"That was all?"

"Well, sir, maybe I didn't say 'please.' But that's no reason—"

"Never mind the conclusions. The fight go any farther?"

"No, sir. They separated us."

"Very well. Baslim, what have you to say for yourself?"

"Nothing, sir."

"Is that what happened?"

"Yes, sir."

Brisby stopped to think, while his jaw muscles twitched. He felt angry, an emotion he did not permit himself at mast—he felt let down. Still, there must be more to it.

Instead of passing sentence he said, "Step aside. Colonel Stancke—"

"Yes, sir?"

"There were other men present. I want to hear from them."

"I have them standing by, sir."

"Very well."

Thorby was convicted—three days bread and water, solitary, sentence suspended, thirty days probation; acting-rank stricken.

Decibel Peebie was convicted—court trial waived when Brisby pointed out how the book could be thrown at him—of "Inciting to Riot, specification: using derogatory language with reference to another Guardsman's Race, Religion, Birthplace, or Condition previous to entering Service, the Ship then being et cetera. ". . . Sentence three days

B & W, sol., suspended, reduction one grade, ninety days probation in ref. B & W, sol., only.

The colonel and vice colonel went back to Brisby's office. Brisby was looking glum; most upset him at best. Stancke said, "Too bad you had to clip the Baslim kid. I think he was justified."

"Of course he was. But 'Inciting to Riot' is no excuse for riot. Nothing is."

"Sure, you had to. But I don't like that Peebie character. I'm going to make a careful study of his efficiency marks."

"Do that. But, confound it, Stinky—I have a feeling I started the fight myself."

"*Hub?*"

"Two days ago I had to tell Baslim that we hadn't been able to identify him. He walked out in a state of shock. I should have listened to my psych officer. The lad has scars that make him irresponsible under the right—I mean the 'wrong'—stimulus. I'm glad it was mashed potatoes and not a knife."

"Oh, come now, Boss! Mashed potatoes are hardly a deadly weapon."

"You weren't here when he got the bad news. Not knowing who he is hurts him."

Stancke's pudgy face pouted in thought. "Boss? How old was this kid when he was captured?"

"Eh? Kris thinks he was about four."

"Skipper, that backwoods place

where you were born: at what age were you fingerprinted, blood-typed, retina-photographed and so forth?"

"Why, when I started school."

"Me, too. I'll bet they wait that long most places."

Brisby blinked. "That's why they wouldn't have anything on him!"

"Maybe. But on Riff they take identity on a baby before he leaves the delivery room."

"My people, too. But—"

"Sure, sure! It's common practice. But *how?*"

Brisby looked blank, then banged the desk. "*Footprints!* And we didn't send them in." He slapped the talkie. "Eddie! Get Baslim here on the double!"

Thorby was glumly removing the chevron he had worn by courtesy for so short a time. He was scared by the peremptory order; it boded ill. But he hurried. Colonel Brisby glared at him. "Baslim, take off your shoes!"

"Sir?"

"*Take off your shoes!*"

Brisby's dispatch questioning failure to identify and supplying BuPers with footprints was answered in forty-eight hours. It reached the *Hydra* as she made her final approach to Ultima Thule. Colonel Brisby decoded it when the ship had been secured dirtside.

It read: "GUARDSMAN THORBY BASLIM IDENTIFIED MISSING PERSON THOR BRADLEY RUDBEK TERRA NOT HEKATE TRANSFER RUDBEK FASTEST MILORCOM TERRA DISCHARGE
ASTOUNDING SCIENCE FICTION

ARRIVAL NEXTKIN NOTIFIED
REPEAT FASTEST CHFBUPERS."

Brisby was chuckling. "Colonel Baslim is *never* wrong. Dead or alive, he's never wrong!"

"Boss—"

"Huh?"

"Read it again. Notice who he is."

Brisby reread the dispatch. Then he said in a hushed voice, "Why do things like this always happen to *Hydra*?" He strode over and snatched the door. "Eddie!"

Thorby was on beautiful Ultima Thule for two hours and twenty-seven minutes; what he saw of the famous scenery after coming three hundred light-years was the field between the *Hydra* and Guard Mail Courier *Ariel*. Three weeks later he was on Terra. He felt dizzy.

XVII

Lovely Terra, Mother of Worlds! What poet, whether or not he has been privileged to visit her, has not tried to express the homesick longing of men for mankind's birthplace . . . her cool green hills, cloud-graced skies, restless oceans, her warm maternal charm.

Thorby's first sight of legendary Earth was by view screen of G.M.C. *Ariel*. Guard Captain N'Gangi, skipper of the mail ship, stepped up the gain and pointed out arrow-sharp shadows of the Egyptian Pyramids. Thorby didn't realize the historical significance and was looking in the wrong place. But he enjoyed seeing

a planet from space; he had never been thus privileged before.

Thorby had a dull time in the *Ariel*. The mail ship, all legs and tiny payload, carried a crew of three engineers and three astrogators, all of whom were usually on watch or asleep. He started off badly because Captain N'Gangi had been annoyed by a "hold for passenger" dispatch from the *Hydra*—mail ships don't like to hold; the mail must go through.

But Thorby behaved himself, served the pre-cooked meals, and spent his time ploughing through the library (a drawer under the skipper's bunk); by the time they approached Sol the commanding officer was over his pique . . . to have the feeling brought back by orders to land at Galactic Enterprises' field instead of Guard Base. But N'Gangi shook hands as he gave Thorby his discharge and the paymaster's draft.

Instead of scrambling down a rope ladder—mail couriers have no hoists—Thorby found that a lift came up to get him. It leveled off opposite the hatch and offered easy exit. A man in spaceport uniform of Galactic Enterprises met him. "Mr. Rudbek?"

"That's me—I guess."

"This way, Mr. Rudbek, if you please."

The elevator took them below ground and into a beautiful lounge. Thorby, mussed and none too clean from weeks in a crowded steel box, was uneasy. He looked around.

Eight or ten people were there, two of whom were a gray-haired, self-assured man and a young woman. Each was dressed in more than a year's pay for a Guardsman. Thorby did not realize this in the case of the man but his Trader's eye spotted it in the female; it took money to look that demurely provocative.

In his opinion the effect was damaged by her high-fashion hairdo, a rising structure of green blending to gold. He blinked at the cut of her clothes; he had seen fine ladies in Jubbulpore where the climate favored clothing only for decoration, but the choice in skin display seemed different here. Thorby realized uneasily that he was again going to have to get used to new customs.

The important-looking man met him as he got out of the lift. "Thor! Welcome home, lad!" He grabbed Thorby's hand. "I'm John Weemsby. Many is the time I've bounced you on my knee. Call me Uncle Jack. And this is your cousin Leda."

The girl with green hair placed hands on Thorby's shoulders and kissed him. He did not return it; he was much too startled. She said, "It's wonderful to have you home, Thor."

"Uh, thanks."

"And now you must greet your grandparents," Weemsby announced. "Professor Bradley . . . and your Grandmother Bradley."

Bradley was older than Weemsby, slight and erect, a paunch, neatly trimmed beard; he was dressed like

Weemsby in daytime formal jacket, padded tights and short cape, but not as richly. The woman had a sweet face and alert blue eyes; her clothing did not resemble that of Leda but seemed to suit her. She pecked Thorby on the cheek and said gently, "It's like having my son come home."

The elderly man shook hands vigorously. "It's a miracle, Son! You look just like our boy—your father. Doesn't he, dear?"

"He does!"

There was chitchat which Thorby answered as well as he could. He was confused and terribly self-conscious; it was more embarrassing to meet these strangers who claimed him as their blood than it had been to be adopted into *Sisu*. These old people—they were his grandparents? Thorby couldn't believe it even though he supposed they were.

To his relief the man—Weemsby?—who claimed to be his Uncle Jack said with polite authority, "We had better go. I'll bet this boy is tired. So I'll take him home. Eh?"

The Bradleys murmured agreement; the party moved toward the exit. Others in the room, all men none of whom had been introduced, went with them. In the corridor they stepped on a glideway which picked up speed until walls were whizzing past. It slowed as they neared the end—miles away, Thorby judged—and was stationary for them to step off.

This place was public; the ceiling was high and the walls were lost in crowds; Thorby recognized the flavor of a transport station. The silent men

with them moved into blocking positions and their party proceeded in a direct line regardless of others. Several persons tried to break through and one man managed it. He shoved a microphone at Thorby and said rapidly, "Mr. Rudbek, what is your opinion of the—"

A guard grabbed him. Mr. Weemsby said quickly, "Later, later! Call my office; you'll get the story."

Lenses were trained on them, but from high up and far away. They moved into another passageway, a gate closed behind them. Its glide-way deposited them at an elevator which took them to a small enclosed airport. A craft was waiting and beyond it a smaller one, both sleek,

smooth, flattened ellipsoids. Weemsby stopped. "You'll be all right?" he asked Mrs. Bradley.

