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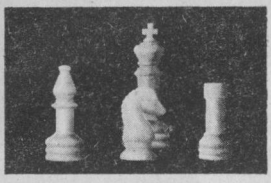

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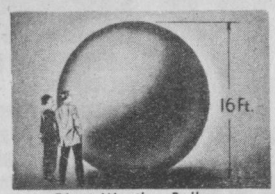

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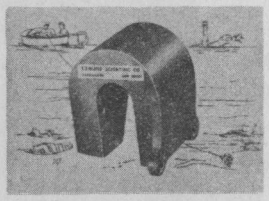

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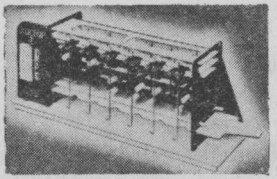

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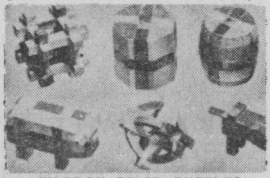

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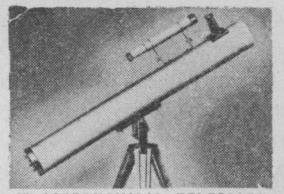

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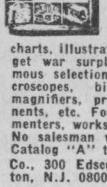

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Chemical Warfare

An Editorial by John W. Campbell

The earliest use of chemical warfare is not recorded in history, probably because it was very prehistoric. We can strongly suspect it began with some bright Neolithic war leader coming up with an idea of how to get the enemy out of their inviolable cave, and make 'em come out and fight like men—use smoke, and smoke 'em out!

The more sophisticated but essentially unchanged technique is called "tear gas."

Along that millennia-old road to modern technology, the original irritant-smoke approach changed and developed to the use of burning sulfur—which was not merely irritant, but poisonous.

Presumably this was, at the time, considered a great improvement in military technology; if they came out of their cave—or other shelter—weeping, coughing and gagging, it was easy for the attackers to chop 'em down as they stumbled out. If they didn't come out, the sulfur fumes killed them inside.

To some extent this technique of chem warfare fell into disuse because of undesirable efficiency; as slaves became valuable commodities, the lethal tendencies of burning sulfur became unsatisfactory.

Chemical warfare, in the modern sense of a consciously devised application of synthetic chemical substances derived for the purpose, began during WWI with the German's first use of chlorine. Thereafter both sides of the dispute worked rapidly to find more powerful and more deadly toxic agents. By the end of WWI some crude agents had been developed, but nothing really

very potent. They were all pretty simple direct-action substances—agents in which one molecule of the substance directly attacked a molecule of the victim. Essentially like simple inorganic chemical corrosion.

By the end of WWII some really efficient lethal agents had been developed—poisons that acted more like enzymes than simple corrosives. The "nerve gases" worked on mammals, including Man, as the DDT type insecticides did on flies and mosquitoes. Their action is not a direct corrosive erosion of tissues—it depends on highly selective blocking of critical enzyme systems in the living organism. Since enzymes are highly efficient organic catalysts—one molecule of the enzyme may bring about catalytic change of 1,000 or 10,000 molecules of the substrate it works on—it made the "nerve gas" agent, by blocking one molecule of the enzyme, alter the metabolism of 1 to 10 thousand molecules, instead of only one.

The quantity of the toxic agent needed for death, therefore, shrank by three or four orders of magnitude. A trace so small that no chemical analysis could find it could be lethal; only biological tests were sensitive enough to react to it.

By 1955 some really horrendously deadly materials had been developed in various places in the world. Some were crippling agents rather than lethal agents; in many respects these were more effective against an enemy because it takes only a four-man squad to bury a corpse efficiently, but it takes twenty or more to nurse a cripple, and for a long time.

Then came a new turn in chemical warfare developments.

Most biochemical research is done by pharmaceutical companies seeking new curative drugs; this is an activity that is paid for not by research grants and public moneys and military budgets, but by the individuals who benefit from the results of that research.

(Of course currently, the public is raising a howl at having to pay for anything, and screaming at the pharmaceutical houses that include the price of the research development in the production cost of the drug. They seem to feel that they shouldn't have to pay for learning how to use a chemical.)

The result of the economics of pharmaceutical research is that more biochemical assay work is done by pharmaceutical houses than by any military or university supported laboratories. This means that most biologically active substances are first discovered and/or synthesized in pharmaceutical research labs. Since the work is genuine research—"I know exactly what I'm doing, so I can repeat it, but I haven't the faintest idea what the stuff will do; this is *research!*"—they inevitably come up with some very wild, weird, and wicked compounds.

They may start with a known compound with known effect—but substitute a methyl group here, and a nitro group here, and who can guess what the effect will be? Biological enzyme systems are incredibly selective, and react powerfully only to exactly thus-and-so configuration of the molecules. One simple example was the development of a morphine derivative that turned out to be so fantastically potent that one thousandth of a gram can knock an elephant cold for hours. Roughly, it's effective at a concentration of 0.3 parts per billion of his body weight.

One of the great problems in drug developments is the horrid threat of side effects, and idiosyncrasy. (The difference between those two is that it's called a "side effect" if nearly everybody shows the undesirable response, and "idiosyncrasy" if only a few unfortunate individuals go into convulsions, start hemorrhaging, stop breathing, or go blind. The idiosyncrasy reactions are due to genetic peculiarities of the victim, rather than to malign characteristics of the drug. A friend of mine very nearly died from eating fresh strawberries; there wasn't a thing wrong with the strawberries—but she had a highly unusual personal metabolism.)

LSD was discovered in a pharmaceutical laboratory; the biochemist who discovered it hadn't the slightest intention of "going on a trip," but he'd been taking only normal precautions that none of his preparation escaped—and with something that's effective in microgram quantities, that's not adequate. It was a very bad trip; naturally he hadn't the slightest idea what was happening to him, except that it was quite clear he was losing his mind. The experience of knowing you're going insane, and watching it happen to yourself, and knowing of no possible cause does not make for a "good trip."

When he came back up out of that hell hole, he went to work on the stuff with most abnormal precautions that were adequate to stop microgram quantity leakages.

There are a lot of would-be drugs developed and tested that prove to be biologically extremely potent—but not therapeutically useful.

Again, many drugs are found which are indeed of immense therapeutic value . . . but they have undesirable to intolerable side effects. For example, a drug was developed which would reverse arteriosclerosis—pick up the cholesterol deposits in plugged arteries. It worked magnificently—if you could get the patient to take it. Trouble was, the stuff had so indescribably awful a taste—and it persisted for hours after a dose—that even patients who were dying, and fully realized it, refused to take the vile stuff. (They've recently found a way to modify the molecule so that

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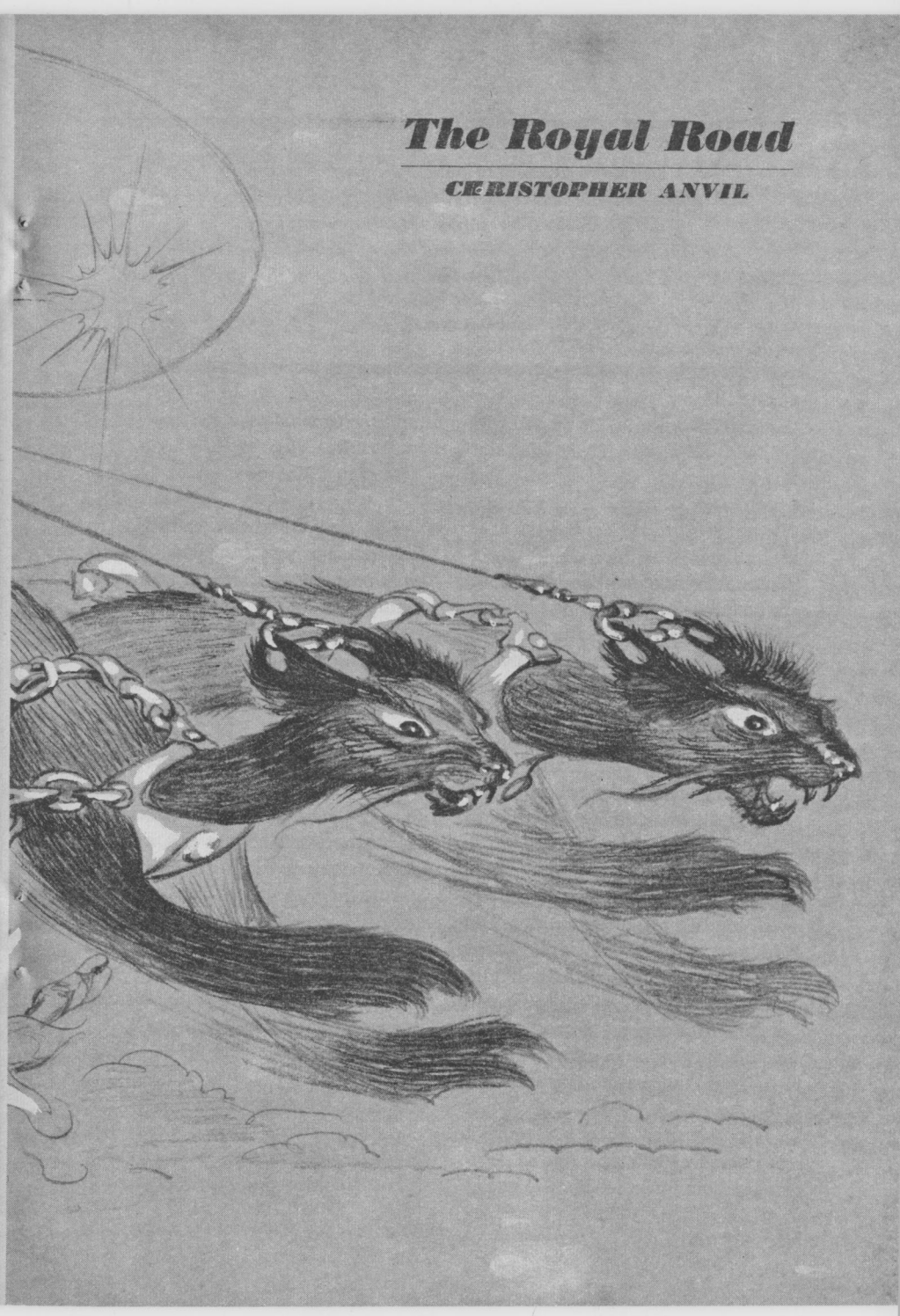

The Royal Road
CHRISTOPHER ANVIL

The three gentlemen with the Space Force ship had promoted themselves very rapidly to Dukes, Royalty and High Rulers by some very fancy trickery. But the Space Force demoted them, fast!—to rookies. And showed them what real professional tricky technique was . . .

Illustrated by Kelly Freas

I

Colonel Valentine Sanders of the Interstellar Patrol had just emerged from a session with the simulator when the call came. Against this opponent, the colonel always lost. Scarcely anyone was able to hold the simulator to a draw until the preset time was up. Nearly always, sooner or later, it found some weakness in the man, and by means of the weakness, beat him. This time, the colonel had wasted a precious fraction of a second congratulating himself on his performance, and that fraction of a second, once wasted, was the margin by which he lost. Now, seeing it all clearly, the colonel was in an angry frame of mind as the call buzzer sounded.

"Code number," demanded the colonel.

On the gray bulkhead opposite, the numeral "4" appeared.

The colonel frowned. "Go ahead."

The gray bulkhead vanished, to show a strongly-built man with piercing blue eyes, seated at a desk facing him.

"We have a little problem, Val."

The colonel's expression was alert. "This business with the Space Force?"

"No, that will work out however it works out. If they open fire, we'll fuse a few turrets, to get it across that Imperial Trasimere will stand for no nonsense. Right this minute, we're beaming our recognition signal at them, and this new recruit's ship is giving Larssen enough hints so that even a Space Force general ought to catch on."

"Larssen has high-grade steel between the ears."

"Can't be helped. He's Space Force."

"How did we get in this spot?"

"As nearly as I can figure it out, it started when the main gravitor went haywire on one of Interstel-

lar Rapid Transport's fast freights. The nearest repair facility seemed to be on Boschock III, so they headed there for help."

"Ouch," said the colonel.

"Exactly. They discovered that the settled part of the planet was nothing but a gigantic slum, run by a computer."

"What did they do?"

"We'd like to know. Whatever they did led the planetary computer to divert effort from maintenance and *rebuild the repair facility to help them.*"

"Quite a feat."

"Wasn't it? Since, at that time, we had nothing but a set of out-phased watch satellites observing the planet, we don't know just what they did. But of course, after they left, we watched them, and the watch quickly boiled down to a surveillance of three men—Roberts, the captain; Hammell, the cargo-control officer; and Morrissey, the communications officer. These three took their accumulated leave, and started looking around for a ship to go back to Boschock III."

"So they could perfect what they'd used there before?"

"Why else would anyone go back to that place?"

"Hm-m-m. So then we found out what they were using before they got back?"

"We did not. We sent an 'I'-class crew after them. As usual, we were short-handed, but that should have been enough. However, these three men are tough, and secretive. There wasn't anything to be found. Then Roberts, the captain, latched onto a 'J'-class ship planted in a salvage cluster. It rejected the other two men, but accepted him."

"Complicates the issue."

"Yes. Now we were up against our own stuff. Symcomp was perfectly happy, of course, since it could follow what was happening through this J-ship's own symbiotic computer. But where did that leave *us?* Roberts, of course, merely thought he'd bought a good ship at a comparative bargain price. We couldn't contact *him* because that would wreck his trial period. Meanwhile, on this end, Symcomp was perfectly bland and uninformative. Doubtless Link knew what was going on, but we weren't informed from there, either."

The colonel said curiously, "What happened when these three men got back to Boschock—or Paradise, as they call the miserable hole?"

"What happened? Well, while they'd been gone, the inhabitants had split up into warring factions. When they came back, Roberts presented himself as their liege-lord, Vaughan, Duke of Trasimere—*and they accepted him.*"

The colonel looked startled.

"And that's the ultimate cause for this masquerade we're carrying out right now?"

"That's just the barest suggestion of it. Next, there was a war between Duke Vaughan, and a sorcerer

called 'Oggbad.' Where Oggbad came from, we have no idea. But there's some ferocious wild life on that planet, and the wild life *cooperated by attacking the city in support of Oggbad.*"

"Holy—"

"Naturally, the inhabitants suspended their differences to protect themselves against Oggbad. That temporarily ended the factional strife amongst the inhabitants. But you see the significance of all this?"

"Sure. Roberts and the others must have developed an emotional-field generator and learned to use it. It must be big and powerful, too."

"Exactly. And with that, if they choose, they could carve out quite an empire. But they don't seem to be doing that. Instead, as nearly as we can judge, they're trying to straighten out the mess on Boschock III. Now, in brief, that's what brings us here, and if Larssen doesn't run wild on us, we should have them on board shortly, and start to figure this business out."

"Wait, now. With their own E-G, aren't we taking a certain risk in bringing them aboard?"

"*If* they had with them one of the power that they used on the planet, sure. But Ahrens tells me that's impossible. Anything they've got on their ship, we can beat down. He'll pour on the power as soon as they're in range, and reel them in so dewy-eyed and overcome to be members of the Interstellar Patrol that they'll hand their plans over voluntarily, and be grateful to do it, at that."

The colonel frowned, then shrugged. "Well, that gives a clearer picture of that part anyway. But, that's not what you called about, is it?"

"No. We're already doing about all we can there. This other business is unrelated, except that it adds to the strain. It's nothing of *our* choosing."