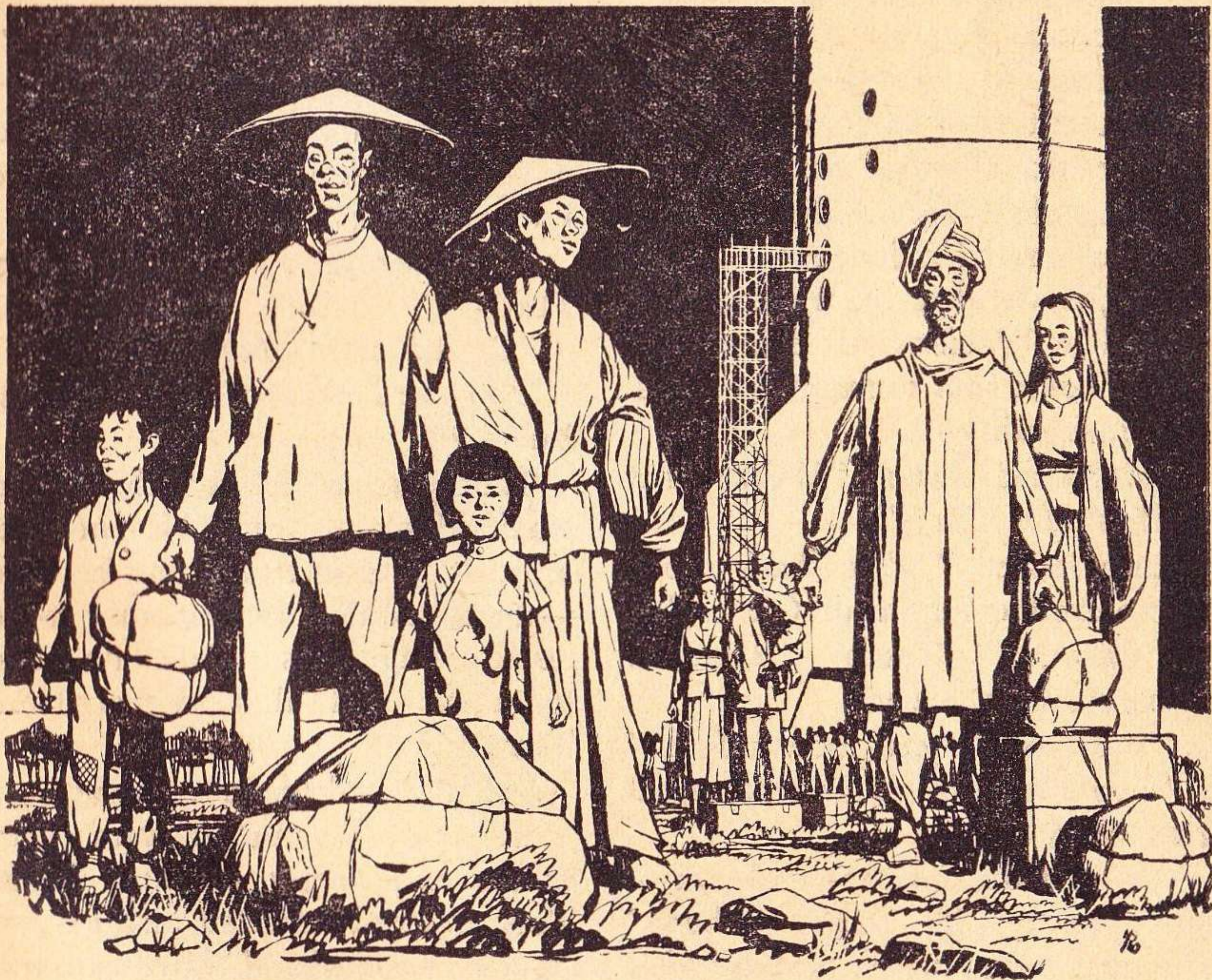
"Oh, surely," answered Professor Bradley.

"The car was satisfactory?"

"Excellent. A nice hop—and, I'm sure, a good one back."

"Then we'll say good-by. I'll call you—when he's had a chance to get oriented. You understand?"

"Oh, surely. We'll be waiting." Thorby got a peck from his grandmother, a clap on the shoulder from his grandfather. Then he embarked with Weemsby and Leda in the larger car. Its skipper saluted Mr. Weemsby, then saluted Thorby—Thorby managed to return it.



Mr. Weemsby paused in the central passage. "Why don't you kids go forward and enjoy the hop? I've got calls waiting."

"Certainly, Daddy."

"You'll excuse me, Thor? Business goes on—it's back to the mines for Uncle Jack."

"Of course . . . Uncle Jack."

Leda led him forward and they sat down in a transparent bubble on the forward surface. The car rose straight up until they were several thousand feet high. It made a traffic-circle sweep over a desert plain, then headed north toward mountains.

"Comfy?" asked Leda.

"Quite. Uh, except that I'm dirty and mussed."

"There's a shower abaft the lounge. But we'll be home shortly—so why not enjoy the trip?"

"All right." Thorby did not want to miss any of fabulous Terra. It looked, he decided, like Hekate—no, more like Woolamurra, except that he had never seen so many buildings. The mountains—

He looked again. "What's that white stuff? Alum?"

Leda looked. "Why, that's snow. Those are the Sangre de Cristos."

"'Snow,'" Thorby repeated. "That's frozen water."

"You haven't seen snow before?"

"I've heard of it. It's not what I expected."

"It *is* frozen water—and yet it isn't exactly; it's more feathery." She reminded herself of Daddy's

warning; she must not show surprise at anything.

"You know," she offered, "I think I'll teach you to ski."

Many miles and some minutes were used explaining what skiing was and why people did it. Thorby filed it away as something he might try, more likely not. Leda said that a broken leg was "all that could happen." This is fun? Besides, she had mentioned how cold it could be. In Thorby's mind cold was linked with hunger, beatings, and fear. "Maybe I could learn," he said dubiously, "but I doubt it."

"Oh, sure you can!" She changed the subject. "Forgive my curiosity, Thor, but there is a faint accent in your speech."

"I didn't know I had an accent—"

"I didn't mean to be rude."

"You weren't. I suppose I picked it up in Jubbulpore. That's where I lived longest."

"'Jubbulpore' . . . let me think. That's—"

"Capital of the Nine Worlds."

"Oh, yes! One of our colonies, isn't it?"

Thorby wondered what the Sargon would think of that. "Uh, not exactly. It is a sovereign empire now—their tradition is that they were never anything else. They don't like to admit that they derive from Terra."

"What an odd point of view."

A steward came forward with drinks and dainty nibbling foods. Thor accepted a frosted tumbler and sipped cautiously. Leda continued,

"What were you doing there, Thor? Going to school?"

Thorby thought of Pop's patient teaching, decided that was not what she meant. "I was begging."

"What?"

"I was a beggar."

"Excuse me?"

"A beggar. A licensed mendicant. A person who asks for alms."

"That's what I thought you said," she answered. "I know what a beggar is; I've read books. But—excuse me, Thor; I'm just a home girl—I was startled."

She was not a "home girl"; she was a sophisticated woman adjusted to her environment. Since her mother's death she had been her father's hostess and could converse with people from other planets with aplomb, handling small talk of a large dinner party with gracious efficiency in three languages. Leda could ride, dance, sing, swim, ski, supervise a household, do arithmetic slowly, read and write if necessary, and make the proper responses. She was an intelligent, pretty, well-intentioned woman, culturally equivalent to a superior female headhunter—able, adjusted and skilled.

But this strange lost-found cousin was a new bird to her. She said hesitantly, "Excuse my ignorance, but we don't have anything like that on Earth. I have trouble visualizing it. Was it terribly unpleasant?"

Thorby's mind flew back; he was squatting in lotus seat in the great Plaza with Pop sprawled beside him,

talking. "It was the happiest time of my life," he said simply.

"Oh." It was all she could manage.

But Daddy had left them so that she could get to work. Asking a man about himself never failed. "How does one get started, Thor? I would not know where to begin."

"I was taught. You see, I was up for sale and"—he thought of trying to explain Pop, decided to let it wait—"an old beggar bought me."

"'Bought' you?"

"I was a slave."

Leda felt as if she had stepped off into water over her head. Had he said "cannibal," "vampire," or "warlock" she would have been no more shocked. She came up, mentally gasping. "Thor—if I have been rude, I'm sorry—but we all are curious about the time—goodness! It's been over fifteen years—that you have been missing. But if you don't want to answer, just say so. You were a nice little boy and I was fond of you—please don't slap me down if I ask the wrong question."

"You don't believe me?"

"How could I? There haven't been slaves for centuries."

Thorby wished that he had never had to leave the *Hydra*, and gave up. He had learned in the Guard that the slave trade was something many fraki in the inner worlds simply hadn't heard of. "You knew me when I was little?"

"Oh, yes!"

"Why can't I remember you? I

can't remember anything back before I was a . . . I can't remember Terra."

She smiled. "I'm three years older than you. When I saw you last, I was six—so I remember—and you were three, so you've forgotten."

"Oh." Thorby decided that here was a chance to find out his own age. "How old are you now?"

She smiled wryly. "Now I'm the same age you are—and I'll stay that age until I'm married. Turn about, Thorby—when you ask the wrong question, I shan't be offended. You don't ask a lady her age on Terra; you assume that she is younger than she is."

"So?" Thorby pondered this curious custom. Among People a female claimed the highest age she could, for status.

"So. For example, your mother was a lovely lady but I never knew her age. Perhaps she was twenty-five when I knew her, perhaps forty."

"You knew my parents?"

"Oh, yes! Uncle Creighton was a darling with a boomy voice. He used to give me handfuls of dollars to buy candy sticks and balloons with my own sweaty little hand." She frowned. "But I can't remember his face. Isn't that silly? Never mind, Thor; tell me anything you want to. I'd be happy to hear anything you don't mind telling."

"I don't mind," Thorby answered, "but, while I must have been captured, I don't remember it. As far as I remember, I never had parents; I was a slave, several places and

masters—until I reached Jubbulpore. Then I was sold again and it was the luckiest thing that ever happened to me."

Leda lost her company smile. She said in a still voice, "You *really* mean it. Or do you?"

Thorby suffered the ancient annoyance of the returned traveler. "If you think that slavery has been abolished . . . well, it's a big galaxy. Shall I roll up my trouser leg and show you?"

"Show me what, Thor?"

"My slave's mark. The tattoo a factor uses to identify merchandise." He rolled up his left trouser. "See? The date is my manumission—it's Sargonese, a sort of Sanskrit; I don't suppose you can read it."

She stared, round-eyed. "How horrible! How perfectly horrible!"

He covered it. "Depends on your master. But it's not good."

"But why doesn't somebody *do* something?"

He shrugged. "It's a long way off."

"But—" She stopped as her father came out.

"Hi, kids. Enjoying the hop, Thor?"

"Yes, sir. The scenery is wonderful."

"The Rockies aren't a patch on the Himalayas. But our Tetons are pretty wonderful . . . and there they are. We'll be home soon." He pointed. "See? There's Rudbek."

"That city is named Rudbek?"

"It used to be Johnson's Hole, or some such, when it was a village.

But I wasn't speaking of Rudbek city; I meant our home—your home—'Rudbek.' You can see the tower above the lake . . . with the Grand Tetons behind it. Most magnificent setting in the world. You're Rudbek of Rudbek at Rudbek . . . 'Rudbek Cubed,' your father called it . . . but he married into the name and wasn't impressed by it. I like it; it has a rolling thunder, and it's good to have a Rudbek back in residence."

Thorby wallowed in his bath, from needle shower, through hot pool whose sides and bottom massaged him with a thousand fingers, to lukewarm swimming plunge that turned cooler while he was in it. He was cautious in the last, having never learned to swim.

And he had never had a valet. He had noticed that Rudbek had dozens of people in it—not many for its enormous size, but he began to realize that most of them were servants. This impressed him not as much as it might have; he knew how many, many slaves staffed any rich household on Jubbul; he did not know that a living servant on Terra was the peak of ostentatious waste, greater than sedan chairs on Jubbul, much greater than the lavish hospitality at Gatherings. He simply knew that valets made him nervous and now he had a squad of three. Thorby refused to let anyone bathe him; he gave in to being shaved because the available razor was a classic straight-edge and his own would not work on Rudbek's power supply. Other-

wise he merely accepted advice about unfamiliar clothing.