The colonel smiled. "You don't mean the Space Force is calling on us for 'interservice cooperation'?"

"Not the Space Force—PDA."

The colonel's smile faded. "When Planetary Development admits it needs help, it *is* in a mess. What's got them by the throat this time?"

"Nothing serious. Just two dozen petty kings and princes."

The colonel frowned. "Two dozen petty—"

"You see, PDA is opening up new regions for colonization. Since travel by colonization ship is not the best possible preparation for the rigors of life on a new planet, PDA likes to give the colonists a chance to recover, and to finish their fitting out, at a Rest & Refit Center, before the final stage to the colony planet. It generally works out that if the R & R Center is on an Earth-type planet, it simplifies things for everyone. PDA has found exactly one Earth-type planet that's ideally situated as a site for an R & R Center. This planet is already settled

by an intelligent life form so human in appearance that, for all practical purposes, you might as well say there's no difference."

"So PDA has to get the approval of these people before they can put their Rest & Refit Center on the planet."

"Exactly. And that's where the fun starts. This place is backward. Each pipsqueak nation on the planet is run by a petty monarch of some kind. A few of these local princes do their jobs. But the bulk of them spend their time popping grapes into their mouths, spurring on the recruiting teams for the harem, and figuring out how to wring more taxes out of their subjects."

The colonel thought a moment, then shrugged.

"Then the people should happily vote the princes out of office. Let PDA run the Space Force in there, to cover them while they explain the principle of the vote, and, in no time at all, they'll have the approval of the populace." The colonel leaned back, and clasped his hands around his knee. "That solves the problem."

The figure on the screen smiled sourly, and held up between finger and thumb a small message spool. "This is a record of the story as I got it from PDA. What's on this spool explained the thing to me, and it will explain it to you just as well. Then you can figure out the solution for yourself." He dropped the spool into a small shiny cylinder, and popped the cylinder into a hole.

The colonel sat up. "Wait a minute. Then *I* can—?"

"Obviously, *someone* has to handle this mess. And Symcomp has made its choice. The problem is all yours."

The wall screen faded out.

Across the room, the lid of a pneumatic chute snapped open. A shiny metal cylinder popped part way out, opened up, and dumped its cargo.

With a clang, the message spool dropped into the tray.

II

The colonel stared at the spool for a moment, then gave a short bark of a laugh, scooped the spool up, and went out the hatch-type door. A brisk walk down a corridor brought him to an unmarked hatch that gave way at the pressure of his hand. He stepped into a small neat room, one wall of which was lined with books, while another wall bristled with a formidable array of weapons. A small viewer sat on a stand by the desk at the foot of his cot. The colonel shut and locked the hatch, then snapped the spool into the viewer, spun the chair around, and sat down.

He was at once presented with a view of a desk, behind which was seated a fussy-looking individual in a state of considerable nervous tension. On the desk was a nameplate

reading, "R. Halstead, Senior Administrator." On the desk were three viewers, several racks of spools, and a pile of reports. A small side table held an ash tray heaped with cigarette butts, a half-empty glass of water, and a small pill bottle with the cap off.

The administrator cleared his throat self-consciously.

"Ah . . . I have been assured by my superiors that it will be within the normal canons of proper procedure to apply through channels to determine the availability of . . . ah . . . interservice assistance regarding a matter of some consequence to the . . . the fullest settlement by humanity of the available interstellar territory consonant with equitable treatment of less-favored inhabitants of the planets in question."

The colonel listened intently. With all this jargon, the administrator must have something to hide. He went on:

"The situation is of more than normal urgency, having been the subject of many exhaustive studies by the foremost authorities in the relevant fields of supply factors and transsolar jurisprudence . . ."

The colonel waited out a lengthy statement designed to show how much work PDA had done. Then came a complex justification of PDA procedures, which the colonel listened to closely, since he had no idea what esoteric point they might be hung up on now.

In due time there emerged the sentence, ". . . Since, of course, due consideration must be assured for the established customs of the indigenous sentient populace, it would obviously be intrusive and autocratic to force upon them our conception of representative government; a more enlightened policy requires that no such intrusion be tolerated; the existing allocation of administrative authority must be regarded as uniquely suited to the conditions obtaining at the moment amongst the populace; and hence their leaders, whatever the outward apparent form of their government, must be regarded as the *duly-chosen representatives of the people* . . ."

The colonel hit the replay button. He went over this section until he was satisfied that he knew what it meant: Regardless of circumstances, whoever was in charge when PDA got there, *that* was who PDA dealt with. In this case, that meant two dozen wrangling petty princes.

The administrator went on, "We find it most unfortunate that these Planetary Representatives, by a vote of eighteen to six, have chosen to reject the building of a Rest & Refit Center on the planet. There is no other suitable planet *for* this facility. Obviously, we can't send colonists into this region without proper preparation; and yet, to be true to our own principles, we can't *force* the local princes to accept the R & R Center. Any administrator who did choose to do that would be removed

by higher authority. We can't permit any outsider to use force against them, either. They are our responsibility. We must *lead* them, not *force* them. Yet we must have this Rest & Refit Center. Hence we've had no choice but to put the Center out to contract, on the assumption that the contractor will persuade the Peoples Representatives of the advantages of accepting the Center. Unfortunately, no contractor has felt confident enough to submit a bid."

The administrator now projected three-dimensional views of the planet's location, and its single inhabited continent, showing the rocky, reef-bound coastline, primitive cities, loosely connected by the wandering network of local roads, and fertile river valleys given over to a checkerboard of tiny plots. Then came a view of the people in one of the cities, wrapped in white robes and jostling one another as they streamed across the baked-mud plaza, to hastily jump back as a gilded coach drawn by four weasel-headed animals rushed around the corner. Through the open windows of this coach could be seen an immensely fat individual wrapped in gold and orange cloth. The people, taken by surprise, were a little slow to get out of the way, and a petulant face bellowed orders out the window. The coachman lashed out right and left with a long whip. After the coach passed, the people fell on the ground to kiss the dirt where it had gone by.

The scene vanished, and the administrator said, "We've done our best to find some solution, but unfortunately we haven't succeeded. There seems to be no way to proceed, but the R & R Center is vital. Any assistance you can give us will be deeply appreciated. . . . The remainder of the spool contains a statistical summary of conditions on the planet, for your information."

The colonel skimmed through the summary, then turned to a dial on the blank wall against which his desk rested. He tapped out a call number, then his own identification code. A moment later, the wall seemed to vanish, and he was looking at the same strongly-built, sharp-eyed man who had given him the assignment, and who now smiled at his expression.

"How do you like it?"

"It's an interesting problem," said the colonel. "As I understand it, it boils down to the fact that PDA has *got* to have a rest center on this planet, can't get it without interfering locally, and yet its own rules forbid it to interfere locally, since there's a sentient race on the planet."

"Worse yet, PDA can't let anyone *else* go down there and use force, bribery, or any of the obvious ways to get these princes to change their minds. If it weren't for that, some contractor would have turned the planetary politics inside out, and the R & R Center would be built by now. But the rules are iron-

clad, even if the result is stupid. And there are watchdog committees to look for any breach in observance of the rules. What unavoidably has to be done here is to get results that are just, but possibly—considering only the letter of the law—illegal. PDA isn't set up for that. That's in *our* department."

"How much help can I count on for this?"

"Anything you want . . . in the line of full departmental aid, equipment, supplies, any free ship you'd like—"

"I was thinking of personnel."

"Well— You know what *that* situation's like."

"Yeah."

"We're recruiting by every means we can think of, and we're still short-handed. There isn't much we can do about it. Lowering standards certainly won't help." He shook his head. "You can have anyone available. But there are none too many available."

The colonel thought a moment. "Anyone not already assigned, I can use? *Anyone?*"

"Right."

"O.K. I'll get right at it."

"Good luck."

As the scene faded from the wall, the colonel sat back, his eyes narrowed, and then he sat up and his fingers flashed over the dial. The wall remained blank, but a voice said briskly, "Personnel Monitor."

"The day before yesterday, I administered the oath to a Candidate Nels Bergen, inducting him as a Recruit. I then sent him for routine orientation, and clothing and equipment issue. Where is he now?"

"One moment . . . Recruit Bergen is at this moment arguing with the Quartermaster Assistant regarding the fit of a pair of uniform trousers."

"Then no one has claimed him for any assignment?"

"No. He is only a recruit."

"O.K. Thanks." Rapidly, he punched out a new call. A voice replied, "Project Monitor."

"Any current project with the designation, 'Operation New Vote'?"

"Spell this, please."

The colonel spelled it.

"One moment . . . No . . . Additionally, we find no past such designation recorded."

"Thanks. Put me through direct to the project controller."

The wall lit up to show a tough-looking individual with sandy hair and an alert watchful expression. "Hello, Val. What can I do for you?"

"I want to register the project-designation, 'Operation New Vote.' I've already checked with monitor."

"O.K. That part's easy."

"For personnel, I'm assigning, first, Recruit Nels Bergen—"

The project controller squinted. "Wait a minute, now. I know what the personnel situation is, of course, but—a *recruit?*"

"This one we got out of a Space Force guardhouse. The boy is rugged, did splendidly on his physical and attitude tests, is smart and mentally alert—very fine material, and I believe this operation, while not subjecting him to any particular danger, will give him a splendid opportunity to gain an insight into how we operate, and should . . . hm-m-m . . . motivate him excellently for his more formal training when he returns."

"We just want to be sure he *does* return. Every qualified man we can lay our hands on is worth a basket of diamonds. What *is* this excursion you're taking him on?"

The colonel briefly described the situation on the planet.

"Hm-m-m," said the project controller. "Why not take a battery of emotional-field generators, and wrench these princes around to the right viewpoint?"

"PDA is duty-bound to watch this planet like a hawk. What happens when all these petty despots suddenly get cooperative? Sure, we've solved the problem for PDA; but we've also presented them a piece of information that's none of their business."

"Yes— They might deduce the existence of the E-G. Hm-m-m . . . and if you provide some logical reason for the princes' change of heart, that logical reason will doubtless fall under the heading of 'bribery,' 'compulsion,' or something else PDA can't allow."

"Right," the colonel said bluntly.

"You're going to have to be kind of subtle on this one."

"Yes."

"All right. I'm going to recommend that this recruit be assigned to Operation New Vote. I'll put him on the personnel list provisionally, until we see whether personnel melts its coils over this one. Who else do you want?"

"Recruits Roberts, Hammell, and Morrissey."

The project controller shook his head. "I suppose if this isn't too dangerous for one recruit, then in theory it's not too dangerous for four. But you need some sprinkling of trained men. *One* recruit is one thing. Four of them is something else again. I'm afraid I'll have to—"

The colonel spoke quickly. "Well, I agree, if these were *ordinary* recruits, but these are very exceptional men, who—"

"All our recruits are exceptional men. They're hard to get. That's why we can't have them shot to pieces because they weren't trained in the first place."

"I mean, seasoned men. These are all . . . that is, the captain—"

"What captain?"

The colonel realized that he had come close to letting the cat out of the bag. He started over. "I mean, these men have their own J-ship."

"Ah? You mean, they're all ship-selected?"

There was the catch. If he admitted to the project controller that

two of these men had failed to pass the scrutiny of the J-class ship, and had apparently been admitted only on Roberts' say-so, the project controller would naturally decline to let them go along. The colonel said, "What I mean to say is that the captain of the J-ship was formerly captain of a fast transport, which involves plenty of responsibility. He's not likely to be green or rash."

The project controller looked impressed. "What about the other two?"

"They were his cargo-control officer, and his communications officer, on board the transport. His personal selections, apparently. Too bad we can't get more recruits to bring in recruits. It might solve our problem, or ease it anyway."

"Yes— Well, I'm sure Personnel has thought of—"

While the project controller was momentarily distracted with this line of thought, the colonel added, "Anyway, it seems as if they should be reasonably stable men."

"True enough." The tough face frowned, as if in partial awareness of something wrong. Then the controller shrugged. "The main point is, we don't have four unseasoned or suggestible recuits. O.K., who else are you taking?"

"I'll have to check with Personnel to see who's available. I wanted to get these men assigned before anyone grabbed them."

"What about ship and equipment?"

"I'm going to have to study this information to get a preliminary plan. *First* I wanted to be sure that when I had a plan, I would have somebody to carry it out."

"O.K. I'm definitely assigning the J-crew, as a unit. I'm tentatively assigning Recruit Bergen. How's that?"

"Fine. That's a load off my mind."

"I hope this personnel shortage eases up pretty soon. Well, let me know when you have your ship and equipment lined up."

"I will. Thanks."

The wall went blank, and the colonel wiped a fine beading of perspiration from his brow and punched another call number. A voice promptly replied, "Personnel Monitor."

"I'd like to know what personnel are available for assignment."

"One moment . . . No personnel below the equivalent grade of colonel are currently on the Available List. There is a Colonel Valentine—"

"I'm Colonel Valentine."

"Then this is of no assistance."

"Correct. What about new recruits?"

"Only one new recruit is available at this location. One moment . . . This recruit has already been assigned, provisionally, to Operation New Vote."

"How about . . . ah . . . recruits expected to arrive here in the near future?"

"I will check . . . Only three recruits are expected to arrive here in the near future. They are already assigned to Operation New Vote. If you wish to contact the operation commander—"

"Thanks. I'm in charge of that operation."

"Ah. Then that is no help. In summary then, these are the total personnel at this location currently available and unassigned: zero."

"O.K.," said the colonel. "Thanks."

He rapped out another call signal. A new voice replied.

"Ship Operations Monitor."

"Give me a report, please, on the current confrontation between ourselves and the Space Force fleet commanded by General Larssen."

The wall immediately lit, to show, hurtling past against a brilliant backdrop of stars, the rigidly-spaced array of a formidable fleet.

"General Larssen," said the monitor, "has accepted the situation with an ill grace, and is withdrawing under imminent threat of attack by His Royal and Imperial Majesty, Vaughan the First, backed by the massed power of Imperial Trasimere, as symbolized by this dreadnought."

"Mm-m-m," said the colonel, scowling. It was all right to go along with this masquerade, so far as the outside was concerned. But to dish it out to their own people seemed like too much. "And when," said the colonel dryly, "is His Royal and Imperial Majesty due to get here?"

"At any moment."

The colonel came to his feet. "What bay?"

"Center Main Number One."

"Thanks."

He was out the hatch and running up the corridor in an instant. If he delayed, Intelligence would grab his men for a prolonged interrogation. It would be all he could do anyway to get Intelligence to settle for a memory simulation. And to do that, he had better be right on the spot when they got here.

He stopped at a door marked in glowing green letters, "Express," pulled it open, jumped into the empty gray shaft within. "Center Main Bay Number One! Emergency! The Chief's business!"

The walls blurred around him.

A cool voice spoke from a slim strip grille running along the length of the shaft.

"Relax your muscles. Physical resistance may create severe pain and bodily injury."

The colonel relaxed, and closed his eyes to shut out the dizzying blur as the walls flashed past. More and more rapidly, his limp body bent and twisted at each curve of the shaft, his movements progressively more forced and violent, as if against his will he were being put through a course of strenuous calisthenics. And then the rapidity and force of these movements mounted until he felt as if he were being shoved through a winding twisting maze at

top speed. Yet he felt no sense of forward motion at all. He concentrated on staying relaxed, his attention focused first on the muscles of this limb, then of that, as his body bowed and jerked like a marionette run by a madman.

Then the motions began to slow, and he allowed himself to open his eyes. He had time to remind himself not to use that phrase, "The Chief's business" quite so lightheartedly the next time.

Then the door of the grav shaft opened up and spat him out, the words from the grille reaching him, "Center Main Bay Number One is straight ahead."

He strode swiftly down the broad corridor, through a wide thick double door, and then there stretched out before him a space huge in itself, though small in relation to the size of the ship, in which rows of racks of various sizes stood nearly empty. Here and there a ship, itself of respectable size, nestled in a rack exactly fitted to it, a rack equally well-fitted holding it from above, so that no sudden acceleration or shift in gravitic field could tear the moored ship loose.

All this was familiar to the colonel, and he had also expected the score or so of men, some of them with Intelligence insignia, who stood a little back from the near end of the entrance, waiting. Nevertheless, something unusual in the air led him to look around uneasily.

To his right, in the surveillance ell projecting out beyond the near end of the membrane, half-a-dozen men operated big E-G machines. The men leaned back in their raised seats, guiding the snouts of the machines according to the image of a battered J-class ship on the wall before them, visible almost as clearly as if seen through a sheet of glass. These machines, no doubt, were only a part of Ahrens' overpowering battery of emotional-field generators. The colonel frowned. Just so long as they *were* overpowering. He wasn't eager to find himself in a battle of E-G machines, however weak the other side might be by comparison. Just let Ahrens pop them out of their ship in a wave of devotion and awe, and the colonel would have them on his team before there was time to say "Yes," "No," or "But," and while Intelligence was still choked on its own outrage.

Alertly, he watched the image of the ship move forward, and then, from his viewpoint, it vanished. The E-G operators, receiving slightly different patterns of light from their viewpoints, raised the snouts of their machines an instant later, and threw the main switches to "Off" lest they unintentionally affect their own people. The nearest E-G operator now raised a fluorescent yellow-and-black paddle overhead. An answering wave from behind the rack told of the E-G machines concealed there, taking up the slack.

And that gave the colonel's uneasiness a focus.

Had there been a gap between the coverage of one set of machines and the turning on of the others? And if so, why?

Then the nose of the J-ship appeared through the thick membrane, the membrane close against it at all points, so that no slightest detectable loss of air took place. The gradually-appearing J-ship, though obviously battle-worn, blazed in gold and platinum, and now a dazzling set of three coats of arms flashed into view.

The colonel felt an unaccountable sense of awe.

He heard an indrawing of breath from the men waiting in the bay.

The glittering J-ship was now fully inside.

. . . And now the colonel was stricken with an urge to drop reverently to his knees.

III

Inside the J-Class Interstellar Patrol ship, Roberts, Hammell, and Morrissey had spent the last hour in that state of nerves induced by having their fate in the hands of others.

First, there had been the question whether Larssen would call their bluff and wipe them out, and then there had been the agonizing question in their minds about this huge dreadnought. But the voice of the symbiotic computer had answered their questions, and the reply from the dreadnought had seemed reassuring, and they had been content enough during the first part of the approach to the dreadnought.

More than content, they had been proud. Proud to serve with the legendary Interstellar Patrol. And more than proud, they had been humble. Humble because they really did not feel that they deserved the honor. And not only had they felt proud, and humble, but also determined. Determined to make the best of their good fortune, and do their best to deserve to be in the Interstellar Patrol. And so far, it was all right. So much emotion might naturally follow from what they had experienced. But then, not only did they feel proud, and humble, and determined, but as they entered the huge port of the dreadnought, they also felt awed, and impressed, and worshipful, and unworthy, and submissive, and obedient, and earnest, and loyal, and apologetic—and when the thing reached a certain pitch, there was an instant of sanity, and Roberts glanced at Hammell, and both men looked at Morrissey, who turned to look at the want-generator, and said, "It's turned off."

Roberts said, "Maybe *ours* is, but there's one somewhere that isn't."

And before he fell blubbering on the deck in his humility, he managed to shake a supertranquilizer pill out of a small can, crumble it to bits, and swallow some.

A plate of thick glass seemed to descend, cutting him off from the rest of the universe. Outside this plate of thick glass, there was a sense as of mighty forces beating in vain against an unyielding barrier.

Hammell also ate several bits of the pill, and so did Morrissey. Then they looked at each other like so many vegetables nodding in the hot sun, and for a little while they were so stupefied that no ideas at all came. Then Roberts glanced at the outside viewscreen. "We're almost inside the dreadnought."

Hammell said dully, "Not that it matters, but we're in kind of a hole. It's all come about step by step; but how we're going to get out of it—"

Roberts groped for something to say, and then, possibly because he had taken very little of the super-tranquilizer, he felt a sudden flare of defiance and spirit.

Moving swiftly, for someone under the influence of the drug, he slipped out of the control seat, ducked under the shiny cylinder that ran down the axis of the ship, and bent to set the want-generator.

IV

The colonel, watching the J-class patrol ship glide fully through the membrane, felt the sense of awe strengthen unbearably. The glittering ship seemed to blaze in glory. His mind, groping for some explanation, was overloaded with sensations. Dazedly, he heard a clear, deep, faintly ironical voice say, "On your knees, gentlemen. It is His Royal and Imperial Majesty, Vaughan the First, our Most Just and Fearless Sovereign."

The colonel knelt, his first thought being wonder at his own hesitation. His second thought comprised a clicking together of these last words and what he had heard before about this ship and its crew. The logical answer sprang into his mind:

They're taking over the dreadnought!

Holding his mind locked on what he had to do, the colonel staggered to his feet.

Directly in front of him, forty feet away beside the glittering J-ship, stood a crowned figure in blazing golden armor.

The wave of awe was almost too much for the colonel, but he managed to stay upright on his feet.

Then he heard a cool voice say dryly, "You shut yours off, and we'll shut ours off."

The meaning came through to him. He sucked in a deep breath and roared, *"All E-G batteries! Cut to zero and stand by!"*

To the colonel's right, the men staggered to their feet and pulled themselves up into their control seats, their hands near the levers and switches. Their machines were already shut off, but they must obey the order to "Stand by."

A judicious voice called from the J-ship. "It just let up. Shall we shut it off?"

"Shut it off. But stay right with it."

The sudden relaxation of the sense of psychic pressure staggered the colonel. But his mind and body were well exercised, and he recovered his equilibrium quickly, thinking, "So that's what a battle of emotional-field generators is like!" But it seemed obvious which side had the heavier guns, and they obviously had the will to use them, so it looked like a good idea to get this business settled quickly.

Brusquely, he said, "We'd appreciate it, Recruit, if you'd get out of that monkey suit on the double and report for assignment."

A chilly voice replied, "We don't much care to have our emotions tampered with. If this is your standard practice, you can look elsewhere for recruits."

The colonel's original uneasiness at the way this was to be handled returned, and he said in a conciliatory voice, "Whether you realize it or not, people who have just used an emotional-field generator to take over a planet, for whatever reason, and whatever motives, are not so harmless that they can be welcomed into a ship without precautions."

There was a brief silence, then the armored figure turned away.

"We'll be right out."

The colonel appeared to have won. But there was no "sir" at the end of the sentence, and it was evident that the new recruits had suffered an early disenchantment.

Still, they *were* recruits. And recruits were desperately needed.

Impatiently, the colonel waited for them to come out.

V

Inside the patrol ship, Roberts, Hammell, and Morrissey glanced at each other doubtfully, then shrugged. They might conceivably fight their way *out* of the huge ship, but then what? Once outside, the gigantic weapons of the dreadnought could squash them with ease. And, assuming they were able to use the want-generator to immobilize the whole gigantic ship, then make good their escape, which seemed doubtful, they would then be in the position of having acquired for an enemy the Interstellar Patrol. Anyone with any faint experience in the matter would rather be hunted by the Space Force. The Space Force at least had strictly-defined limits on its sphere of action. Possibly the Interstellar Patrol had such limitations, but, if so, no one seemed to know what they were.

Roberts ducked under the shiny cylinder that ran down the axis of the ship, leaned across the control panel, and tapped a button marked "SymComp."

"This dreadnought we're inside of *is* an Interstellar Patrol ship?"

SymComp replied: "It is."

"And it's still under the control of the Interstellar Patrol?"

"Yes."

"Those people waiting for us outside are members of the Interstellar Patrol?"

"They are."

Roberts straightened up, and glanced at Hammell and Morrissey.

"We might just as well go on out."

"O.K."

The three men got out of their battle armor, made themselves as presentable as they could, and climbed out.

They found themselves at one end of an enormous spaceship hangar, with a spare, strongly-built colonel facing them with a look of genuine welcome.

Roberts, keenly aware of everything about him, saw the ships, of various sizes but roughly the same overall shape, held tightly in their cradles. He noticed a large, peculiarly-shaped device at the edge of the door they'd apparently come through; in an upraised control seat, the operator of this device, a faintly punch-drunk expression on his face, was glancing down ruefully toward Roberts. That same punch-drunk expression was on the faces of several other men standing around with various insignia on their uniforms.

The insignia and the uniforms themselves caught Roberts' attention. The colonel's insignia of rank was the usual Space Force eagle, its wings spread and claws clasped about a slender rocket. But the uniform itself was unusual. At first glance, it appeared to be made of a fine leather of some kind. It was hard to say its exact color, though Roberts at first was certain it was dark-green. An instant later, he thought it was a very dark brown. Then he became aware of a gray tone, like the bark of maples transplanted from Earth, and seen in shadow. The uniforms were cut to allow ease of motion but they appeared tailored to a near-perfect fit, just loose enough not to hamper movement. At the waist was a moderately-wide belt, apparently of some dark leather, that held a holstered pistol on the right side, and what appeared to be a hunting knife on the left side. There were also several small leather cases fitted to the belt. Roberts was reasonably certain that these belts would be awkward and uncomfortable to wear, yet everyone he could see was wearing them. Possibly, he thought, they'd only put them on to be inconspicuously armed, in case there was trouble.

In the short space of time that they stood silent, before the colonel spoke, a great many forms, colors, sounds, and barely perceptible odors flashed in upon Roberts' consciousness. The sum total of these, and perhaps of something else that wasn't so easily pinned down, combined to ease his wary sense of restraint.

The colonel smiled. "Well, Captain, does the Patrol pass inspection?"

" 'Captain'? A few minutes ago, sir, I was a recruit."

"You're still a recruit. But you've passed the inspection of the symbiotic computer, a patrol ship has accepted you, and you've passed your trial run without disqualifying yourself. Whoever does that has the rank of captain automatically. But there's obviously a great deal you don't know, so necessarily you're still a recruit. This may seem strange to you, but it will make sense when you think about it. There are many things about the Patrol which may seem strange at first, but will make sense when you think them over. For instance, we sometimes take recruits along on our milder operations, even before they're thoroughly trained. This, you see, gives the recruits a chance to see the Patrol in action. I don't imagine any of you would object to that, would you?"

The three men, without bothering to think about it, automatically shook their heads.

The colonel then added casually, "Then, men, you're assigned to Operation New Vote. How's that?"

They all looked more or less surprised, but said "Fine, thank you, sir," and tried to look alert and happy, though Operation New Vote could be a trip through the nearest sun, for all they knew.

"Good, good, gentlemen," said the colonel, friendliness and approval shining all over his face as he thrust out his hand. "I'm in charge of Operation New Vote. Now, of course, you'll be Roberts?"

"Yes, sir," said Roberts, shaking hands. He introduced Hammell and Morrissey, and the colonel was just turning to lead them off, all one tight little group now, when three men standing to one side suddenly gave themselves a shake, and stepped forward.

"Hold it," said one, wearing at his left lapel a small golden plow and still tinier letters that appeared to read "Tiens et" followed by something totally undecipherable. A second man, his branch of service indicated by a robed female figure holding a large ax, said angrily, "What's this? You're not trying to assign these men, are you?"

The third man, crossed spear and arrow at his lapel, said exasperatedly, "Listen, Val, we've got to question them. You can have them about two weeks from now."

"Sorry, gentlemen," said the colonel. "Why didn't you mention this sooner?"

"Sooner? We were right here when they got out of the ship!"

"I can't help that. They're already in Operation New Vote."

"Sorry. We're assigning them to quarters on call for the next three weeks."

"They've already freely agreed to go with me on Operation New Vote."

"That's preliminary, not final. Ted, get the project controller."

The colonel said with icy politeness. "The project controller has al-

ready assigned them to Operation New Vote."

"It's not final till published in the Assigned List."

"Oh, I imagine by now that's taken care of."

"Check it, Ted."

The officer with the small golden plow at his lapel had slipped a little green and orange striped device from a belt case, and now held it to his lips. His lips moved, apparently without sound, and a moment later he glanced around. "Recruits Roberts, Hammell, and Morrissey are on the Assigned List for Operation New Vote."

The officer with crossed spear and arrow at his lapel eyed the colonel as if he would like to cut him into small pieces and throw the pieces in a fish pond. The colonel smiled back cheerfully, glanced aside at his three recruits, and said, "Stay right with me, men." He tossed back, over his shoulder, "You can take a memory simulation, if you want."

"We *will* want. Listen, the Chief will—"

"The Chief has given me permission to draft anyone not already assigned. I'd avoid creating pointless antagonisms if I were you."

The colonel moved away. After a moment, he turned to Roberts with a smile. "A shame, the way some officers will try to chain-gang new recruits into three weeks of interrogation and virtual house arrest, without anyone's permission.

"Yes, sir," said Roberts blankly.

The colonel pulled open a door marked "Express" in glowing green letters, said "Operations Branch," and motioned Roberts and the others to precede him.

Roberts stepped into the empty shaft; the gray walls blurred around him, seemed to wind, twist and bend, more and more rapidly, and then finally to change shape more slowly, until they came to a door marked with several numerals, and lettered "Operations." This door came open, and they landed in a wide corridor.

The colonel said, "These men are recruits Roberts, Hammell, and Morrissey. They are to be allowed access to this floor, but for the time being can leave only with my permission."

Roberts looked around, but there was no one there save themselves, the colonel, and the door. The door swung shut behind them, and as the colonel strode off, Roberts tried the door. The door wouldn't budge.

Roberts glanced at Hammell and Morrissey, and the three men, frowning, followed the colonel up the corridor. The colonel stopped at a door numbered "14", and opened it, to show a room with two sets of double bunks, one above the other, with four desks in pairs, back-to-back, their sides against the wall, and with four lockers against the wall. There were two more doors; one opened into a tiled lavatory, while the other held a round heavy

glass porthole, through which shone what appeared to be bright sunlight.

The colonel said, "Captain Roberts, Recruits Hammell, Morrissey, and Bergen."

Roberts glanced around. There was no one there but the colonel, standing in the doorway making notes on a small pad. "All right, gentlemen," said the colonel, "you're free until 1800. At that time you will eat, in your room. At 1830 you will put on your uniforms, which you'll find in your lockers. Don't worry about the fit; they'll be all right. You will then report to Room 18, just down the hall. There you will receive about an eight-hour orientation course; this will acquaint you with our methods, generally, and also with the specifics of Operation New Vote. You will then return here. Lights out at 2200."

He nodded to them, stepped out, and shut the door.

Roberts, Hammell, and Morrissey stared after him.

VI

Hammell said exasperatedly, "Am *I* confused?"

Roberts tried the door, and it opened readily enough. The colonel was already out of sight. But now that Roberts had the door open, he noticed the list of names on the outside of the door, below the number "14":

Captain Roberts
Recruit Hammell
Recruit Morrissey
Recruit Bergen

Morrissey was saying, in a wondering voice, "at a little after 1830, we report to Room 18. There we get an *eight-hour* orientation course. Then we come back here, and put our lights out *by 2200*. But, eight hours, starting at 1830, brings it to 0230 tomorrow."