The clothing waiting for him in wardrobe loads did not fit perfectly; the chief valet snipped and rewelded, muttering apologies. He had Thorby attired, ruffled jabot to tights, when a footman appeared. "Mr. Weemsby sends greetings to Rudbek and asks that he come to the great hall."

Thorby memorized the route as he followed.

Uncle Jack, in midnight and scarlet, was waiting with Leda, who was wearing . . . Thorby was at loss; colors kept changing and some of it was hardly there. But she looked well. Her hair was now iridescent.

Uncle Jack said jovially, "There you are, lad! Refreshed? We won't wear you out, just a family dinner."

The dinner included twelve people and started with a reception in the great hall, drinks, appetizers, passed by soft-footed servants, music, while others were presented. "Rudbek of Rudbek, Lady Wilkes—your Aunt Jennifer, lad, come from New Zealand to welcome you." "Rudbek of Rudbek, Judge Bruder and Mrs. Bruder—Judge is Chief Counsel," and so on. Thorby memorized names, linked them with faces, thinking that it was like the Family—except that relationship titles were not precise definitions; he had trouble estimating status. He did not know which of eighty-odd relations "cousin" meant with respect to Leda, though he supposed that she must be a first cross-cousin, since Uncle Jack had a surname not Rudbek; so he thought

of her as taboo—which would have dismayed her.

He did realize that he must be in the sept of a wealthy family. But what his status was nobody mentioned, nor could he figure out status of others. Two of the youngest women dropped him curtseys. He thought the first had stumbled and tried to help her. But when the second did it, he answered by pressing his palms together.

The older women seemed to expect him to treat them with respect. Judge Bruder he could not classify. He hadn't been introduced as a relative—yet this was a family dinner. He fixed Thorby with an appraising eye and barked, "Glad to have you back, young man! There should be a Rudbek at Rudbek. Your holiday has caused trouble—hasn't it, John?"

"More than a bit," agreed Uncle Jack, "but we'll get straightened out. No hurry. Give the lad a chance to find himself."

"Surely. Thumb in the dike."

Thorby wondered what a dike was, but Leda came up and placed her hand in his elbow. She steered him to the banquet hall; others followed. Thorby sat at one end of a long table with Uncle Jack at the other; Aunt Jennifer was on Thorby's right and Leda on his left. Aunt Jennifer started asking questions and supplying answers. He admitted that he had just left the Guard, she had trouble understanding that he had not been an officer; he let it ride and mentioned nothing about Jubbulpore—Leda had made him wary of the subject.

Then Leda turned from Judge Bruder and spoke to Thorby; Aunt Jennifer turned to the man on her right.

The tableware was in part strange, especially chop tongs and skewers. But spoons were spoons and forks were forks; by keeping his eye on Leda he got by. Food was served formally, but he had seen Grandmother so served; table manners were no great trouble to a man coached by Fritz's sharp-tongued kindness.

Not until the end was he stumped. The Butler-in-Chief presented him with an enormous goblet, splashed wetness in it and waited. Leda said softly, "Taste it, nod, and put it down." He did so; as the butler moved away, she whispered "Don't drink it, it's bottled lightning. By the way, I told Daddy, 'No toasts.'"

At last the meal was over. Leda again cued him. "Stand up." He did and everyone followed.

The "family dinner" was just a beginning. Uncle Jack was in evidence only at dinners, and not always then. He excused his absences with, "Someone has to keep the fires burning. Business won't wait." As a trader Thorby understood that Business was Business, but he looked forward to a long talk with Uncle Jack, instead of so much social life. Leda was helpful but not informative. "Daddy is awfully busy. Different companies and things. It's too complicated for me. Let's hurry; the others are waiting."

Others were always waiting. Danc-

ing, skiing—Thorby loved the flying sensation but considered it a chancy way to travel, particularly when he fetched up in a snowbank, having barely missed a tree—card parties, dinners with young people at which he took one end of the table and Leda the other, more dancing, hops to Yellowstone to feed the bears, midnight suppers. Leda's friends were fun and Thorby gradually became sophisticated in small talk. The young men called him "Thor" and Leda "Slugger." They treated him with familiar respect, but they did not press personal questions.

But he began to tire of fun. A Gathering was wonderful but a working man expects to work.

The matter came to a head. A dozen of them were skiing and Thorby was alone on the practice slope. A man glided down and snowplowed to a stop. People hopped in and out at the estate's field day and night; this newcomer was Joel de la Croix.

"Hi, Thor."

"Hi, Joe."

"I've been wanting to speak to you. I've an idea I would like to discuss, after you take over. Can I arrange to see you, without being baffled by forty-seven secretaries?"

"When I take over?"

"Or later, at your convenience. I want to talk to the boss; after all, you're the heir. I don't want to discuss it with Weemsby . . . even if he would see me." Joel looked anxious. "All I want is ten minutes. Say

five if I don't interest you at once. 'Rudbek's promise.' Eh?"

Thorby tried to translate. Take over? Heir? He answered carefully, "I don't want to make any promises now, Joel."

De la Croix shrugged. "O.K. But think about it. I can prove it's a moneymaker."

"I'll think about it," Thorby agreed. He started looking for Leda. He got her alone and told her what Joel had said.

She frowned slightly. "It probably wouldn't hurt, since you aren't promising anything. Joel is a brilliant engineer. But better ask Daddy."

"That's not what I meant. What did he mean: 'take over'?"

"Why, you will, eventually."

"Take over *what*?"

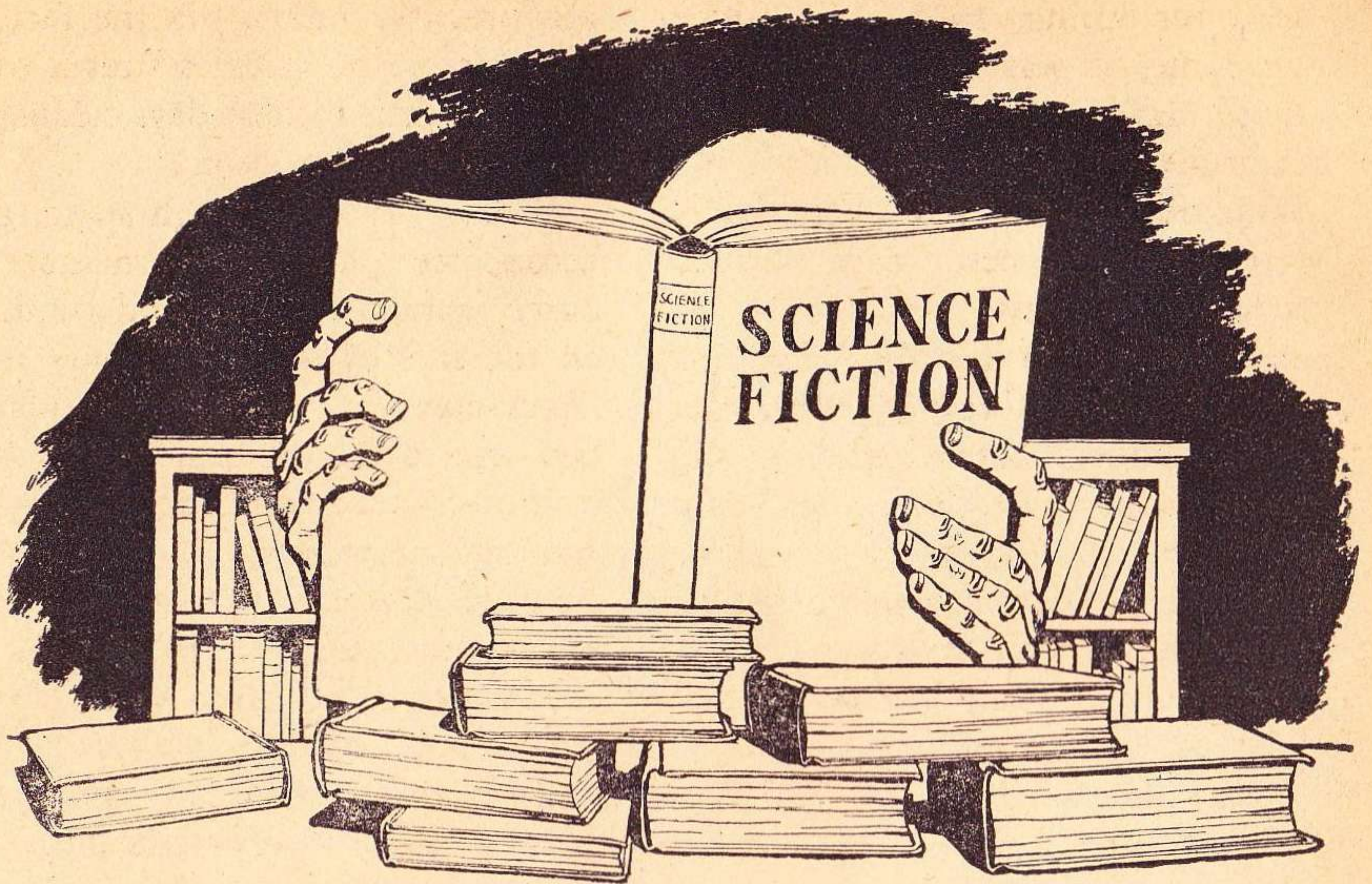
"Everything."

"What do you mean by 'everything'?"

"Why, why—" She swept an arm at mountain and lake, at Rudbek city beyond. "All of it. Rudbek. Lot of things. Things personally yours, like your sheep station in Australia and the house in Majorca. And business things. Rudbek Associates is many things—here and other planets. I couldn't begin to describe them. But they're yours, or maybe 'ours' for the whole family is in it. But you are the Rudbek of Rudbek. As Joel said, the heir."

Thorby looked at her, while his lips grew dry. He licked them and said, "Why wasn't I told?"

TO BE CONCLUDED



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BY P. SCHUYLER MILLER

SCIENCE FICTION

I'd been collecting books and clippings for a very different column, which the newspapers were threatening to make obsolete, when three recent books forced themselves and this set of comments on me. They are your editor, John W. Campbell, Jr.'s "Islands of Space" (Fantasy Press; 224 pp.; \$2.50), Murray Leinster's "Colonial Survey" (Gnome Press; 185 pp.; \$3.00), and Hal Clement's

"Cycle of Fire" (Ballantine Books; 185 pp.; \$2.75 or 35¢). All three seem to me to be examples of what some readers mean when they say they want "real" *science* fiction—yet they're about as different as three books could be.

John Campbell's book was written a rather long time ago, as a sequel to his "Arcot, Wade and Morey" novelettes which Fantasy Press collected in "The Black Star Passes." It was in the grand old *Amazing Quar-*

terly for Spring, 1931 . . . and believe me, it was a world-beater in those days. Although it has been carefully modernized, it's old-fashioned now. It is also very characteristic of the best "hard" science fiction of its day.