Hammell said exasperatedly, "Either he meant we'd get back after lights out, or else we've gotten into the Interstellar Patrol's private Institution for Mentally Disadvantaged Persons."

Roberts ran his hand lightly across the lettering on the door. It felt perfectly dry, and smooth, as if the lettering had been put on with a very thin quick-drying paint—or as if the letters were inset flush with the door.

Roberts cleared his throat. "Before we jump to conclusions, what was on this door when we walked into the room?"

"Just a number," said Hammell. "The number 14, I think."

"Take a look at it now."

Hammell and Morrissey came over, looked at the door, felt of it, and glanced around wonderingly.

"There's more to this place than meets the eye."

Roberts walked to the far door, where sunlight appeared to shine through. He was looking out on a broad sandy beach. To his far right, blue water sparkled, while, close by,

white foaming surf rushed far up the beach. To his left was a kind of open park, with occasional tall spreading trees, and roughly-cut grass. As he watched, a mower went by, floating perhaps three inches above the ground, the cut grass pouring out in a green fountain, to be dispersed by a brisk wind.

Hammell shut the corridor door and came over. "That's an effective illusion."

Morrissey said, "Why put it in a *door?* In a larger window-type frame, it would be refreshing. This is just tantalizing. You don't see enough to enjoy it, yet you can't actually go out, either."

Roberts glanced around, and spotted a small clock on the wall. This told him that ship time was a little after two in the afternoon, or 1400. That left almost four hours until 1800. The colonel had said they were "free" until 1800. Free to do what? He glanced back at the door, then reached out.

"Brace yourselves," he said. "When I pull the handle, that will probably work some switch that will show us a snow scene, or a waterfall, or a beautiful girl sitting on a rock with the spray splashing around her."

Hammell shrugged. "Go ahead. Obviously, there's nothing there. We know they don't have a beach and half an ocean inside the ship."

Roberts snapped the handle back, and pulled sharply.

The door swung open.

Bright sunlight and sea air filled the room.

Just beyond the threshold was a very short open passage, a second high threshold, and dazzling sand.

They simultaneously started forward, and then simultaneously gripped each other. "Wait a minute. *Maybe* this is alsens. But if it's some kind of 6-V, we don't want to smash into the projector heads."

Morrissey said, "If it's alsens, the whole room must be part of it. We could see it from across the room."

"With the door *shut,*" said Hammell. "That could be 3-V. Then the alsens goes on when you open it."

Roberts glanced around, saw no warning sign, and felt his way forward. He stepped over the second threshold, groped around in the air, felt nothing but sunlight and a fresh breeze, stooped, felt the hot sand, and glanced back.

Morrissey get back out of range of this. How does it look?"

Morrissey backed until he was across the room. "It still looks the same."

Roberts shook his head. "One way to find out." He scooped up a handful of the hot sand, and stepped back inside.

The sand, red grains and yellow grains with separate flecks of black, was still there in his hand.

They looked at each other in astonishment.

Roberts tossed the sand back on the beach, looked around exasper-

atedly, and said, "Well, *you* know it isn't real, and *I* know it isn't real, but can you think of any better way to spend the time from now till 1800?"

"No. Let's try it." They went back inside to toss shirts and trousers on the various bunks, then started out.

The water, when they dove in, turned out to be not quite ice-cold. They plunged and swam, were buffeted and rolled over and over by the breakers, staggered to their feet, sinking slightly in the soft sand, and dove in again. The sun blazed steadily down from above, and the white-capped breakers crashed endlessly in. Before an hour was up, feeling refreshed and yet tired out, they sprinted back across the blazing sand, showered in hot spray, and then stretched out on their bunks, to fall asleep at once.

Roberts became aware of the distant clanging of a gong. He fought his way up some kind of dark tunnel, and sat up dizzily, to find that he was lying on a bunk in a room where three other men were stretched out insensible, the covers over their heads. Roberts, overtired and feeling irritated, dropped off his bunk, and at once the clanging stopped. He looked out the door to the "beach," and it was just starting to get dark out there. Then he became aware of a smell of freshly-grilled steak. It hadn't occurred to him until then that he was hungry. He looked around, to see a tray of steak and French fries on each of the small desks in the room. He took hold of the metal uprights of the bunks, and shook them. Hammell and Morrissey staggered out, stupefied and muttering incoherently. From the last bunk, a lean face about twenty years old looked out. This face was pink complexioned, with angry light-blue eyes, close-cropped blond hair so light that it was almost white, and an out-thrust chin with a slight cleft or dimple that seemed to set the seal of stubbornness and pugnacity on the face.

Roberts sensed a tough material that something useful might possibly be made out of. "You're Nels Bergen?"

"Yes," said Nels Bergen roughly, putting a slim muscular arm threateningly over the edge of the bunk, "and who do you think *you* are?"

Hammell and Morrissey glanced at each other, picked up their trays, and abruptly started toward the "outside."

Roberts' irritation heightened for an instant, then transmuted itself into pure pleasure. He yanked Bergen off the cot—mattress, mattress cover, sheets, blankets, and all, so that he landed with a solid thump on top of the mattress with the covers strewn all over him.

"Conceivably, I am your commanding officer," said Roberts,

"but don't let that bother us. Stop hiding under the sheets, unless you've got a broken arm, and let's hear you use that tone again."

Morrissey opened the door, and carried his tray outside.

Hammell followed close behind.

Bergen erupted out of the tangle of covers like a jaguar out of a brush patch, and slammed Roberts back against the corridor door.

Roberts struck Bergen an open-handed blow to the side of the head, that gave a crack like a fusion gun. He pinned Bergen's legs with one arm, heaved him over his shoulder, and dumped him on the other upper bunk.

"Now, friend, we begin again. The alarm has rung, knocking one of your fellow roommates out of bed. Time is passing, and we all have to get to Room 18 in thirty minutes. It would be easier to let you sleep but duty calls. With gentle blandishments, we bid you cast off the blinkers of Morpheus."

Roberts gripped the bunk, and shook it till Bergen was flung around like a boat in a hurricane. "Please decide," said Roberts, "whether you wish to get up or stay in bed. The choice is entirely yours, of course."

Bergen stared out dazedly as the room danced around him. "O.K. I'll get up."

"There's a little word," said Roberts, stepping back politely as Bergen dizzily swung his feet over the edge, "that soothes the egoes of those who hunger and thirst after rank. It's only a short word, but what self-respecting man can say it without its catching in his throat and gagging him? His stomach turns over, he feels nauseous and cheapened, but—"

Bergen stared at him. "Sir."

"That's it," said Roberts, smiling. "How it soothes my soul to hear it! Drop it into the conversation now and then, when you have time. It will cement our friendship."

Bergen dropped off the edge of the bunk, steadied himself with one hand, and said, "I'm sorry, sir. I always wake up in a bad mood when I'm tired, and I was worn out. I—"

"Say no more about it. I understand. Count on me to waken you with only the softest whisperings from this time forward. But meanwhile, time's passing. Take a tray."

"Yes, sir." Bergen sat down beside the nearest tray. He looked up at Roberts, who waved his hand beside his head, and called out to Hammell and Morrissey, "Better come back in. That alsens is so real I've got illusions of gnats flying around my head."

They came inside and shut the door. "It would be nice if we could figure the thing out."

"Better save our strength for Room 18," said Roberts.

They all sat down with their trays, and ate hurriedly.

On the wall, the second hand of the clock swung steadily around.

The uniforms the colonel had said they needn't worry about turned out to be a poor fit: Tight at the shoulders, loose at the waist, the sleeves binding their muscles when they bent their arms. Roberts, Hammell, and Morrissey angrily expressed their opinion of these sacklike uniforms, in words of few syllables. Then Bergen said, "My uniform fit the same at first. I don't understand it, but it's looser where it used to bind, and tighter where it sagged, and now is a decent fit."

"Another puzzle," said Roberts. "Come on, it's almost 1830."

They went out and down the corridor to Room 18. They shoved the door open and went in, to experience a peculiar blur that caused them to pause just inside, then step on through the doorway, pull the door shut behind them, glance up and down the now extremely dim corridor, then turn to look back blankly at the closed door, marked "18," behind them.

For a second, they stood frozen, then Roberts shoved hard on the door. The door didn't move.

"What in —?"

"We just went *in* there!"

Roberts shook his head. "Wait." Mentally, he retraced his steps, down the corridor at 1830, through the door, and, with no memory of turning, back out to pull the same door shut behind him, and find himself in this dimly-lit corridor.

Hammell said, "Is this *another* corridor?"

"Hold on," said Roberts. "There was a *blur* back there. What did the colonel say we were going in there for?"

"To get about an eight-hour orientation course, that would acquaint us with their methods, and also with the details of Operation New Vote."

And then they all stood there in silence.

Operation New Vote, they now knew, without any memory of being told, was the problem of getting a Rest & Refit Center accepted on that planet run by a collection of petty humanoid princes. Roberts could see the planet in his mind, could see the inhabited continent's rocky coast, the small farms, the haughty princes, and the enduring trudging people. And, with all of this vivid information, there was the reservation, "This is the information as received from Planetary Developmental Authority. Reserve final judgment until we see it ourselves at firsthand."

Hammell said, in a peculiar tone, *"Daira go nasht?"*

The meaning came across to Roberts clearly: "And this that transpires here— It is what?"

Morrissey said dazedly, "We've even got the languages!"

Nels Bergen said, "And— We're all members of the Garoujik Construction Corporation!"

That was right there in their minds, too. PDA wanted *someone* to bid on a contract to put up the

R & R Center. This had now happened. The Garoujik Construction Corporation had bid on the contract.

And what was the Garoujik Construction Corporation?

PDA didn't know it, but Garoujik Construction Corporation was the Interstellar Patrol.

VII

When they got back to their room, they got another shock. That the clock should stand at 2156 was no surprise. They had already deduced the passage of time, and made allowance for it in their minds. What they hadn't suspected in the darkened corridor looked at them now out of the mirror in the tiled washroom. When they stood before the mirror, not a one of them could recognize his own features. Four strangers looked back at them with expressions of amazement.

They washed, and got ready for bed. "What was it the colonel said this would do—acquaint us with their methods?"

"Yeah," growled Hammell.

Morrissey said, "*I* can't think of anything having to do with their methods."

Roberts growled, "The *whole thing* acquaints us with their methods—indirectly."

Overhead, the inconspicuous lights of the room suddenly dimmed. The slightly-glowing clock face showed that it was one minute before 2200.

Irked and disgruntled, their thoughts a whirl of information about the planet they were headed for, and their duties as members of "Garoujik Construction," they climbed into their bunks.

The second hand of the clock swung to the vertical, and the lights went out completely.

The only glow in the room now came from the softly-lighted clock face, and moonlight shining on the "beach."

That scene outside, with the water washing in long white streamers up the sand, should have been restful, even romantic.

With growls of exasperation, they turned their backs to it, pulled the covers around them, buried their heads in their pillows, and fell asleep.

Down the hall, the colonel was on his feet facing the screen above his desk, where the same strongly-built man who had given him the assignment in the first place now looked out with a puzzled frown.

"Tomorrow morning? Sure. You can leave yesteday, as far as I'm concerned. As long as Intelligence has its memory simulation, the sooner you get out of here, the better. They're sure to find something about the simulation that isn't clear. They'll want to question your men, and on top of this damned Super E-G, the last thing I want is to ref-

eree a fight between you and I-branch."

"Fine. There are just a few more details, and I can get started."

"O.K., then. Good luck."

The screen went blank.

The colonel gave a satisfied grunt, hung up his uniform shirt, sat down at the desk, got pad and pencil, and jotted down the few things that still had to be done. Then he sat back and looked at the list critically.

Unless he had overlooked something, he was in good shape to get out of here early tomorrow.

But he always *did* overlook *something.*

It would occur to him tomorrow, as they were ready to leave. Or, worse yet, after they had left, and then he would have to come back, and bully everyone in reach, or else they would catch on to the silly oversight he'd made, and he would look and feel like a complete boob.

He sat back, and imagined himself ready to leave. It was tomorrow, and the ship was ready, the cargo on board, the men climbing in, and now he told them to shut the hatch, and—

He sat up abruptly. How had he forgotten *that?*

He reached out to impatiently tap the dial near his desk.

Roberts, Hammell, Morrissey, and Bergen were awakened by a clanging, bonging noise so loud and rude as to bring them all out of their bunks in a nasty frame of mind.

The colonel's voice, brisk and cheerful, reached them from a speaker they were too sleep-drugged to try to locate.

"Good morning, gentlemen! As you see, it's a fine day outside. I've gotten you up half-an-hour early, so you'll have time for a little fresh air before we start. Anyone who wants to crawl back in his bunk is free to do it. But, believe me, it's nice outside. A horn will tell you when it's time to get back. You'll eat in your quarters, and we'll be ready to start immediately afterward. You need bring only yourselves, the uniforms you received yesterday, and your hand-weapons belts. Meanwhile, have a good time."

The four men looked around stuporously, made spasmodic motions toward getting back in their bunks, then turned to look at the sunlight flooding through the thick round window of the door. Bright blue sky showed overhead, and a gentle wash of the sea on the sand could be faintly heard. Roberts growled under his breath, and walked over. Outside, the sea was far calmer than the day before, and the sky was a deep blue, with just a small white cloud moving slowly past high above. He glanced at the disguised stranger who was Hammell. Hammell nodded exasperatedly, and Roberts pulled open the door.

Outside, the air was fresh and

cool, the sun hot, and the bright sand sizzling underfoot. They sprinted down the beach to the cool dark sand washed by the surf, then waded out in the cold water. Half-freezing, they ducked underwater, swam furiously out from the beach, and now the water seemed pleasantly mild. After a while, Roberts methodically swam far out, to look back at a sweep of sandy shore that stretched, gently curving, out of sight in both directions. Far off to his left, he could see the hazy outline of a kind of tower, and what appeared to be a thin rail stretching out into the sea. What might *that* be?

There was a quiet splash, and Hammell surfaced beside him.

"Some illusion," said Hammell, looking around.

"And yet," said Roberts, "as you said yesterday, they obviously don't have a beach, and half an ocean, inside the ship."

"I know it."

They considered the situation in silence, then Hammell said, "What do you think of this outfit, so far?"

"Well— They're exasperating. And they aren't infallible, as you can see from what we did to them yesterday. But they don't fool around, either. I get the impression there's a high ratio of brains to mass in this outfit."

Hammell nodded. "And we've only begun to get a look at it. It's like an iceberg. Seven-eights underwater. Maybe more of it will come to the surface when we tangle with this Operation New Vote. Boy, there's an impossibility if I ever saw one. You can't hit them, and they're unpersuadable. Where do you take a grip on a thing like that?"

"There's one hopeful sign."

"What's that?"

"According to the information we got last night, five or six of these two dozen petty kings are *sensible*."

"Yeah, but the vote has to give a big majority, or the R & R Center is no go."

"Well, it's an opening, anyway. But we don't have to figure it out now. Come on, I'll race you to shore—that is, if you know anything beside the dog paddle."

Hammell, born on a planet named "Poseidon," smiled faintly, sucked in a deep breath, and ducked underwater.

Roberts started a fast crawl toward the shore. As he'd been Hammell's captain on the fast freighter *Orion*, he was familiar with Hammell's record, and knew what he was taking on. Roberts went through the water in a streak of foam. But Hammell was waiting when Roberts reached the shore.

An instant later, there was the loud blare of a horn.