Let's dispose of the plot first. Arcot, Wade, Morey, and their computer, Fuller, put together a ship which will travel faster than light. In the previous stories they had come up with the first convincing answer to the problem of enduring accelerations of more than a few gravities, with the molecular drive that simply makes all molecules in its field—ship, cargo and crew alike—move in the same direction at the same time. This time they give us what may have been the first "space-warp" drive—I can't be sure without my magazines where I can consult them—and was certainly the first to be spelled out in detail. The concept was simple; to make it plausible wasn't—unless you were John Campbell. Now it's one of our most maligned clichés. With this out-of-space drive they hightail it among the stars. They locate the fugitive planets of the Black Star with which they had battled in the previous book . . . find a frozen cemetery-world of a lost race . . . then head out for another galaxy. (For reasons I have never understood, they passed up our nearest neighbor, the Andromeda universe, at a couple of million light-years' distance and landed in an unidentified one a round ten million light-years away. At a guess, John

was probably rubbing in the fact of the plurality of galaxies strewn over distances that in those days compared with the national debt.)

In this voyage through space, our heroes meet—and beat—a number of purely natural dangers, and wind up on the side of the Good Guys in a knock-down-and-drag-out interplanetary war in the other galaxy. It was strictly formula stuff, but it was a formula that nobody else had really tried—a formula that mixed pure melodrama, later to be known as "space opera," with a Cook's tour of oddities of the universe, and *explained* or seemed to explain the most outlandish effects and inventions in simple, plausible language. "Doc" Smith invented the thing in his "Skylark of Space," but John Campbell took it over and made it strictly his own.

I may be doing Doc an injustice, and I'd have to go back and study those 1928 *Amazing Stories* to be sure, but it strikes me that his explanations of what happened to the "Skylark" and its crew were pretty largely scientific double-talk, so smoothly and wonderfully delivered that you believed every word of it. The "super-physics" in "Islands of Space" and John Campbell's other stories was different: it seemed to make sense in terms of what you'd just learned in school. It was a kind of extrapolation of the physics of the day *if* there should be a breakthrough of the kind John meticulously explained. You were almost persuaded that you could go down cellar

and make a molecular drive or a hyperspace whizzbang yourself—except that you didn't have quite the right gadgets to work with.

Maybe the explanations *didn't* explain anything—after all, we've had a quarter of a century to get the molecular drive, various rays, invisibility, ideal energy storage, and faster-than-light travel—but they sure seemed to. And when the story did drift down to the borderland of reality, and the *Ancient Mariner* was, for example, trapped in the gravity-field of a dwarf star and whipping around it in microseconds, the way out that Arcot and Company finally found *was scientifically sound* once you had swallowed the assumptions that went before.

New readers, especially young readers, may still find this kind of step-by-step building of the incredible from the improbable and the improbable from the barely possible, to be helpful. They certainly ask for it often enough.

"Islands of Space" is a running series of high-pressure scientific puzzles, which the reader doesn't always have enough background to solve, but which are as reasonable as a Sherlock Holmes explanation once Arcot or Morey has done it for you. The four episodes in Murray Leinster's "Colonial Survey" are also scientific puzzles, but puzzles worked out with the skill and sophistication of 1957 instead of 1931, by one of the most experienced writers in the business instead of a then gifted amateur.

You've read all four of the stories here, though they were in a different order and the four Colonial Survey officers who were protagonists of the original stories have now been merged in one, the Bordman of "Sand Doom" (December, 1955). He is a character much like Forester's now-famous Horatio Hornblower, always unsure of himself, always conscious of what he does not know, but with the invaluable ability to accept a hopeless situation as he finds it and go on from there to make it beat itself.

This is a future universe that Murray Leinster is still developing—what might be called the "landing grid" universe that he picked up again last June in his new Med Service series, a century or so after Bordman's time. The "Ribbon in the Sky" of the new story's title may not be the same one that Bordman flung up to save Lani III in "Solar Constant," the first episode of the book—"Critical Difference" in July 1956, when Bordman was Massy—but it was certainly the result of his discovery of how to thaw out an ice-world or handle the sudden concurrence of a flock of sunspot cycles. For the record, the story continues with the "Sand Doom" adventure on a world as hot as Lani III was cold, goes to my own favorite, "Combat Team"—"Exploration Team," March '56, with Roane as Bordman—with its fighting team of intelligent kodiak bears and utterly horrendous sphexes, and closes with "The Swamp Was Upside Down" from September '56,

in which Bordman was Hardwick.

In each episode Bordman is confronted with a hopeless combination of circumstances, and solves them logically by using the forces and equipment at hand. Again, granting him the culture and science at his disposal, you're convinced his schemes would work. But where John Campbell's yarns were "hard sell," Leinster's are fashionably "soft."

The ultimate in present-day *science* fiction is being written by Hal Clement. He hit his peak in "Mission of Gravity," but there's no reason to suppose he may not surpass that classic before he's done. He hasn't in his new original novel for Ballantine, "Cycle of Fire." I think it's because the story changes direction two-thirds of the way through.

Basically this is a scientific puzzle, like the Leinster and Campbell books. We are given two castaways, a teen-age Earthling, Nils Kruger, and an alien "monster," Dar Lang Ahn, on a world about which neither knows very much and about which both have basic misconceptions. Through all the first part of the book they are companions on an almost endless trek across the face of the strange world Abyormen, the "impossible" planet of a double star. On the basis of what they experience, each has to learn about the other and Nils, in particular, has to reason out what is going to happen to him and to Dar because of the planet's outlandish orbit. All this is handled as carefully and skillfully as we know the author can, playing contradiction

against paradox, then resolving them with a flash of insight or a casually encountered fact.

Then the puzzle changes: in place of the man-against-nature plot, we pick up a set of villains in the mysterious Teachers who have confiscated Dar's books, booby-trapped both Dar and Nils, and seem dead set against the perpetuation of knowledge by anyone but themselves. Also, apparently because time is running out and there just doesn't seem to be enough left to give Nils a chance to work out this second situation, he is given a shipload of assorted scientists to help him correlate his information. I suppose it's more logical that way; one boy never would have arrived at the facts that a research team uncover—but it diffuses the interest in a way that never happened in "Mission of Gravity" and was not too serious in "Iceworld."

In these three books we have an increasing degree of sophistication in the science-based SF story. In "Islands of Space" the story stops while every phenomenon is explained and spelled out. It's like the detective story of Sherlock Holmes vintage. In "Colonial Survey" all the elements needed to solve an insoluble scientific puzzle are hidden in plain sight; this would be the John Dickson Carr type of yarn. And in "Cycle of Fire" the characters have to live out the clues which will explain what is happening to them and how they can gain control of their own fates. In the 'tec field, this might correspond to the best Ellery Queen novels—as

distinct from his short stories—though there are better individual examples.

A step back of "Islands of Space" in evolution might be John Campbell's "The Moon Is Hell," which spells out realistically the probable conditions in a Moon colony, in terms of what we now know, almost without extrapolation. If more "primitive," this is a far more difficult kind of book to write—and, as it happens, a far better book—than the no-holds-barred yarn of synthetic, do-it-yourself super-physics that "Islands of Space" represents.

A step ahead of "Cycle of Fire" and "Mission of Gravity"? I don't think we've had it—but we will. And if present trends can be projected, it may just be serialized right here.

THE 27TH DAY, by John Mantley.
E. P. Dutton & Co., New York.
1957. 248 pp. \$3.50

A young Canadian author, who is new to me, here handles a usual SF theme well, but not unusually well.

Flying Saucer aliens snap up five assorted individuals simultaneously from California, England, Germany, Russia and China, and confer with them somewhere outside of time. Their captors explain that their own sun is shortly to go nova, and they need a new world but are prevented by ethical considerations from taking

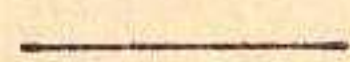
Earth away from Man. Instead, they will give each of the five the same invincible weapon, which he alone can make available, and wait twenty-seven days for humanity to annihilate itself and make room for better folk. The five make a pact that they will wait out the twenty-seven days without revealing what has happened—but the aliens spoil that solution by broadcasting an all-nations announcement of what they've done, and the hunt is on.

The simple Chinese girl takes the simplest and most direct way out: she kills herself, and the weapon—three golden mini-bombs in a box tuned to the "Open Sesame" of each person's brain-waves—turns to dust. Eve Wingate, also femininely direct, sinks hers in the bottom of the English Channel and heads for California. Physicist Klaus Bochner, bound for New York, hides out there and tries to find out what makes the bombs tick but collapses of "malnutrition" after fifty-two hours without food—which seems a bit short to one who habitually quits eating for three days when the "double-ended bug" bites—and is picked up by the FBI. The Russian sergeant tries to make good on his pledge, but is finally tricked into opening the box, whereupon Russia sets out to take over the world as confidently expected by the star-folk.

Meanwhile boy, girl, and the fifth box have gotten together in California—Eve fortunately has a fat bank account and friends with credits in New York, as all purely fictional

Britishers seem to have—and taken to the hills. The story is really theirs, and it's relatively subdued and pleasantly romantic. A good-hearted idiot intervenes—but that's the plot, isn't it?

Hollywood could do very well with this. The alien scenes might almost come up to "Forbidden Planet," the German professor is a natural Walter Slezak part—he finds a last-minute solution in the best tradition—and I sort of rely on these space-oaters to put juicy new starlets on the screen, with or without British accents. And there are a lot of mob scenes in which I refuse to believe, even though I am old enough to have heard the Orson Welles "War of the Worlds." Still, on a wide screen . . .



ROGUE IN SPACE, by Fredric Brown.
E. P. Dutton & Co., New York.
1957. 189 pp. \$2.75

For some unfathomable reason, Fredric Brown has tried to do a lot of things at once in this book and came up with a rather nondescript stew.

Since he is a deft and original writer, of mysteries and crime yarns, the first half of the book is the best. Crag, an habitual criminal, is framed on a drug-carrying charge which carries a near-life sentence on a prison satellite or electro-psychological obliteration of his asocial personality. Instead, the judge offers to help

him escape if he will steal a certain mysterious gadget from a scientific stronghold on Mars. This part, up to the take-off for Mars, is plausible, fast-moving, and fun. The invasion of the secret citadel and theft of the disintegrator are handled so perfunctorily that you wonder why the first bum out of the gutter couldn't have done it between drinks. And then a completely unnecessary and never understandable *deus ex machina*—or *ex spatia*—is dragged in, in the "person" of a second rogue, a sentient asteroid from 'way over the other side of the galaxy, just a-rovin' and a-lookin' for a friend. This kindly lump of rock brings Crag to life after his benefactor has suddenly become a Power-Mad Politician, sends him back to Mars, and builds a new and quite unconvincing planet where only he and his can dwell.

Meanwhile, back in the stews of Mars City, Crag is trying to spend half a million dollars while limiting himself to a few innocuous vices like drinking and gambling. Here, I think, the author is trying to say something significant about what makes criminals like Crag tick. He could do it, too, in the setting of almost any of his detective stories, from the fabulous "Fabulous Clip-joint" right on down the line—but he doesn't do it here. Instead, we get a new cast of characters, no-goods with hearts of gold, who bring an end to the boredom of too much money in an escape to the new planet and a happy ending, thanks to that esping boulder.

THE STARS MY DESTINATION, by Alfred Bester. New American Library, New York. No. S-1389. 1957. 35¢

Why this second science-fiction novel by the author of the memorable "Demolished Man" isn't being published in hard covers here in the United States, I have no idea. The English edition was out as "Tiger, Tiger" last year, even before the serial started in *Galaxy*.

To my taste, this isn't quite up to the author's first SF book, but it's in the top rank of anything you're likely to find around this year. I read the serial, and it's even better the second time over, although I don't think there has been any extensive rewriting. (Would that I had the kind of memory that can tell you the chapter and paragraph of the changes, without making a tedious line-by-line collation!)

Like "The Demolished Man," this is a story of a society reorganized around a psi power: teleportation, or "jaunting." A hard-shell purist can, I'm sure, itemize a good many places in which the science *per se* won't hold water—or even molasses—but as might be expected, the picture of the world that develops is consistent and fascinating, and the van Vogtian complications are handled far more smoothly than the Master ever did.

Gully Foyle is trash of the spaceways, sole survivor of a wreck and passed up by a ship that answered his signals. Driven by the savage resolution to avenge himself, he

manages his own rescue and sets out on his ruthless quest. Immediately this is complicated by the fact that the people he is looking for, high in the social and financial hierarchy of the times, are hunting for him and for a mysterious something known as "PyrE" which will control the balance of power in the interplanetary war fast brewing between the outer satellites and the inner planets.

Every detail of the fantastic tapestry has its importance in the finished pattern: Gully's hideously tattooed face . . . the Negro girl who is his jaunting instructor, and whom he rapes . . . the Burning Man who begins to haunt his quest as it enters its last wild phase . . . jaunting itself. The key and core to the whole, the warp on which it is woven, is Gully's obsessed personality. He is the mad-dog product of a mad-dog culture, impelled to his inevitable end by Furies as relentless as any that ever haunted the Greeks.

I repeat: why a book like this should be limited to a paperback edition, in view of some of the things out in hard covers, is about as much of a puzzle as the identity of Gully Foyle's Burning Man.

CITY ON THE MOON, by Murray Leinster. Avalon Books, New York. 1957. 224 pp. \$2.75

There's really nothing wrong with corn. The original American (Indian) civilizations were based on it, and it keeps TV, Hollywood, and the

ASTOUNDING SCIENCE FICTION

"big" magazines going in our present version of what the Indians started. In "City on the Moon," Murray Leinster again proves that there is nobody better able to make the stuff tasty, without giving you either sustenance or a headache. It's a book—source not credited, as is customary with this publisher—that would probably have earned its author and publisher more as a juvenile than as adult fare.

Joe Kenmore is on his way back to Civilian City, the international supply station on the Mare Imbrium, when a mountainside is blasted down on top of his Moon-jeep. He and his French partner escape, to find the city abandoned, its plastic bubble-walls slashed and the air escaping. They start to cope with that when a rocket reports in from Earth with Joe's girl aboard—and no landing beam. And so trouble piles up on trouble, sabotage on sabotage, madness or murder in rather offhand fashion. All this goes on in a lunar setting as convincingly detailed as you could want. Give it to your nephew, if he's just nibbling at SF. It's rather old-fashioned and elementary, but it's good. Good corn, that is.

REPRINT SHELF

SCIENCE FICTION CARNIVAL,
edited by Fredric Brown & Mack

Reynolds. Bantam Books, New York. A-1615. 1957. 167 pp. 35¢. Apparently the complete Shasta anthology of humorous SF; eleven stories in all.

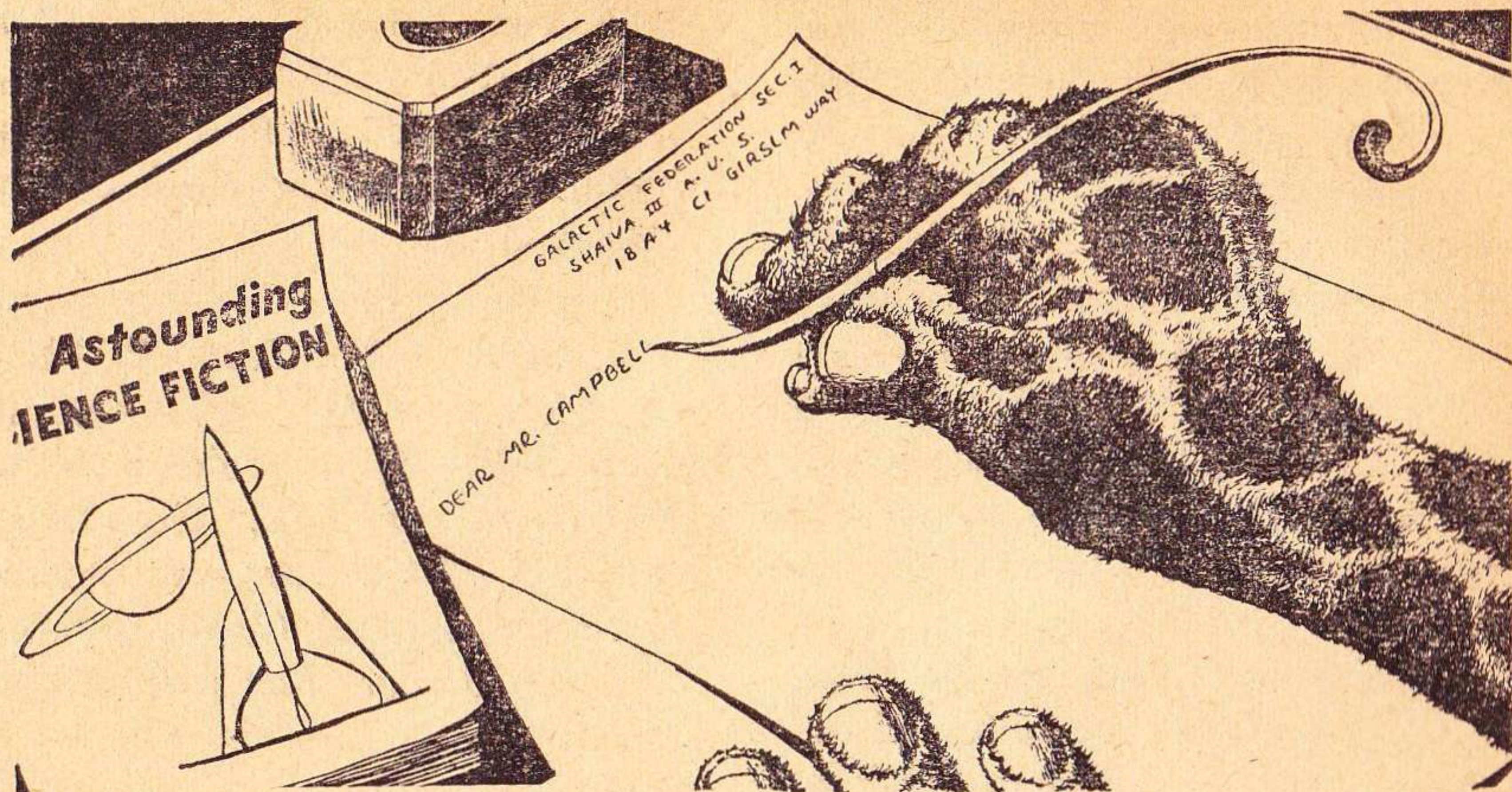
BIG BOOK OF SCIENCE FICTION, edited by Groff Conklin. Berkley Books, New York. G-53. 1957. 187 pp. 35¢. This time, only ten of the thirty-two stories from the original Crown anthology. Good, but what's big about it?

DESTINY TIMES THREE, by Fritz Leiber. Galaxy Novel. No. 28. 1957. 126 pp. 35¢. This yarn about three parallel worlds in conflict was a two-part serial here in 1945, then a Gnome book.

OPERATION: OUTER SPACE, by Murray Leinster. New American Library, N. Y. S-1346. 1957. 160 pp. 35¢. A ship headed for Mars with a load of neurotics, grandstanders and prima donnas winds up among the stars. Good fun in the Fantasy Press edition in '54; good fun now.

TOMORROW PLUS X, by Wilson Tucker. Avon Books, N. Y. T-168. 1957. 158 pp. 35¢. This was out in 1955 as "Time Bomb," a kind of sequel to "The Time Masters"—which is Signet Book No. 1127.

THE END



BRASS TACKS

I have received several requests for the full set of Finnagle's Laws; to date I have been unable to find any comprehensive collection of these famous Unwritten Laws of Science, however. The Finnagle Factor, or Finnagle's Variable Constant is, of course, well known, and some of Finnagle's Laws, such as "In any laboratory experiment, if something can go wrong . . . it will," are very widely known. I believe, however, that there are a number of lesser known laws enunciated—but not very clearly—by this understanding scientist, and I feel it would be a real service to Science if our readers would aid me in collecting the entire set of Finnagle's Unwritten Laws of Science. Younger students of science

certainly should be given the benefit of the discoveries of the fabulous Sage; who else would have defined Hell so objectively as "the place where all the instruments test perfect, but none of them work."

THE EDITOR.

Dear John:

In my article "The Unblind Workings of Chance" in the April, 1957 issue of ASF, I said there were two possible sources of energy which could turn the simple compounds of Earth's primordial ocean into the complex compounds that compose living tissue: lightning and solar ultraviolet radiation.—Well, there

is experimental evidence, now, pointing to a third possible source of energy.

In the May 3, 1957 issue of *Science*, Raymond Paschke, Robert W. H. Chang and Donald Young of the General Mills Research Laboratories in Minneapolis, Minnesota, report that they have irradiated ammonium carbonate with gamma rays from cobalt-60 and have then recovered from the material two—and possibly three—of the simpler amino acids.

The authors suggest that the gamma radiation resulting from Earth's natural radioactivity could have acted to produce complex organic compounds.