VIII

The trip to the planet began with a series of shocks that made successively weaker impacts until the four men nearly reached the state

where nothing would surprise them.

To begin with, well before their ship was to leave the dreadnought, Roberts, standing beside the big hatch as he adjusted his unfamiliar weapons belt, somehow dropped the belt. It didn't *fall* to the deck outside. It *floated*. Roberts climbed down the handholds of the space-yacht-type ship, stepped out to pick up the belt, and the ship was gone. As he stood staring around stupidly, a voice from above irritably directed him to put out his hand. He touched the side of the ship, and immediately could see it again. When he climbed back in through the big hatch, he happened to notice the total thickness of the beveled edge of the hatchway. It was at the very least six times thicker than any space yacht Roberts had seen before.

Bemused by these preliminaries, the men started for the grav shaft up to the next level, and banged head-on into a thick highly-polished column that ran vertically up the axis of the ship. When they did go up the shaft, they discovered that it stopped short of the sixth level, which usually contained the control room, but now had no visible entrance at all. The fifth level consisted merely of a space seven feet high three feet wide by two feet deep, the walls of which were fitted with a screen showing the detailed *illusion* of the usual fifth level. The control room turned out to be on the fourth level, along with five different weapons lockers, and the control seat and the controls themselves were unlike anything Roberts had ever seen in a space yacht. They were a lot closer to what he'd found in his salvaged patrol ship. The sleeping quarters were on the third level, along with highly functional kitchen and washroom sections.

Hammell said ironically, "This space yacht is sure luxurious—like a barracks."

Morrissey smiled. "And flimsy—like a fortress."

Roberts said, "It doesn't seem possible, but I know what this ship *look*s like."

"What's that?"

"A large Interstellar Patrol ship, *in disguise as a space yacht.*"

"It *does*, at that."

Their speculations were ended abruptly by the appearance of an impressive-looking individual who radiated financial know-how and business acumen. When this tycoon opened his mouth, the colonel's voice came out:

"If I remember correctly, Roberts, you are supposed to be the pilot of this ship. Suppose you jar yourself off the mark and get in there and do some piloting."

After this, Roberts was in something of a state of shock until they reached the planet.

The planet drifted up toward them like an old acquaintance that they knew well from some previous

visit. Their first sight of the green and tan continent, its forbidding coastline lit in hard-shadowed relief by the early-morning sun, was like a familiar face. They stared down at half-lighted valleys, swift-flowing rivers, and numerous patchworks of small farms, many of them far removed from any sizable cities.

"That orientation," growled Hammell, "was pretty effective."

Roberts frowned at the screen and drifted down toward what looked at first like a collection of small towns inside a strong wall on a bluff above a wide swift-flowing river, with a granite palace near the center, and a number of large rectangular buildings in many separate walled enclosures throughout the city. Near the palace, on the other side of a wide stone wall, was an open square that Roberts knew to be the "Visitor's Campground."

As Roberts headed toward it, the colonel stepped into the control room.

"When we set down, gentlemen, I am going to need the services of my 'lawyer' and my 'financial advisor.' My 'crew,' however, is free to see the sights, and you'd better go through the city, and get as good a sense of the general atmosphere as you can. Are the people content, or miserable? Is the place well run? Are the people reasonably well fed? Take a look at the food-storage warehouses. Look over the roads. Watch for one particular phenomenon— If you've learned something in your orientation, and it's contradicted by the facts here, there will be an instant of surprise and disorientation, and then the incorrect fact will vanish like the memory of a dream. The instant you feel that disorientation, hang on to the memory of the misleading 'fact' and tell me the first chance you get. If PDA is trying to run our head into a noose, we want to know it."

Roberts set the ship down, and they looked out at the capital city of Mardukash, one of the larger of the planet's two dozen kingdoms.

As the colonel conferred with the disguised Morrissey and Bergen, Roberts and Hammell put on native-style loose blouse and trousers, under long white robes, and set out through the city.

Their knowledge of the general layout proved accurate, and they found themselves walking down wide cobbled streets that sloped toward gutters in the center, with shops to either side whose owners were putting up their shutters to display earthenware jars, baskets woven of reeds, brightly-colored cloth, cheap jewelry, woven hats with wide down-curving brims, and a variety of handmade iron tools. Here and there, they passed more strongly-built places, with iron grilles in front. These were spice shops and the business places of goldsmiths.

Everyone Roberts and Hammell saw seemed brisk and cheerful.

"O.K. so far," said Hammell. "Isn't one of their food-storage warehouses around here?"

"If we take that street to the left up ahead, it ought to bring us to it."

They turned left, and gradually a massive gray stone wall came into view. Armed men, spears and bows ready, patrolled the walls. Beyond loomed the tops of buildings, long and with steeply-sloping roofs, that they wanted to look at. But they soon found that the outer wall blocked their view of the inside.

A long walk, past a part of the city devoted to stables for beasts that looked like a kind of big slender otter, and past a section devoted to the sale of seeds, and plows made of hard wood or iron, brought them to the city's east gate. The gate was open, and beyond it, heavily braced from below, a bridge reached out across a wide ravine, turned ninety degrees toward the north, then swung ninety degees east again to reach the opposite bank. The bridge was wide, but had only a low flimsy rail at the edge. Just as Roberts and Hammell came up to it, a gaily-dressed rider, approaching at a gallop along the dirt road to the east, was desperately slowing his mount. After almost plunging into the ravine, he called out to the guards, "I come to purchase spice from far Iandul. May I enter?"

"Yes, friend, and we have the spice," said the guard atop the wall. "For once, the cursed reefs let a ship through unhurt. But enter at a walk. No one rushes the Iatulon's capital at a gallop."

"So I see. Your roads are so good, compared to our own rutted bogholes, that I was careless. I will be more alert."

The guard smiled. "I observe you are a noble, so let me warn you. If you use your lash on a commoner here, the Iatulon's guards will have you in a flash, and you will spend the night in poor accommodations, and go out in the morning with a lighter pocket. On the other hand, if any commoner attempts to provoke you, report it to the first guard you see, and the nuisance will be ended. Go through with a plain, cheerful manner, and all will be well. Try haughty airs, and you will have your foot in a hole from now till you leave. The Iatulon doesn't use the grand manner, and no one else can."

"Ah? No one? And what then of the Iatulon's queen?"

"Of that, friend, say no more. In any case, no one knocks a woman's head off for pride, but *you* are a man."

Smiling, the nobleman came through the gate, nodded to Roberts and Hammell, and trotted into the city.

Roberts called up to the guards, "We are strangers here, and want to go up into those hills to look at

the city from a distance. Is it all right?"

"It is permitted, but if you go beyond the open pastureland into the forest, it is dangerous. There are beasts there that forage for nuts and the root bark of certain favored trees. They have an evil disposition, and worse yet, they are armed with a horn like a dagger in the center of their foreheads. If you come upon them amongst those trees, they will rip you open from groin to gizzard. The only safety is to climb a tree, and then you are stuck there till they decide to move on. Owing to their disposition, they will starve a while in the hope that thirst will bring you down. Best keep to the open. If they come at you there, yell at the top of your lungs, and run for your lives, downhill and away from the forest. They cannot catch you, and will fear that your screams will bring mounted men, who will attack them in the open. After a short run and much snorting, which will increase your speed, they will give up."

Roberts laughed, and thanked the guard.

The guard smiled and waved, and they walked on up the dirt road into the open grassy hills.

When they were high enough, but still well below the trees, they looked back. From here, they could see over the walls around the storehouses.

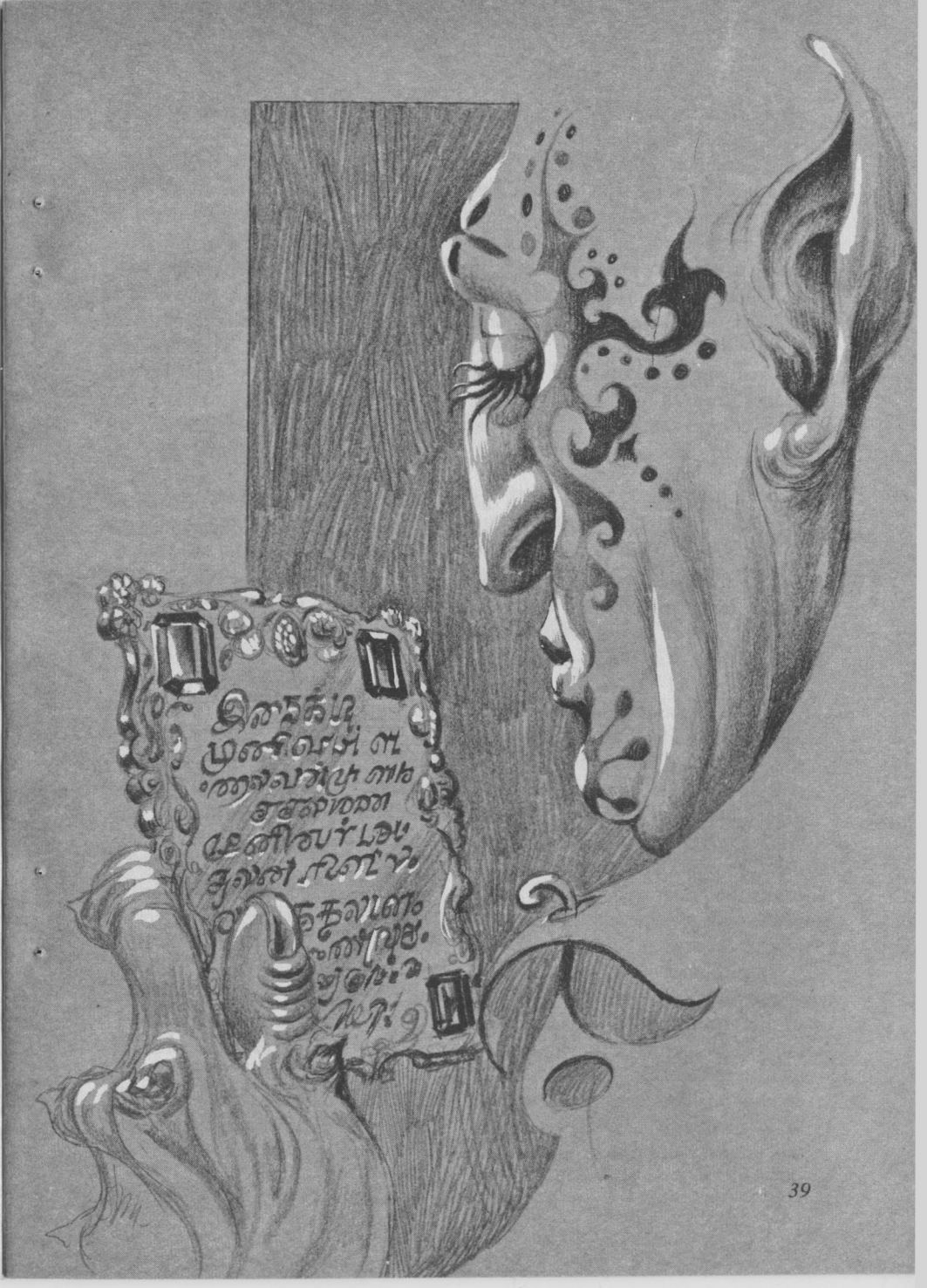
Each storehouse was white, made of a native concrete, and raised ten to fifteen feet off the ground on massive arches. The storehouses were rectangular, with steep roofs that had a wide overhang on all sides, and screened ventilators at the ends. Each was set apart from the others by a smooth, out-curving cement wall some eight feet high, with a tightly-fitted metal gate at either end.

Roberts and Hammell, studying the scene through binoculars, noticed men coming out of the warehouses with the critical look of inspectors, as others checked the walls and grounds. Wagons were let in through the metal gates, and the gates closed tightly behind them. The wagons pulled out of sight under the storehouses, as other wagons reappeared heaped with yellow grain, to leave by the opposite gates. Within and between the separate walled warehouses, there roamed animals that Roberts at first thought were the local form of rats. But a little more watching showed that they had no fear of the men, who in turn paid little attention to them. It followed that they were roughly the equivalent of barn cats.

After watching an hour or so, the two men glanced at each other.

Everything they had seen spoke of foresight and good order. Without a word, they got up and started back.

On the way, the city seemed more familiar than ever, until they reached the Visitors' Campground. Here, the ship was practically lost



from sight, in the center of a host of tent makers and their poles, cords, and gorgeous rolls of purple, gold, and yellow cloth, with wagons hastily unloading chests and boxes, then rattling off at a fast trot, to bring in yet more merchandise.

When they finally located the colonel, he was examining a large ruby, while a beaming jeweler poured out a selection of flashing stones from a purple velvet bag. The colonel excused himself, listened to Roberts' report, then smiled.

"I think this place will be all right. We ought to be able to do it."

The following days saw the colonel's fame spread. He was soon known as Yel Den Garoujik—the Star Prince Garoujik—and when the rumors of his wealth and impressive dominion amongst the stars had spread widely enough, the Iatulon, consumed with curiosity, had one of his court functionaries drop a hint that His Highness might be willing to grace the Yel Den's table. The Yel Den promptly sent an invitation engraved on a silver plate, with an emerald at each corner for decoration.

The colonel was in the control room, his robes slung over the back of the control seat, when Bergen popped in to tell him the Iatulon had accepted the invitation. The colonel nodded, and glanced back at a small auxiliary screen, where the signal degarbler showed a member of the Interstellar Patrol's legal staff.

"It's O.K., Val," the staff member was saying. "The local PDA consul on the planet isn't likely to interfere until later, if at all. PDA is so desperate to get this job done that they won't want to wreck it unless you should blossom out with bribery, or coercion. They'll *watch* intently, though only an expert at spy devices would know it. But they'll be watching only for any interference in local affairs. Any effective interference is illegal."

The colonel smiled. "All I intend to do is talk—starting with the Iatulon."

"I don't see how words will straighten this mess out."

"They're just the first link in a chain of events."

"Well, good luck with the Iatulon, anyway. He's got a double-edged three-foot sword, remember."

"Sure," said the colonel, smiling "but he only uses it on people who don't do their jobs."

That evening, the Iatulon, a tall impressive figure in flowing robes, showed up with a small but businesslike escort, ate moderately of the feast spread out before him, and cheerfully accepted a magnificent ruby put at his place with the dessert, according to local custom when entertaining royalty.

He retired in a benevolent mood to the flowered terrace beside Yel

Den Garoujik's pool, where the stars were mirrowed, as magical musicians played softly, rendered invisible by the power of the Yel Den's wizards.

After a lengthy but companionable silence, the Iatulon glanced thoughtfully around. "An entertainment to dwell upon in pleasant memory, Yel Den Garoujik. I thank you."

The colonel bowed his head, and settled himself to the customary flowery exchange of compliments. "And I thank you, Great Iatulon, for your presence here."

"I have done nothing."

"This is but a setting for the jewel of your presence. What is the setting without the jewel?"

The Iatulon looked at him with a smile. "Jewels are expensive, Yel Den Garoujik. One does not spend of his substance to place a jewel in a setting unless he has a purpose."

The colonel, slightly off-balance, said courteously, "That is true, Great Iatulon."

The Iatulon leaned forward. "Then let us to the business, Yel Den. I am hung about the ears with those who are too frightened of my sword to think, and with those who would not think if they could think, because of the pain that would come with their first thinking. Around my borders dwell rulers who neither think nor work save when dire need rouses their hunger. I would sweep away these triflers, but long thought shows me the task outweighs my resources. Thus I am condemned to a circumscribed sphere, amongst fools and would-be idlers. What has brought the jewel to this setting, Yel Den, is not the thought of food and drink, or sweet music, though such things are pleasant, but the prospect of *discourse amongst equals*. You are here for a purpose. Let us now to the purpose."