The advantages of such a mechanism are several. Lightning would work mainly on the upper atmosphere and have little direct action on the oceans where life undoubtedly began. Ultraviolet radiation from the Sun would presuppose a generally clear and unclouded sky at least part of the time for direct action on the ocean, so that a cloud-wrapped Earth—a la Venus—would be forbidden. Gamma-radiation from naturally radioactive substances in the Earth itself would, however, be working at various points along the sea-bottoms—and land, of course—clouds or no clouds, storms or no storms.

Gamma radiation would break down complex compounds once formed, but the amino acids formed about the sites of radioactivity would be carried away by ocean currents—or washed into the ocean by rain

—and in places remote from radioactivity have a chance to build up still further, perhaps with lightning or ultraviolet as a secondary agency.

The authors point out that even today, highly radioactive ores could deliver the amount of radiation they used experimentally—which was a healthy dose—in a matter of decades. (With one or two billion years available for the job, ten or twenty years is nothing.) Furthermore, as I'll show in my article "The Whenabouts of Radioactivity," radioactivity was considerably higher in the primitive Earth than it is now.

I rather like the notion.—Isaac Asimov.

To which add a further item: recent work has shown that "free radicals" are essential in the life-processes of plants, at least—and it's a fair guess that the same holds for animals. And—radiation such as radioactivity produces is characterized by its tendency to produce quantities of free radicals.

Dear John:

Your logic is fine: an intelligence amplifier, for purposes of self-preservation, would conceal its successful operation. Really? This would be true if the intelligence amplifier could *think* and if it had a *built-in* "self-preservation circuit." So far as I know, only animals have such a built-in circuit, and it would be unreasonable to assume that such

a severely limiting feature would be included in the amplifier.

I agree that "the real and fundamental test is that of solving the problems of real-world living." Now, the people called on to solve the highest echelon of such problems are frequently politicians. It is true that executive politicians make the final decisions, but they rarely themselves have sufficient knowledge in *special* fields to make the initial proposals. For this they employ expert advisers who submit proposals and the executive politician reaches a solution by a process which may be called "questioning concepts and weighing methods." This might be a method which an intelligence amplifier could successfully employ, questioning concepts and weighing methods in proposals submitted to it.

This is something a machine might do, but a machine that could think, have genuine intelligence, or create new proposals would be difficult to build. Furthermore, it would no longer be an *intelligence amplifier*, but an intelligent *thinking machine*.

This may be an inversion of a tacit concept of cybernetics: to have a machine question us instead of us questioning a machine, but it might be as workable a concept as the other in this case.—N. H. Boehmer, 111 Loma, Long Beach, California.

Who would accept a machine that questioned him, instead of answering his questions?!!

Dear Mr. Campbell:

As a graduate student in the Classics, who is also a devoted reader of science fiction, I was very much interested by your remarks on classical and scientific educations. Although I was in general agreement with your emphasis on the importance of what you call "discipline," I felt that some corrections and amplifications were needed.

You argued that the study of the classics, like that of the sciences, produced "sound thinkers" because of the "discipline" involved in dealing with hard, immutable facts, e.g., those of the dead languages, which unlike modern languages were fixed and unchanging. Actually, the "fixed" character of the classical languages is the result of the fact—of pedagogy, not linguistics—that a schematization of the form which each had at one brief period in a particular place—late Fifth Century Athens; early First Century Rome—has been taken, for teaching purposes, as the "ideal" of the language, with earlier and later usages, together with their survivals and forerunners in the "golden" age, treated as variations on the basic pattern. But at higher levels of study the languages are treated historically, with no loss to the "hardness" of the facts in question.

The same treatment can of course be applied to the modern languages. The trouble with the contemporary student who studies only English is not that English is constantly changing, but that he is never made to

study English, or any other subject, systematically. (I think this is essentially what you mean by "discipline," is it not?)

Of course, there is another sense in which the study of any foreign language is "discipline," in that it forces the student outside the patterns of his own language; thus the first introduction to a foreign language is also an introduction to the idea of conceptual systems. For this purpose, the ancient languages are better than a modern European language, simply because they are less like English in structure and idiom. Chinese would be still better. (Perhaps a majority of today's high-school graduates have never studied *any* foreign language.)

The sciences, then, and foreign languages—the ancient languages even more than the modern—*require* systematic study; so, of course, does any subject the study of which is to be profitable. But there is a further analogy between scientific and classical studies, that seems to have escaped you, largely, I think, because of your impression that our knowledge of the ancient world is something closed. For, of course, to say of the ancient authors, as you do, that "what they were-in-fact was not open to argument," is to say that everything needed for an understanding of the classical world, is known. And this is far from being the case.

In fact we know pitifully little about the ancient world, and that little has reached us in a pitifully garbled state. For centuries the efforts

of classical scholars were bent on the removal of scribal "noise" from our texts and the elucidation of what remained; and it was to problems of this sort that students of the classics in the nineteenth century were directed to turn their attention.

Now, a great deal can be said, and has been said, against this emphasis. That is was often destructive of the literary interests that humane studies were supposed to foster, is undeniably true. But consider that those nineteenth-century students were presented, in effect, with a series of problems—unintelligible allusions, manuscript blunders, and so on—and with a mass of virtually unclassified information, some of which might be relevant. They were told how other scholars had put together, let us say an entry in an ancient dictionary and some ancient editor's footnote to a passage in Homer—and suddenly a line of Pindar that no one had understood for twenty centuries was clear. They were encouraged to do the same themselves.

Now, was this not excellent training in an important part of the scientific method?

The sequel is instructive, too. Because when the revolt against classical education began, the classicists decided that they would have to make things easier for their pupils. And when they set out to make things easier, one of the first things they did was to eliminate from their school-texts all references to these problems and unsolved or lately-solved puzzles. (It is instructing, and

saddening, to compare two school-texts of a standard author, such as Cicero, one published around the middle of the nineteenth century, the other near its end.) Hence it comes that you, Mr. Campbell, have the impression that classical studies is a field in which all problems have been settled and everything that needs to be known, is known. That is the way it is all too often taught.

Of course, the sciences are everywhere taught in an entirely different manner. Well, aren't they?—Mike Wigodsky, 402 West Clay, Houston 19, Texas.

Contrasting the modern Liberal Arts vs. the older Classical education, one might say the Classicist was taught to discipline his opinions, and to defend them honorably—a rather outdated (unfortunately) concept of gentlemanly behavior applied to discussion of ideas. The modern Liberal Arts attitude seems, many times, to produce graduates who have the impression that they have an inviolable and unlimited right to their opinions. "Right, wrong, or indifferent—but mine own!"

Dear John Campbell:

Looking through *Dissertation Abstracts* a few days ago (volume 17, issue No. 1, page 57, 1957) I saw the abstract of a dissertation in education, submitted last year to the Faculty of the University of Pitts-

burgh by Marcus T. Allias, titled "The Reading Difficulty of a Selected List of Leading Mass Magazines," which may interest you.

Allias (no doubt Dr. Allias, by now) applied to the selected magazines the Yoakim Readability Formula, based upon the "vocabulary load" of the text matter. I am not familiar with the Yoakim formula, but assume it's something like that of Rudolph Flesch, with which I am somewhat acquainted. If so, it's an index primarily of the proportion of polysyllabic words and polyverbal or multiverbal sentences—the "unplain" talk of which Flesch complains. At any rate, application of this arithmetic yardstick to a piece of reading matter results in an index number, whose size is directly proportional to the difficulty—that's what the man says—that the average man would have in reading same.

Results: Yoakim indices for individual magazines ranged from 8.0 (easiest) to 13.6 (most difficult). Overall median: 10.8; median of "behavior type" magazines: 9.0; median of all science-fiction magazines inspected: 11.7. Indices for individual magazines:

<i>Sport</i>	11.1
<i>Amazing Stories</i>	11.1
<i>Motion Picture</i>	11.1
<i>True Detective</i>	11.6
<i>Confidential</i>	13.1
<i>Stag</i>	13.3
<i>Astounding Science Fiction</i>	13.6

Many more magazines were yard-

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sticked, but only these examples were given in the abstract.

Notes seem superfluous, but here are a couple anyway: (1) the contrast between *Amazing* and *ASF*; (2) no magazine examined had a higher rating than *ASF*; (3) *ASF* is included in a list of "mass" magazines—would that 'twere so!—William F. Hewitt, Ph.D., Associate Director of Technical Information, Evansville 21, Indiana.

Wonder how the Gettysburg Address would score?

Dear Mr. Campbell:

Inasmuch as your present tilt is towards "eloptics," perhaps you could help us steady readers out by publishing a scale-of-reference chart to aid us in further research in this particular field. Some sort of metering system is needed! Take, for a very good example, K6MLE's "readings." He reports getting vicarious results varying from hot through cold and heterodynes in between! Others have been equally vague.

May I suggest we establish an interim scale for noting down these sensations? Present methods involving tactile sensations are, to my way of thinking, a little like trying to establish the amount of charge produced by a Weimhurst Generator by letting it discharge through the tip of the tongue! Most unpsionic!

By the way, I've tried inserting a ferrite core into the output coil of

my version of the Machine, having gotten practically no results earlier. A cylindrical core, $1\frac{5}{8}$ " diameter, by $\frac{1}{2}$ " high and with a wall thickness of $\frac{1}{4}$ " gives excellent "readings." The output "radiation" seems to be focused about 2 inches above and/or below the core opening, making a lenticular—as far as I can ascertain—field of sensation about $\frac{3}{4}$ " diameter.

Replacing the pancake coil you originally described with a honeycomb wound coil, same size wire, same number of turns but with room for the ferrite core at the center, due to increased "Q" perks up the output plenty. I found that the ferrites do not always work well, especially with corundum and carborundum crystals—raw, unground crystals. Mitsubishi type sT "I" transformer laminations forming a core $\frac{1}{2}$ " x $\frac{1}{2}$ " x 1.5" work exceptionally well with these crystals. Sensation produced by corundum—the closest thing to natural sapphire I could find—are faint pricklings under the ends of the fingernails. Carborundum crystals produces an odd sand-under-the-fingernails sensation, a used carborundum slip-stone made the fingernails feel dirty!—Leonard E. Geisler, MAES, Tokyo, Japan.

*Friend, I know we need a meter!
That's the problem—how!?*

Dear Sir:

Regarding J. W. Dunne, I think the less said about his mathematics

ASTOUNDING SCIENCE FICTION

the better. I am sure they are beyond everybody, let alone Dr. Wheeler.

However, I am equally sure that Dunne recorded a great basic truth—that we dream *about* the future—not that we dream the exact future, but that we dream *about* it, just as we dream about the past.

Unlike the H. machine, however, this knowledge can at this moment be put to a very useful purpose (please do not take umbrage at this point—I think you are on the track of something Rilly Big).

Consider this: Supposing 1 million people keep a Daily Dream Diary. Suppose every week they send in their dreams, all in proper form, to a Central Dream Office, which includes a Statistician, a Psychologist, and one of those Electronic File Cabinets. Suppose the essentials of each dream are recorded on punched cards or something, which are fed into the Brain. Suppose the Brain is set to pick out dreams which have a correlation beyond pure chance. Result: "Now at your favorite magazine stand, 'A History of the Future,' as compiled by the Central Dream Office, Inc. Published twice a month. Subscribe now!"

As you say, it could be frightening—but so enlightening. — Richard Green, 126 S. Gay Street, Knoxville, Tennessee.

Trouble is—Dunne's work showed the future dreams to be very much personal experiences-to-come, not subject to such correlation, sad to say!

BRASS TACKS

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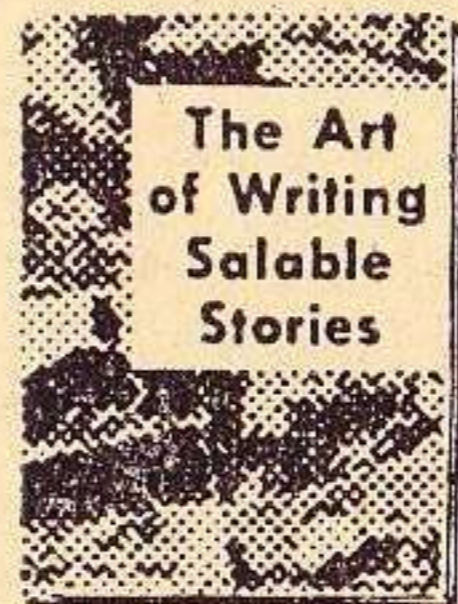
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(Continued from page 6)

also been called the Periclean Age, because it reached its full expression during the lifetime of one man. Modern science owes a great deal to three powerful thinkers; Galileo, Newton and Einstein. But these men are scattered through centuries of time. Classical philosophy stems from Socrates, Plato and Aristotle . . . but we do not have any of the works of Socrates himself, only Plato's reports, so, in fact, we are hearing only Plato and Aristotle. They were contemporaries.

Practically speaking, all we know of Greece was *one generation*. This would be equivalent to judging all of European cultural philosophy by studying solely the works of Mauve Decade, Victorian Age, writers.

But the situation is considerably worse, because that generation in Greece was the generation that exploded the great achievements that preceding centuries had patiently built up.

Homosexuality has been defended, by somewhat biased partisans, by pointing out that homosexualism was socially accepted in the Golden Age of Greece—that the taboo against it is "mere tribal mores."

It's perfectly true; Golden Age Greece was a high-level culture which accepted homosexualism—and critical masses of U-235 can, too, exist; it's just tribal-mores prejudice that says they shouldn't be assembled. What happened after that tribal-mores was accepted, huh? The *point* isn't important; what is the *pattern*?

What led up to it; what are its results?

The nuclide Beryllium-8 is exceedingly unstable; it detonates into two He-4 nuclei in something like 10^{-10} seconds, with enormous energy release. But in the hydrogen bomb explosion, it can be shown that Be-8 exists. In a situation of explosion-in-process, completely "impossible" situations and patterns can, and do, come into existence momentarily. We know uranium as a fissionable nucleus, possessed of such an excess of too-tightly-packed particles as to be inherently unstable. How did it form? How did something intrinsically too complex come into being?

Current theory indicates that the super-heavy elements were formed in the explosion of supernovae—in a situation where pressures and densities, and the floods of free neutrons reached such unbearable intensities that the environmental pressure exceeded internal pressures of even such nuclei as uranium and thorium, so that nuclear particles collapsed into these super-heavy nuclei to escape the external pressures. In an explosion of sufficient violence, the improbable becomes the line of least resistance. With a tornado driving, it takes an anchor to hold a two-ton automobile from flying through the air.

In examining the cultural concepts of Golden Age Greece, we are not examining "one of Man's highest cultures" — we're examining *an exploding culture*.

Naturally such events are land-ASTOUNDING SCIENCE FICTION

marks of history; a supernova, when it explodes, gives off more light than all the rest of the stars in an entire galaxy. The ages of quiet and steady radiance preceding the explosion passed unnoticed, of course; one star among many.

When a culture explodes, it, too, can outshine a galaxy of other cultures.

In Rome, again, the period that has attracted most attention, the period of fabulous memory, is the splendor of Imperial Rome; the very name of the imperial dynasty has shouted down the centuries as the mighty symbol of Power; Caesar . . . Kaiser . . . Czar . . . a dozen modifications. The power and the glory of Imperial Rome . . . which was the explosion of the centuries of patient building of the Roman Republic! From the day of the first Emperor, the collapse of Rome was enormously swift. Its sheer, stupendous mass made that collapse last more than the one lifetime of the collapse of Greece; it took about three lifetimes.

But the historical impress of Rome is the concept of *Imperial* Rome—not that of the highly dynamic, constructive, and effective *republican* Rome. The great and lasting writers and orators were those of the Age of Collapse; their words and works are preserved.

Finally, the fundamental belief of the early Christians was that the end of the world was immediately at hand. Read the Pauline Epistles, and you'll notice Paul had to spend some time and energy convincing the early

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Christians that getting married was worthwhile—that the Last Trumpet was not due *that* soon.

One of the factors that aided the spread of Christianity in the early centuries was, in fact, that basic doctrine; the people of that period *knew* the end of the world was at hand. Mighty Rome was dying; all the civilized world was crumbling about them. The last mighty flare of Imperial power was trailing off and there was no hint of guidance into a new, post-Roman world. Christianity, which accepted the destruction of this world as inevitable and unimportant anyway, held no hopes for this already hopeless mess, but concentrated on what to do after the end of the world.

In the collapsing ruins of all known civilization—that was precisely what people were desperately in need of; a road map of some kind into some kind of a future. The old gods had been destroyed; when you deify a man, an emperor, you do not promote him to godhood; you merely demote the gods to human level.

The three major sources of cultural philosophy that have led to European-Western culture are, then, philosophies of exploding cultures. Greek, Roman, and Christian philosophy alike stem from explosion and destruction. (The Jewish culture from which Jesus came was completely shattered, its cities destroyed, its people driven out, its sacred symbols annihilated, less than half a lifetime after Jesus' crucifixion.)

How could it be that these philosophies of explosion led to the formation of the most dynamic and efficient of the world's cultures, then? Why, basing their cultural thinking on the doctrines and concepts that sprang up during the demolition of greatness, did Europe achieve anything at all?

Perhaps the reason Europe, nourished by three philosophies of doom, death, destruction and despair, produced the most dynamic of all Earth's cultures comes in part from the fact that, having accepted that there is no hope, you have two choices: lie down and die with a minimum of painful effort, or go ahead and fight anyway. The first pattern of behavior must have eliminated most of the people who reacted that way during the first few post-Roman centuries. Those who tended to respond with "Eat, Drink and be Merry, for tomorrow we die!" probably did die off pretty fast. Expect it, do nothing to prevent it, and you generally get it.

The remaining type of personality did somewhat better; they accepted disaster without despair, futility without hopelessness, and made exceedingly dangerous enemies because they didn't have sense enough to lie down and die when they'd been mortally wounded. They could be convinced that their position was hopeless, and all their efforts would be futile . . . and keep on trying anyway for want of anything else to do. The ones who weren't that way quit trying, and joined Imperial Rome in *requiescat in pace*.

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Cultural explosions have been going on since the most remote known pre-history. Sumeria—Babylon—Egypt—Assyria—and the ancient cultures of Asia, and the later ones of America. They rise, achieve . . . and explode. The debris gradually gathers around some new center, gravitates toward it, concentrates, the fire of civilization starts, a great culture rises . . . and explodes.

European philosophy had one difference of aspect; they expected explosion from the start, so it wasn't quite such a shock. "Well . . . we knew it was going to collapse anyway. Knew it from the start."

"If you can't lick 'em—join 'em!"

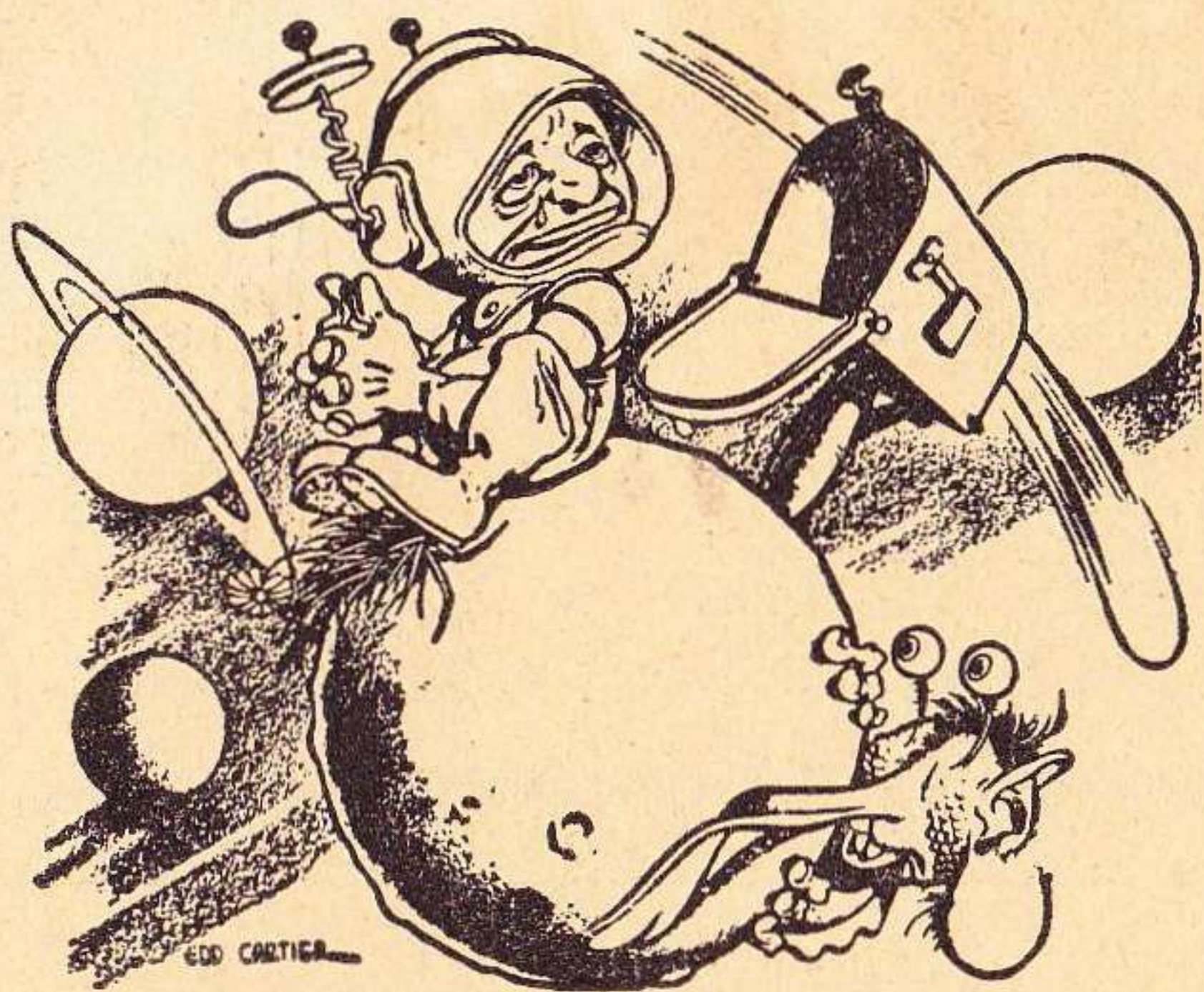
The gasoline engine operates by reason of many small, harnessed explosions. If you can't keep the stuff from blowing up—harness it and make it do something useful.