The colonel promptly discarded some carefully-prepared flowery phrases.

"In the future, many star ships will travel near this world. Whoever can induce the rulers to accept the landing of the people from these ships, will add much to his treasury."

The Iatulon looked puzzled. "I have heard of this plan. But I tell you, Yel Den Garoujik, that no one, unless he employs sorcerers of the highest degree, will persuade the rulers of this world to agree to such a thing. *I* will agree to it. Therefore, without thought, my neighbors will disagree. They will not judge a matter on its merits. They will not *think*. Hence they will not agree."

"And yet, I believe there is one condition in which all the rulers *would* agree."

The Iatulon shrugged.

"Have you a magic potion which will make them think, Yel Den Garoujik?"

"Unfortunately, only a few will think."

"But if only a few will think, and only those who think will agree, how can you say *all* will agree?"

"I say only, 'There is one condition in which *all the rulers* would agree.' "

"*If* all think."

"Yes."

"We travel in circles, and arrive nowhere. They are fools, and will *not* think."

"Fools may not think, yet all the *rulers* might."

The Iatulon began to speak, and suddenly stopped. He turned to stare at the colonel who looked back quietly.

The Iatulon cleared his throat. "Forgive my slowness, Yel Den. I realize now, there is some reason why you would have the thought arise in my own mind with but a hint from you. I follow the trail thus far. My ears are attuned, and my attention prepared, to grasp the idea when you set it free."

"You have roads here, Great Iatulon. What do you think of them?"

"I would not poison your air with my thoughts of them. The streets are cobbled and bearable. In this season, the roads, though most are narrow and winding, are not bad. In very early spring, and in late fall, most of them, because of mud, are good only as obstacles to an intruder. Man or beast will sink to his hips in the worst of these roads. Wagons disappear in them to the axles, and sometimes to the bed. Such are our roads, and yet, they are good enough for our needs. If we travel far, we come to the border, where the enemy has soldiers to put an arrow through us if we cross. Your mention of roads carries me nowhere, Yel Den Garoujik."

"Then let your thought travel upon a finer road, Great Iatulon—a road such as can be made by choosing the route with care, sending men ahead to clear the way, while others bring stone from the place where the road has already passed, and gravel and dirt, and pack it into place to make way for the wagons that bring yet more dirt, stones, and gravel, from the places where this road has already gone, and that have been leveled to make it smooth. Such a road can carry a big idea, amongst other things— Such things as spice, gold, fine tools, and works of craftsmanship, which now must come by sea and upriver, with many shipwrecks and at great cost."

The Iatulon stroked his chin. "That *is* a big idea. But, Yel Den, ideas of any size founder upon the rocks of stupidity, as a spice ship on the coastal reefs. The kings will not agree to *that*, either."

"Even if they are paid the *tolls*?"

The Iatulon looked blank.

"*Tolls*? What word is that?"

"What merchant would not gladly pay a small fee to trade by land with far places? This payment, or

toll, would go direct to the king's treasury. This would be a *royal* road, Great Iatulon, and each length of it would be the personal property of the king through whose territory it passed. The king need only set up a strong guardhouse by the road, and a gate on the road, and collect payment from every merchant who passes through."

The Iatulon sat back. "This appears to be a practical idea. Whoever refused to cooperate would rouse the anger of those who wished to have the tolls, and hence he would risk his throne. If I understand this, the royal treasuries would be paid much of that money now lost to rocks and storms, along the whole length of the miserable coast."

"True. And since the merchants need no longer fear these things, they should be willing to pay the tolls. If all those princes who *do* think should start work on such a road—"

"Yes, but wait. There is a problem. My kingdom, although far from perfect, is at least better ordered than those of my neighbors. While I have a Master of the Roads, they leave it to the peasants to repair the roads on threat of a beating. Yet the peasants are already busy in the fields, tending the crops, and repairing the damage done by the feuds and hunts of the boisterous nobility of these countries. What with the local robbers, the nobility, and the lack of vermin-proof storehouses, there is little excess from one year to the next to carry them if they *did* work on the roads. Everything is ill-ordered. With no Master of the Roads, no work chiefs, no men accustomed to earn extra coppers each year on the road, and no stored surplus of food, how *can* they build? The only system and method in such countries is applied to the army, the tax collector, and recruitment for the harem."

The colonel nodded, his face expressionless. "And yet, such a road would be of great benefit."

"They will *wish* to build it. But they will be unable. As the carouser wishes to mount the steps, but his limbs will not function."

"And yet, if *your* work chiefs had *their* peasants to do the work—"

"Their peasants would not do it for my men, even if my men had permission to cross the border. Their peasants leave their crops only on threat of the lash. There is no profit for them in it."

The colonel said, in a thoughtful voice, "What would happen if they *were* offered pay?"

"Their kings will not deprive themselves, and their treasuries are as disordered as everything else."

"What if *you* paid them?"

The Iatulon looked at him flatly.

"You suggest that *I* pay out of *my* treasury to build *their* road?"

The colonel said courteously, "It would be presumptuous of me to make such a suggestion. But it oc-

curs to me to wonder *what would happen if you did*?"

The Iatulon stared, started to get up, then paused. He gave a low exclamation. Finally he looked at the colonel in astonished respect.

"Truly, Yel Den Garoujik, the man who thinks of such a plan thinks deep thoughts."

Courteously, the colonel said, "It merely seemed to me that such a road might be a benefit to the planet. I thought you would appreciate its virtues."

"You need say no more, Yel Den Garoujik. And when the time comes to vote, count on me to favor the rest camp for the Star Men."

IX

From Mardukash, the colonel moved on to Sil, then Yarum, then Garanzol, and in each of these places, good order reigned, and the colonel was listened to respectfully by rulers whose trend of thought followed the same pattern as the Iatulon's. Each was in turn angered, then wide-eyed, at the thought of subsidizing a road for his neighbors.

In each of these petty kingdoms, Roberts and Hammell found the people content, the troops loyal and alert, and the storehouses full.

Roberts, when not out gathering firsthand information, spent some time wondering about the colonel's plan. The basic idea seemed plain enough: The colonel intended that the best-organized kingdoms should combine in building a great Royal Road that would benefit all the kingdoms by providing a better route than the hazardous sea journey.

But why should the richer kings suddenly turn into philanthropists? And what good did all this do for Garoujik Construction and PDA? Roberts, puzzled, watched to see what would happen next.

When the well-organized kingdoms had been visited, the colonel had Roberts land at yet another Visitors' Campground, and this time Roberts reported that while the people seemed reasonably content, there were signs everywhere of inefficiency.

"Be specific," said the colonel.

"Well, sir," said Roberts, "first, you've got to give the guards at the gate a little something extra to 'oil the hinges,' in order to get in or out. Second, under the usual robes, the people wear the usual loose blouse and long loose trousers. But in this place, they sell a flat leather pouch you wear on a harness under the rest of your clothes. That's on account of pickpockets. When we asked one of the merchants, 'What about the guards?' he looked at us as if we were crazy, and said, 'The pickpockets divide with them.' Third, the public storehouses in the city are alive with rats. It seems that the Great Zaragol pays a bounty on every hundred rat tails that are brought in from the royal

warehouses. The people in charge of the royal warehouses don't get any salary; they're supposed to live on the bonuses, and the more diligent they are, the more they get. It sounds good, but they can't trap rats in the warehouses unless there *are* rats in the warehouses, and we saw one of these people toss a piece of meat to a cat, take a quick look around, then bash the cat's head in and flip it over the wall."

"What do the people think of these things?"

Roberts shrugged. " 'So it has always been. So it will always be.' "

"Where do they get their food when the royal storehouses run out?"

"There are private storehouses that seem better managed, but they're always low by the end of the year. Then the Great Zaragol puts the squeeze on the farmers for 'trying to starve the people.' He can generally wring something out of them so everyone gets through to the next harvest. If not, there's a famine, and that lowers the population, so the next year's food supply will feed the remainder."

The colonel said somberly, "What about the army?"

"What soldiers we saw seemed tough and good-natured. It's hard to judge without knowing more, but it looked as if the men were probably good fighters, but not well organized."

"This fits with what PDA told us," said the colonel. "Well, the thing is now in motion. We'll just have to keep an eye on it, and see how it goes."

Roberts said politely, "Speaking as just a new recruit, sir, who doesn't know much, *what* are we supposed to keep an eye on?"

The colonel smiled. "Since we are inside this ship, Roberts, where PDAs receptors are being fed a thoroughly falsified picture, I suppose we can be frank."

"Yes, sir," said Roberts.

"When a clandestine organization can't hope to get its goal achieved directly, what do you suppose it does?"

Roberts groped mentally. "Apparently, it will have to go about it indirectly."

"For instance?"

"Well, ambush the opposition, tie up his communications, create diversions, wear him out with false alarms—"

The colonel nodded. "That's an armed *military* opposition. Suppose we consider the case of *a few men* who wish to reorganize a planet, and are forbidden to use force or large-scale bribery?"

"That's exactly what I don't see."

"They may be able to do it with an *idea*."

"Sir, that sounds good, but—"

"An idea that offers the locals a visible real or apparent gain, but that has as an inescapable by-product the starting of a chain of events that the majority of the locals do not realize. Those who do

realize it may attempt to block it, but they will be silenced by the majority, who see only the immediate gain. The resulting chain of events is like a chemical reaction, Roberts, and although exact details are impossible to predict, the overall 'reaction' proceeds inexorably, to the final products—unless a new 'reaction'—a different chain of events—is started by the intervention of some new factor."

Roberts said hesitantly, "Sir . . . isn't that pretty theoretical?"

"Very. In practice, the problem, of course, is to find some idea that will appeal to the locals for their own reasons, and that incidentally will start the desired chain of events."

"Such a chain of events has been started here?"

"Of course."

"I don't see it."

"You will."

Roberts said wryly, "The Interstellar Patrol doesn't give information away, does it?"

The colonel smiled. "The Interstellar Patrol gives practically *nothing* away."

Roberts nodded.

"However," said the colonel, "when you've learned a little more about it, you will also see that the Patrol places very few restrictions on what you can *earn*."

Roberts said exasperatedly, "Sir, what *is* the Interstellar Patrol."

"That is a piece of information that you will have to earn."

"And just how do I earn it?"

"By discovering the way to find the answer."

Roberts smiled. "And I suppose if I wanted to get rich, I could achieve that, too, if I could first figure out what mysterious thing to do to achieve it."

The colonel shrugged. "You don't have to achieve that. As far as that's concerned, you, Hammell, and Morrissey, *are* rich."

"You mean, rich in companionship, or some such thing?"

"No," said the colonel, "I mean, rich in money."

"This is news to me."

"Then you don't understand how the Patrol works. When we take something, we pay for it. When you three men came on board, you brought along a gadget far in advance of anything we had in that line, and that promises to be extremely useful—if something of a headache. But, if someone else had discovered this and used it against us, it would have been much more than a headache; hence, you have brought us something extremely valuable. In return, you are given a large money reward. This is only fair."

Roberts said dazedly. "This can be drawn on?"

"Whenever you want, when you're not on assignment to a specific duty."

"It was Morrissey who actually worked out the device—"

"In apportioning the amount of

the payment, all facts available to us and to Symcomp were carefully considered. But bear in mind, you brought the device into the Patrol, intentionally or not, and this weighs heavily with us."

Roberts turned away, then paused, the colonel's words playing themselves over in his mind. " 'Symcomp'? What's that?"

"One of those things you can learn about if you can discover how to find out what you want to know."

Roberts told himself he had assimilated enough for now, anyway. "I'll try to figure it out, sir, when I accumulate the strength. Thanks very much for what you've told me."

"Perfectly all right, Roberts. You were entitled to it. Otherwise, I wouldn't have told you."

As the days passed, the results of their efforts began to show up. Going out into town, they could not help but hear word of the "Great Road," as the people called it. Soon, they saw a more tangible sign—peasants who rode into town on weekends, money jingling in their pockets. Business picked up and became brisk. A boom developed, and merchants and artisans labored overtime to supply goods to meet the demand. Then, as the road came closer, the laborers began to come into town on weekday evenings.

Watching the cheerful throngs buy necessities, and later watching them buy the worthless trinkets that increasingly appeared in the shops, Roberts began to feel uneasy. Approaching a peasant laden with several dozen strings of glass beads, three stuffed dolls, a large bolt of cheap cloth, and fifteen pairs of sandals slung over his shoulder on a woven grass cord, Roberts spoke apologetically.

"Pardon me, sir, but I am a stranger here. If you will excuse my ignorance, I would wish to ask a question."

The peasant looked at him with shrewd good humor. "Ask away. But speak quickly, as I must return on the Great Road tonight with these goods." A glint of pride showed in his eye.

Roberts said apologetically, "I mean no offense . . . perhaps it is just that I am a stranger here . . . but I seem to notice a spending of good money for what, where I come from, some might think to be goods more for pleasure than for use. I mean no offense, but only wonder at such freely-spent wealth."

The peasant smiled and nodded. "We are all become like nobles, and spend money as they do. It is that the Neighbor King, who builds the Great Road, spends lavishly of his substance, for labor that is no worse than what a man must do in his own fields for half the sum or less. Thus we have quickly supplied our needs, and, that done, to what use shall we put the money? True, some of

the silver can be put in the floor, and the spot smoothed over, but to earn much money and spend little is to tempt robbers, and that is not wise. Why should not my wife have that which will please her eye, and my children have that which will enliven their play, and keep sharp stones from their feet—especially when these are things that will be seen by those who steal, and these things will say to them, 'No money here. That fool Ayok has thrown it all away on his family.' Eh?" The peasant jabbed Roberts lightly with his elbow. "Are we, then, such fools?"

Roberts smiled. "Not now that I understand it. Your words have cleared up the mystery."

"Come work on the road. The silver flood cannot last forever, but while it lasts, it is better than to break your back in the fields. Nearly all who farm, and can reach the Great Road, will have a welcome rest this summer. You can share in the wealth."

Roberts smiled. "Perhaps I will. Thank you."

The friendly peasant moved away.

And then, like a blow to the back of the head, suddenly the next link in the colonel's chain of events came across to Roberts.

Here, all around him, spending cheerfully the money earned on the road, were a large proportion of the farmers of the country.

Across the road, under the sign, "Logash & Brothers," grain and dried vegetables were being weighed out to a line of children who handed over their coppers, and hurried home with the food they'd been sent to pick up.

As, across the street, last year's grain was weighed out from the storehouses, over here the peasants laughed and joked, and then headed home to rest up for another day's work—*on the road.*

"My God," said Roberts.

He walked across the street, uncertain exactly what he had in mind, and nodded to a smiling man who stood in the storehouse, a little back from the wide doorway, watching the money rattle into his till.

"Sir?" said the man, half-bowing. "Will you have *dar, qadron,* or perhaps a measure of *nerbash?* We have dried *rashids, pinths,* and still some ground-nuts, though we are completely out of *tekkary*. I believe Gashar, across town, has some, but beware his *qadron*. It is said the rats have been in it, though do not say I said it."

Roberts said hesitantly, "I am a stranger here—"

The man said warily, "Do you have money?"

"Yes."

"Ah, but you do not know our delicacies? Well, our *rashids* and ground-nuts are very good this year. The *rashids* are three coppers the bunch, and the ground-nuts are a

small silver-piece for one hand of them. It is high, but this is the last of the season's. Will you buy?"

"Yes."

"I will serve you myself. Ah, this Road is a great thing, is it not? When it is done, we will have spice from far Iandul, and not at the price of two hands of silver wheels to the half-leaf of spice, either."

Roberts said hesitantly, "But the Road takes many farmers from their work, does it not?"

"Yes, but how else? Who would not work at double the wage for less labor? Everyone prospers. Look at the money flow! Even those who do not work on the Road are rich, because of what they sell to the road workers!"

Roberts tried again. "How will the harvest be this year, do you think?"

"Who can say? There is something no man knows. But we'll get through. There are those who say that this prosperity will go on forever. And why not? If there is much silver, men can buy. And if they buy, other men have the silver and they can buy. Thus is everyone become prosperous. Here you are, sir. Thank you. If you find my goods to your liking, come back, and I think you cannot do better. You will find no rat tails and offal weighed out to you from my scales, even with the scrapings before harvest."

Dumbfounded, Roberts nodded and started back to the ship. On the way, he stopped, and gave his purchase to a little girl, who accepted it smilingly, and looked wonderingly after the somber stranger before running in to hand the food to her mother.

X

The Road approached the city, at first as a sound of crashing trees, and the shouted orders of men urging on beasts of burden. Then the crews clearing away the forest and bridging the streams actually came into view. Then came the bulwark of yellowish-brown dirt, rocks, and gravel, more dirt, rocks and gravel endlessly cascading down as double files of wagons unloaded and went back, and endless lines of men, carrying wicker baskets between them, filled the gaps between the wagons, then walked back single file to let the unloaded and now faster wagons go ahead. To either side of the Road, swarms of men cleared away the undergrowth, and made tangled barriers of felled trees as a discouragement to robbers when the road should be put into use.

The city, by now, was in the grip of delirious prosperity, the men working overtime to fill the unheard-of demand for goods, and the women and children coming out in crowds, to observe the steady advance of the cause of all this wealth. Silver and copper changed hands in a magical flow, but Roberts and Hammell, going out into the countryside to look at the farms,

saw only kitchen gardens, tended by the women of the families, and weedy fields, with occasional boys, too young for heavy work, out pulling up thorny vines, lest they grow big and interefere with the next year's harvest. At rare intervals, there was a good field, tended by an old man, who preferred to stay home, and do work he was used to, rather than make the trip to work on the road. But, with rare exceptions, the food-producing regions within reach of the Road were a wasteland.

"Will you have enough," Roberts asked a road worker in town, "when the stored food is gone?"

"Oh, Shachrim and Fazir have many good farmers, and when the Road crosses the border, we can buy from them. This Road will solve many problems. We never could buy from them before until after the ground froze, because the roads were so bad. Now all will be different. Excuse me, now, good sir; I am a monied person, and have many important purchases to attend to."

At last, there was nothing more for Roberts and Hammell to report to the colonel. The colonel, who each day lifted off with Morrissey and Bergen to observe the progress of the different sections of the Road, suggested that Roberts and Hammell go to work on the Road. Then they could report to him the mood of the road workers on the job.

Carrying a large wicker basket between them, Roberts and Hammell reported for work the next day, and by noon were exhausted, though the peasants around them trudged sturdily on without complaint. Angered at this unexpected weakness, Roberts and Hammell were grimly persisting in the middle of the afternoon when a shout went up somewhere ahead. Lost in the rhythm of the work, they set down the basket, tilted its load down the face of the advancing head of the Road, and were starting back when a murmur of dismay went up around them. They came to sufficiently to look around, and there in the distance was another tongue of dirt, gravel and stone—the head end of a road advancing toward them from the direction of Shachrim and Fazir.

As the men and wagons milled, a work chief's voice rose angrily.

"Let the work go on! Fools! It is only another part of the Great Road! Did you think we would build it all ourselves?"

"But if they, too, are all at work on the Road—"

"Will you have your pay docked? *Work*, I say! Out of the way of the wagons, there!" A large, strong hand roughly seized Roberts by the arm, and shoved him ahead of Hammell. "Keep moving! When you are back with the next load, you can take another look. All of you, *keep moving*!"

By the end of the day, when the

gong sounded that signaled the end of the work, the two roads were close enough together so that the men from both work parties mingled. Roberts and Hammell could hear the same exclamations from both sides, with just slightly different accents:

"How are your crops over there?"

"What crops? We know you will have a great surplus in such a year as this, and with the Road, we can buy from you!"

"But *we* planned to buy from *you*!"

Before their eyes, the confident cheerful faces grew frightened.

"There is nothing to do, then, but to buy from the hill people and the backlanders. But the hill people have such poor land, there will be little to sell us. And to get over river and swamp from the backlands to here with a decent load of grain will be impossible until the ground freezes."

Roberts and Hammell looked at each other.

Another link in the chain of cause and effect had come into view.

XI

The two ends of the Great Road were joined, and abruptly the flood of money ceased. Men at once set out into the hill country, and along the back roads, to find out if conditions were as bad as they seemed. Already, the price of food was climbing, as hoards of silver earned on the Road were used to buy what was worth still more—food.

And then the men who had gone into the hills began to straggle back with the bad news: Here and there were those who had food enough for themselves, and would not sell it at any price, because then *they* would starve. The backlanders had some extra food and were willing to sell it. But after the harvest was in, the fall rains were sure to begin. Then the streams would fill, the rivers overflow, and the long winding roads would be more impassable than ever. Nothing would get through until the ground froze. That meant famine.

Already, Roberts and Hammell, serving as scouts for the colonel, could notice that people looked thinner.

Roberts said, "They're rationing themselves."

Hammell nodded. "They've been through scarcity before. But probably never like this."

As the days slid into weeks, they realized it was no longer a question of "rationing."

Now, as the price of food climbed, other prices began to fall, the proprietors of shops hoping to sell something, anything, so they could pay the ever-rising cost of food.

As Roberts and Hammell, during a brief hot break in the rainy weather, passed the barred front of a silversmith's shop, a voice called,

"This copper tray, good sirs. I will let you have it for nearly nothing. One hand of small silver coins, good sirs! See the workmanship!"

An old woman, passing in the dusty street with her gray robes rightly wrapped around her, hissed, "Don't do it. You will starve without silver."

The voice came again from the barred shop front.

"Or will you have this burnished bowl? Of good solid workmanship, and it shines like gold! Four silver coins, good sirs—the small ones. That is all!"

A cloud of dust whipped down the street, and with a dry rattle, a flurry of leaves swirled from the trees.

The old woman was gone around a corner, but the silversmith's voice still followed them.

"Three silver coins, good sirs! I mistook the price! Three small silver coins! I have sold them for more than twenty. Come look. Look at it! It is a fine bowl."

They passed open shops, where people sat listlessly, then there was a sudden scurry of dust and leaves, and a small hand clasped Roberts' robes.

He looked down to see a thin face with neatly-combed brown hair, and large beseeching eyes. The face was vaguely familiar, and after a moment, Roberts remembered her. This was the little girl he'd given food to, the night that he'd first realized the famine was coming. He looked at her, and her gaze never wavered. The large eyes in the thin face held a steady look of faith.

Roberts took from his pocket a large silver coin, one of the kind locally called "wheels," because of their size and the design on the back.

The little girl took it, stepped back and bowed low. Then she ran unsteadily down the street toward the food storehouse.

The wind whipped another flurry of leaves from the trees, and they rattled on the shop roofs, then blew across the roofs into the streets, to be caught up in whirling clouds of dust, and then rushed along, end-over-end, down the street.

Something gripped Roberts by the trouser leg.

A thin-faced boy said in a singsong voice, "Please, good sir, give me silver. Or my mother dies."

Hammell said harshly, "A woman across the street just sent him out to beg."

The boy repeated, in the same singsong tone, "Please, good sir, give me silver. Or my mother dies."

The boy's eyes blurred, and he clung to Roberts' trouser leg, his hand clasping the white robe on top, and the trouser beneath, as if he were clinging to life itself.

He began again, in a singsong tone, "Please, good sir, give me silver. Or—"

Roberts took out eight to ten

small and medium silver coins, and handed them to him.

The boy shut his eyes, swallowed painfully, and then stepped back and bowed.

"Come on," said Hammell.

From a pottery shop up the road, a little girl, her face and hands painfully thin and her belly swollen out with gas, teetered into the road, looked around listlessly, then started toward the two men. Hammell angrily threw a few small silver coins in the dust before her, and strode past, his hand on Roberts' arm propelling him at a fast pace.

"All that this giving to beggars does," growled Hammell, "is to shift the starvation from one mouth to another. Look."

They'd reached a private food warehouse, where a woman stood by a barred window, under a sign, "Silver Only."

From this warehouse, the little girl was walking very soberly back toward her home, carrying, hugged to her body, a small coarsely-woven bag. Seeing Roberts, she paused and bowed, then went on, walking a few steps unsteadily, then breaking into a tottering run.

Roberts turned and looked back, and for a moment, he saw the little girl at the corner, her bag of food clutched tightly to her. Then she vanished down the street.

With a moan, the wind picked up, and the air filled with dried leaves and clouds of brown dust rushed down the street.

Roberts drew a careful breath, and looked at the food warehouse.

The woman there was holding a bundle in one arm, and in the other, outstretched, several medium-sized silver coins.

"But I *have* the money."

From the barred window came a patient voice.

"But *we* do not have the food. We have no grain at all, and will have no more roots and groundnuts till the hillmen come in again to sell to us. We have just sold the last."

"But I *have* the money, and my child must eat."

"Then go and try another storehouse. It may be that they have some. We have only enough for ourselves, and we live only from week to week. We cannot sell you what we do not have."

"I will pay you twice the price."

"Ten times the price will not buy it. It is gone."

The woman turned away, then hesitated.

"Will you sell me a little of your food? Just a little—"

The voice from the grilled window was pitying.

"No one will sell you of their own food. What good is silver to a corpse?"

The woman turned, and walked slowly away, passing close by Roberts and Hammell as if not seeing them. Roberts had his hand in his pocket, and if the woman had even looked at him, he would have given

her all of the local money he had left. But she looked neither to the right nor the left as she walked by.

After she'd passed, Hammell shook his head. "It would have done no good anyway. The trouble here is, there *isn't enough food.* When you give money, you merely shift the food from one mouth to another."

Roberts felt sick and weary.

"Let's go on back. We've seen enough."

On the way back to the ship, they passed a small group of men and women beside a felled tree. The men were methodically stripping away the bark, while the women with sharp knives clipped off the ends of the twigs, dropping them into large baskets. They worked methodically and steadily, only looking up fearfully from time to time, as if afraid someone might come and take away what they had.

Back at the ship, Roberts and Hammell discovered a visitor in the form of a smaller ship marked with a string of numbers, and the letters, PDA. The colonel was just coming out, shaking his head.

"There is nothing I can do. It's a question of time and freight capacity. Let's say a pound of food per person per day will barely sustain their lives. How many people do you say are involved?"

An earnest-looking man appeared in the hatchway of the PDA ship.

"We don't know. We lack the facilities to say accurately, but on the whole continent—it could be anywhere from ten million to one hundred million persons."

The colonel shook his head. "If it's one hundred million, it will require a shipping capacity of fifty thousand tons per day. Where will we get the shipping? The food itself is problem enough. I know of no stocks in frontier regions on any such scale as that. And we're well out at the edge of the frontier. Now, this food will have to be brought from a great distance, and that will take *time.* When we get it here, it will have to be *distributed.* Can you begin to conceive of the organization this will require? I'm not equipped to begin to do this. Possibly PDA has the organization to handle it."

"I . . . I've received word we *cannot* handle it. I'd hoped you—"

"It's entirely beyond me. I realized, of course, when I suggested this road as a means to facilitate surface transport and . . . ah . . . cultural interchange, that some slight dislocation might result, but I didn't realize— You know, in a way I feel responsible—"

"Not at all, sir. We at Planetary Development have all been most impressed with the humanitarian selflessness of this project."

"Well . . . thank you. That means a great deal to me. All I can say is, we *did* urge that a sufficient proportion of the population be re-

tained in essential occupations—" The colonel paused, and glanced around at a jangling, clattering noise.

A glittering carriage, driven by a well-fed coachman and drawn by four sleek beasts of burden, came to a stop in a cloud of dust. A footman riding in back sprang off and pulled open the door. A second footman leaped off the back, ran around, and swung down a heavily-braced step. An immensely fat man in gold and scarlet robes, glittering rings on every finger, lunged out of the carriage, his face purple with rage, and faced the PDA representative.

"It is a trick . . . a swindle! I demand aid of the Star Men! You are their consul—you must help me!"

The PDA official said considerately, "We are right now trying to find some means to assist your people, Your Supremacy. But—"

"Assist my *people*? Why worry about *them*? Enough of them will live over to breed back to normal. We've had famines before. It's this Iatulon of Mardukash— *He's* the one who makes the trouble!"

The PDA consul's head drew back at the words, "Enough of them will live over to breed back to normal." He stared at the local king, started to speak, and then his jaw snapped shut.

"Now," said the enormous scarlet-robed figure, "you will see how crafty this fellow is. I have just had word, by messenger on my Road, that he will sell me 'enough grain to feed your people, at only a hand of coppers the half-measure,' *but I have to buy in bulk and pay for it myself in big lots*. And I must send word back *at once*!"

The consul stared, then suddenly became excited. "Your hereditary enemy offers food? Then you must take it!"

"*Take* it? Not so fast. This is a high price!"

"But food is *bound* to be high. There is a famine!"

"Not in Mardukash, there isn't. The low born vermin keep their storehouses better than the palace. It is a *high* price. If I buy this food, my treasury will run out, I will not be able to pay my own army. That means ruin. But I *have* to buy, because word of this offer is being spread amongst the people. I will have a revolt if I do not buy! It's all this cursed Road! If it were not for that, the peasants would have raised their crops, and—even if we had a famine—no one could have got food in over the roads, so no outsider could have interfered." He shook his fist. "I demand that you destroy the Road!"

The consul looked staggered, then outraged. With an effort, he unclenched his fists.

"I am afraid I cannot associate myself with such an attitude, Your Supremacy."

"You, too, eh?" The local king

whirled around, and lunged back into the carriage, which sagged and swayed with loud creaks from the springs. *"Back to the palace!"*

The footmen snapped up the step, shut the door, and sprang on in back. The driver cracked his whip. The carriage whirled around in a cloud of dust, and shot out of sight down the road.

The consul stared at the dwindling cloud of dust.

"Incredible! A pure paranoid reaction!"

The colonel shook his head sadly. "In view of his attitude, possibly a change to a . . . er . . . more stable executive . . . might actually be a blessing in disguise."

"Yes. It certainly would. If the Iatulon actually brings food from his storehouses, he, at least, is showing the right attitude!"

The colonel nodded approvingly.

The PDA consul slowly passed his hand over his face. "If only they were *all* like the Iatulon!"

Three days later, his offer having been refused, the Iatulon's army came down the Royal Road like an avalanche, brushed aside a small force sent out to guard the border, clashed in a savage fight with the main body of the defending army, and was just entering the capital when the local king, surrounded by his mounted elite guard, shot out of the palace in a war chariot studded with double-edged knives, with a heavy oblong chest strapped into the chariot, gained the Road, headed for the neighboring kingdom of Fazir. The Road offering excellent speed, he was steadily approaching the border of Fazir when a fast-moving body of troops appeared in the distance ahead. This developed into the slitted and loopholed armored coach and household guard of the Arawak of Fazir, who was himself seeking sanctuary from the Ribar of Zaroom, the Ribar having fomented an uprising by offering food to the starving populace of Fazir.