The prime cause of cultural explosion is creative thinking; that introduces deviant factors in a carefully constructed, rigidly interrelated and delicately balanced structure of traditions, mores, and laws. Naturally, each time a culture reaches the explosion point, the creative geniuses

in the group spring into sight; the group-pressure that has been trying to prevent the devastating effects of new and original ideas, is removed by the shattering of the group. So, for a brief while, the culture shines with enormous brilliance as a dozen or more creative geniuses release new cultural forces in a dozen mutually incompatible directions.

No culture can remain itself and accept the outpourings of creative minds. If the ideas are new and creative, then the culture will be altered to a new and different form. By definition, it hasn't survived as the culture-it-was.

But it is inherently impossible for any people to suppress, for any long period, the most dangerous of all possible minorities; the Mad Geniuses. The way to make a mad genius is to take a genius and frustrate, imprison, demean, ridicule and confine him until he becomes mad. But as Sprague de Camp pointed out years ago, in "The Exalted," normal people can't safely imprison a real mad genius. If he's a genius, he's too smart to be suppressed successfully; if he's mad, he'll be both smart and



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destructive. More recently, Sprague had a variation on the theme in "Judgment Day."

"If you can't lick 'em—join 'em." If you can't suppress 'em—harness 'em.

In the East, the genius has been allowed to go his own way. Instead of being suppressed and confined and forced to conform, he's allowed to go wandering off on his own, going his own strange way. And nobody pays any attention to him; it's a "Live and let live" policy. The genius can go his way, provided he doesn't try to make his neighbors think, and they won't make him work, if he lets them alone and doesn't ask nasty questions, like "What is the nature of Good? Are things holy because they are beloved of the Gods, or do the Gods love them because they are holy?"

If you accept that cultures are going to explode, and can live in the face of that, then you can accept that creative thinkers are going to explode cultures. The next step might be expressed as, "All right, if you've got to blow up the place, do it usefully for Pete's sake. Change it to something more useful, if you must change it."

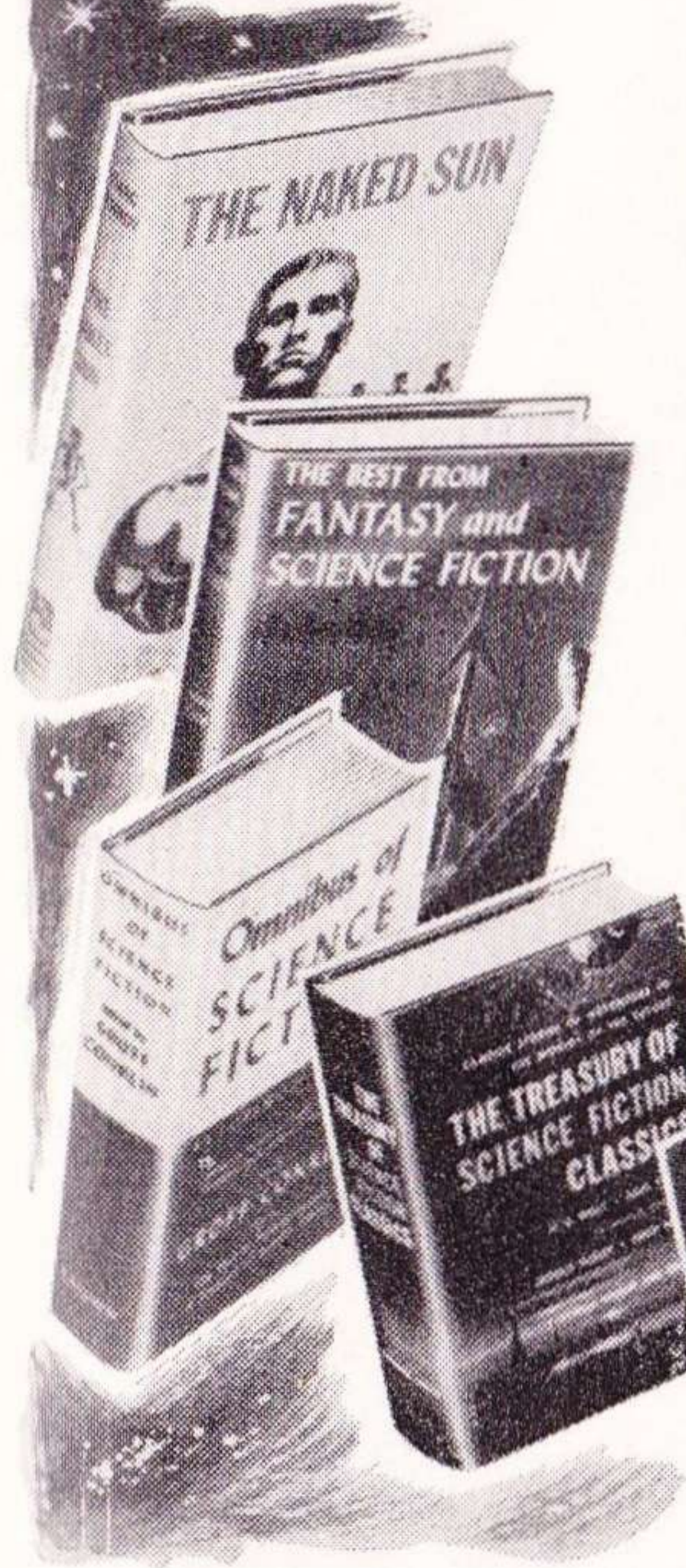
Eventually you get so used to having things blow up, having long-established customs and industries crumble under the blow of some new idea, that you accept it as normal. Even go so far as to establish a Research Department to make it happen faster.

THE EDITOR.

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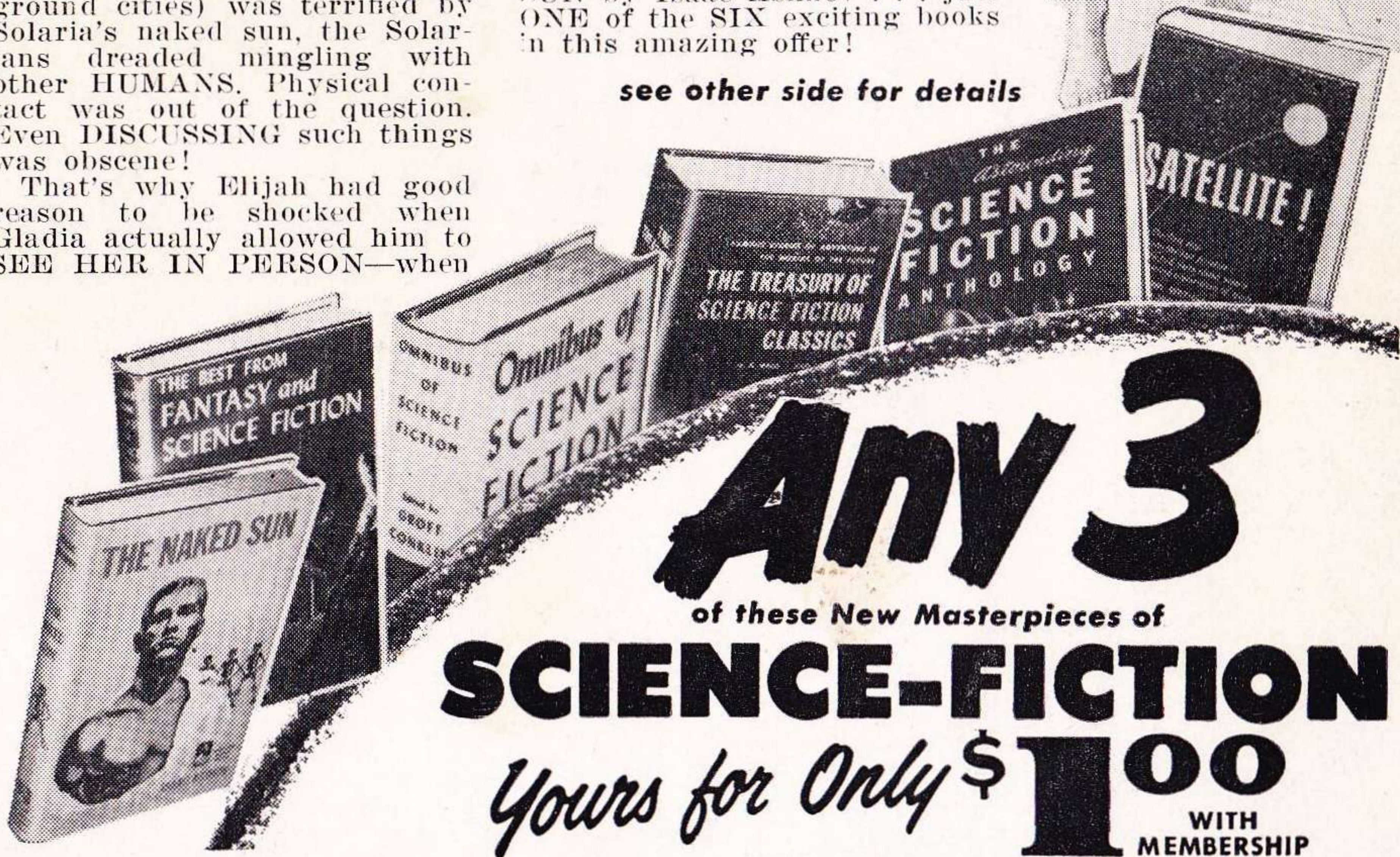
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