As the two kings conferred, there appeared from each direction the rapidly-advancing cavalry of the Iatulon and the Ribar.

The two trapped kings briefly gripped each other by the arms. They whipped out their swords and sprang back into their vehicles.

The chariot and the armored coach whirled around, pointed toward the enemy, and two angry voices rang out together.

"Charge!"

The household cavalry leveled their lances. The war vehicles thundered ahead of them down the road. The cavalry of the Iatulon and the Ribar went from a trot to a gallop.

As the antagonists met in a final bloody clash, already from Mardukash and Zaroom the grain wagons were creaking, heavily-laden, down the Royal Road from the swollen storehouses toward their famine-stricken neighbors.

XII

The colonel, looking like himself again, sat back at his desk, and looked over his four promising new recruits, once more recognizable as Roberts, Hammell, Morrissey, and Bergen.

"You see, gentlemen, a chain of events, if properly made, appears, one link after the other, very logically and inescapably. And here"—he picked up a yellow message form—"is the final link we're interested in, so far as this chain of events is concerned."

Roberts glanced at the paper, to read, ". . . In new vote, the surviving rulers have approved building of a Rest & Refit Center. Garoujik Corporation has subcontracted the actual construction work to Krojac Enterprises, and work is expected to begin at once . . ."

Roberts said, "The Iatulon, the Ribar, and the other efficient kings were able to end the famine?"

"Out of their accumulated stocks, they were able to ease it greatly, until the ground froze, and it became possible to also get food in quantity from the producing regions still cut off by bad roads. Then, between them, they built up stocks to get through the rest of the year on a reasonably normal basis."

"Why didn't anybody foresee this? To try to even suggest it to them was enough to drive you mad."

The colonel nodded. "There were only so many people there *to* see it, and they were all too busy seeing something else. The peasants saw the money they were offered. Overall allocation of effort wasn't *their* job. *That* job belonged to the kings. Their attention was on the money they'd get when the Royal Road was finished. If there was a famine — Well, they'd gotten through famines before. The consul, of course, should have seen it, but he is highly-educated, in economics that comes out of books written on highly developed worlds. 'Subsistence economy' is a pair of words that doesn't mean much on highly developed worlds. What counts there is capital accumulation and technological development. But wherever, for whatever reason, you're just able to produce enough food—or anything else you've got to have to exist—*any diversion of effort from that work is fatal.*

"The consul," said the colonel, "may have known it mentally, but it was about as real to him as the words 'cave bear,' when he reads about the experiences of humanity's remote ancestors. To people who've experienced the thing, the word 'famine' means a whole lot more."

Roberts involuntarily shivered as the colonel spoke the word "famine."

"Sir, does the Interstellar Patrol get involved like this very often?"

The colonel nodded soberly. "It has to. The universe isn't made out

of cotton candy. Our job is to get things done. And often there is *no other way.*"

Hammell said, "Sir, how many people had to die to get that R & R Center in?"

"Very few," said the colonel. "Because the situation was thought out carefully."

Roberts said, "If there'd been an error?"

"Millions of people could have died."

"That's a big responsibility."

"It is. It requires thorough and determined training to be able to bear the responsibility. It's a help if you enter on your initial training with some idea what's in front of you. A man is less likely to throw away something if he knows he will desperately need it later."

Roberts said, "We are about to start our training?"

"You are," the colonel answered.

The four recruits looked at each other grimly.

The colonel said, "That will be all, gentlemen. You have tomorrow off. Then you begin training."

Roberts, Hammell, Morrissey, and Bergen filed from the room. The last man out closed the door gently.

The colonel glanced at the wall above his desk, where gradually the strongly built keen-eyed man who'd given him the problem came into view, smiling.

The colonel said, "What do you think?"

"I think you made the point. And it's an important point. Without it, half the training could be wasted."

The colonel nodded.

"I *think* they're motivated," he said. ■

In Times to Come

Next month's issue has a striking cover by Kelly Freas illustrating a yarn called "Hawk Among The Sparrows," by Dean McLaughlin. I think most of us have, at one time or another, had fun speculating on variations of the Connecticut Yankee theme, such as what a WWII fighter, with its massive machine-gun and cannon fire-power would have done to WWI air combat . . .

Usually forgetting that a WWII plane's 2,000 horsepower piston engine wouldn't have been able to run on the kind of fuel available in 1917–18. After all—hundred-octane fuel hadn't been invented yet!

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no shoulder to cry on

It's repeatedly said that "All things are relative" . . . but one doesn't ordinarily think of that in connection with peace-keeping!

HANK DAVIS

Illustrated by Leo Summers

The ship purred as it bored a tunnel through space; purred like a pampered and petted kitten.

It is, I was thinking, a hell of a noise for a spaceship to make.

A spaceship should roar like all the enraged lions that have ever walked the earth roaring *fortissimo* and in unison. It should spew flame burning more brightly than any tiger in any jungle—even Blake's bright burner.

This spaceship, however, spurned the more flamboyant traits of feline heritage and purred like an enormous kitten.

If it weren't for the purring, I thought, I wouldn't know that we were moving—the purring and the violet shift.

My shirt had been white when I left Earth. It now appeared to be a delicate violet hue. The field which allowed the ship to cheat Einstein and cover light-years in a matter of days shifted all light within the ship slightly toward the violet end of the spectrum. During the first few days of flight the shift had been irritating, giving me an irrational feeling that something was wrong with my eyes. I had compulsively rubbed my eyes until they were red and throbbing.

Now I scarcely noticed the shift. But I couldn't get used to the purring.

Maybe I associated it with cats. But that shouldn't have bothered me. Cats to me were like spinach. Some people love the stuff and some people hate it. I'm apathetic.

I'm edgy because of what Arthon said yesterday, I decided. I'm just reading something sinister into what he said. It's silly to get cold feet just as mankind's salvation comes out of the skies at the eleventh hour, I told myself. There's no reason to be afraid. There should be an end to fear now that there will be no atomic doom.

There had been the usual bumper crop of brushfire wars, some smoldering, some flaming brightly; all to the background music of rattling sabers. Dangerous, merrily blazing little brushfire wars in a world of deadly thermonuclear inflammables. There had been the arms race, more crowded than before by the entry of Cuba with its A-bomb.

But there had also been visitors from interstellar space. Before the moon bases had been developed beyond the level of extraterrestrial summer camps, before man had gone to Mars in person, the stars had come to see him. And brought hope.

The old argument: we have scarcely begun to crawl in space, but look how far we have come in killability. Before we can send our own carcasses—and not some electronic gimmick; some glorified and hopped-up Brownie camera—in person to Mars, we are able to sterilize the globe. If we can keep from blowing our collective brains out for just a little longer, we might even reach Pluto, chilly outpost of the sun's domain.

But to go beyond Pluto and reach the stars would require time; much time. To survive long enough to graduate from the solar system surely would require that we find the magic formula for peace; the therapy to prevent Terracide.

And, similarly, wouldn't visitors from extrasolar systems have found the key to *pacem in terris;* or, rather, *extraterris?*

Scant surprise, then, that *everybody* was ecstatic over the arrival of live and kicking unbombed and unirradiated neighbors from Out There. Those who had advocated a hard line in foreign policy, consequently being villified as warmongers, were happiest of all, for it is a hard and lonely thing to advocate a necessary evil.

Immediately, all parties concerned got down to work on each other's languages. They learned ours before we learned theirs, naturally. They had more teachers than we did. When said language exchange had been reasonably well accomplished, and all the "hello there" rituals had been suffered through, the first question from our side was, in essence: "How can three point nine billion—and more on the way—highly belligerent people coexist on the same eight thousand mile diameter life raft without one or more groups of passengers capsizing the shaky thing and drowning one and all?"

The answer, again in essence, was: "We would have to study your history and culture in depth to determine what factors are responsible for any differences between our civilization and yours with respect to war or anything else, and the time required would be prohibitive; would put us so far behind schedule that our home planets would be concerned. Why not let us ferry experts of your planet to our planets and let them study our civilizations at their leisure? When they have determined the causes of differences in our civilizations, we will return them to Earth."

It made sense. If a group of people, all of the same IQ, were placed on an island as children and allowed to grow up, would they ever develop the concept of intelligence? Could a man who grew up on a plain conceive of either mountains, or valleys, without seeing them? If the aliens had never slaughtered each other *en masse,* would it ever occur to them that there was anything unusual about the peaceful state of affairs, any more than we think it unusual that man can't fly by wiggling his ears? If the man who had grown up on a plain ever wanted to learn all the various techniques involved in mountain climbing, he would have to go to where the mountains are.

Which was why I, Howard M. Nelson, Esq., PhD. in political science, and wearer of a white shirt, that happened to look violet at the moment, happened to be on a

purring spaceship hurtling through space at several hundred times the speed of light.

My mother didn't raise her boy to be a spaceman, I thought. I didn't look the part. An astronaut is as near to physical perfection as flesh born of mere man and woman can be, has the reflexes of a cougar with hypertension, has stamina enough to get out and carry the ship back home, should the rockets fail. This was common knowledge—so common that it had passed into the exalted category of things that "everyone knows." Yet here I was, receding hairline, advancing waistline and all, flying farther and faster than any of the smiling young spacefarers of Projects Mercury, Gemini, Apollo, *et al.*

Aside from some mild panic at takeoff, which had been overwhelmed by the greater fear that I would show the panic and make a fool of myself, all had gone well until yesterday. I had been talking to Arthon, the pilot and entire crew of the ship, and he had hit me between the eyes with an umpteen hundred megaton firecracker—one of the ones that my little thirty-seven light-year jaunt would cover, hopefully, with cobwebs.

"There is so much that we can learn from you," I had said, "it's a shame that there is no way we can repay you."

"The reverse is that which is true," he had replied. "That which we can learn from you is greater than that which you can learn from us."

Feeling as if a gallon of ice water had been poured into my BVDs, I had said, "Oh, gee. Yeah, sure. Uh." We he-men always have a little trouble speaking our mind; especially when hit with brain-scrambling firecrackers like the aforementioned.

"Pardon? Perhaps I have not the mastery of your language which I thought was mine," Arthon had said, his features clouded with very human concern.

By now, I had re-erected the facade behind which we humans, masters of Earth, spend our lives hiding. "But you are so much more advanced than we, what can we possibly teach you?"

"You underestimate your people and in a way that is unjust, Howard," he replied, smiling a very human smile. "As for what that is known by you that can benefit us" —sorrow flowed across his face and spilled over into his voice—"I think that that will be left as a surprise for the time which will be that of arrival."

Judging from his new mood, the surprise would be as cheery as an unexpected visit by Jack the Ripper.

Now, some twenty-four hours later and about thirty minutes from arrival, I was in a very calm state of hysteria. Damnit, why had Arthon looked like Gloom & Doom, Inc. when he told me that there was

much that we Earthside primitives could teach his side—which consisted of some fifty odd inhabited planets in a loose federation.

Arthon had been very chummy during the trip. He looked very human except for his light blue fur and prehensile tail. He was more human on the inside than the administrators back at my university. I had thought that we were becoming fast friends, as the Rover Boys would say . . . Maybe he was going to have to throw me to the lions when we arrived and he was regretting it.

But what could *they* learn from *us?*

Maybe we had followed up pathways of discovery that they had neglected. The American Indians were around for a long time without inventing the wheel.

Suppose they developed their space drive without ever developing atomic power.

Arthon had said that the drive had no moving parts. I didn't have the mathematical background to understand how it worked, he said, but he could easily show me how to make one. If it was that simple, could the extrasolarites, as I called them, have hit upon the drive by accident and still be, with the exception of the drive, in a more primitive state of technological development than man? Then they wouldn't have the wherewithal to bump each other off and wouldn't need any magic formula for peace. Arthon's planet was out to get the know-how for nuclear power and lick the other planets in the federation. *That* was what his people could learn from me!

Nope—because Earth had been discovered by a *fleet* of extrasolarites; one ship from each planet in the Federation. And each ship had taken back one (1) Earthling to its home planet; so no planet would have an advantage over any other. Moreover, each Earthling taken was just like me—an ultra-departmentalized specialist in the social sciences whose total knowledge of atomic power consisted of: "Well, there're some bombs that have uranium in them and some that have hydrogen and the ones with hydrogen make bigger bangs and the bombs cause fallout; yup, yup, yup."

My son was a bug about science and electronics. They could have found out more about atomic power by snatching him than by carting me off.

What if, instead of the planets of the Federation fighting among themselves, they have ganged up and go around looking for other planets to clobber?

Nope—in that case, why did they contact us instead of just going back home with the news of fresh prey? And, if they wanted to size us up as to what kind of a fight we would give them, why were they taking social scientists back with them instead of military experts?

My train of thought was derailed by Arthon's entrance. "Howard, the time which will be that of the breaking out of pseudospace will be ten minutes from this time," he informed me. "Would that which you want be to see it?"

"Lead on, MacDuff," I said.

I went with him down the corridor, which was throbbing with the engine's pussynoise galore, and followed him into the control room. We sat down in deep-cushioned seats, both with slots for a prehensile tail, and looked through the viewscreen at the rippling violet shell that surrounded the ship.

"You promised me a surprise," I reminded him.

"At this time the surprise would be that which I could only tell you. In five minutes, it will be that which can be seen with those eyes which are your own." He paused. "It is afraid that I am, Howard, that honest is not what we have been with you."

Little crawling bits of fear were in my spinal column, as numerous as ants in an anthill. "How is that?"

"You are hoping that the secret of peace is something which can be obtained from us, are you not?"

"Yes. We were expecting a rain of death from the skies any day. Then you came and we, well . . . had hope again."

"For how long had this rain of death from your skies been something that you had expected?"

"What?"

"Let me ask again the question in another shape. How long has atomic power been with you humans?"

My heart sank. "Well, uh, since 1945. Almost forty years, that is."

"And how many times has a war seen the use of atomic weapons?"

"Well, twice. Both times in the same year—1945."

"So, you have not used the weapons of which you have great fear for almost as long as you have had them—for forty of your years."

"Well . . . yes." I frowned.

"Atomic power was our discovery over three hundred of your years ago."

"And you haven't wiped yourselves out? Now I know that you must have the key to peace, Arthon!" (But, still, something was calling the short hairs on the back of my neck to military attention.)

"The terribleness of nuclear weapons has not the final greatness that you think it does, Howard. There are perfect defenses against them. There are fields which are such that a fission bomb will not explode within them. There are other fields for fusion bombs and antimatter bombs."

"Then you've survived because you have defenses against atomic weapons. You can give them to us and there will be no atomic war."

"Understanding is that which you do not yet have, Howard. There are weapons which have a deadliness far greater than the weapons that

are those I have named. There are biological weapons. There are X-ray lasers. The knowledge is ours which can convert a sunspot into a laser and incinerate the sunlit half of a planet. And defenses are ours which nullify these weapons. And others that are more terrible."

"To have survived such dangers proves that you have the key to peace that I seek."

"As I have said, Howard, honest is not what we have been with you. We have misled your people. Happiness was ours when we saw that to study us was your wish and so we gladly took you and your fellows to the planets which were ours, because there is that which we must learn from you."

He paused. My tongue was looking for a hole to crawl into and hide.

"As you once told me, and exactly as you told me, 'A common characteristic equally shared by a group is not evident to the group as a characteristic until they encounter another group which has the characteristic to a different degree.' As you said, 'A colony of people, all having the same IQ would have no awareness of intelligence as a variable.' True would be what this statement would be even if the colony were one of geniuses, would it not, Howard?"

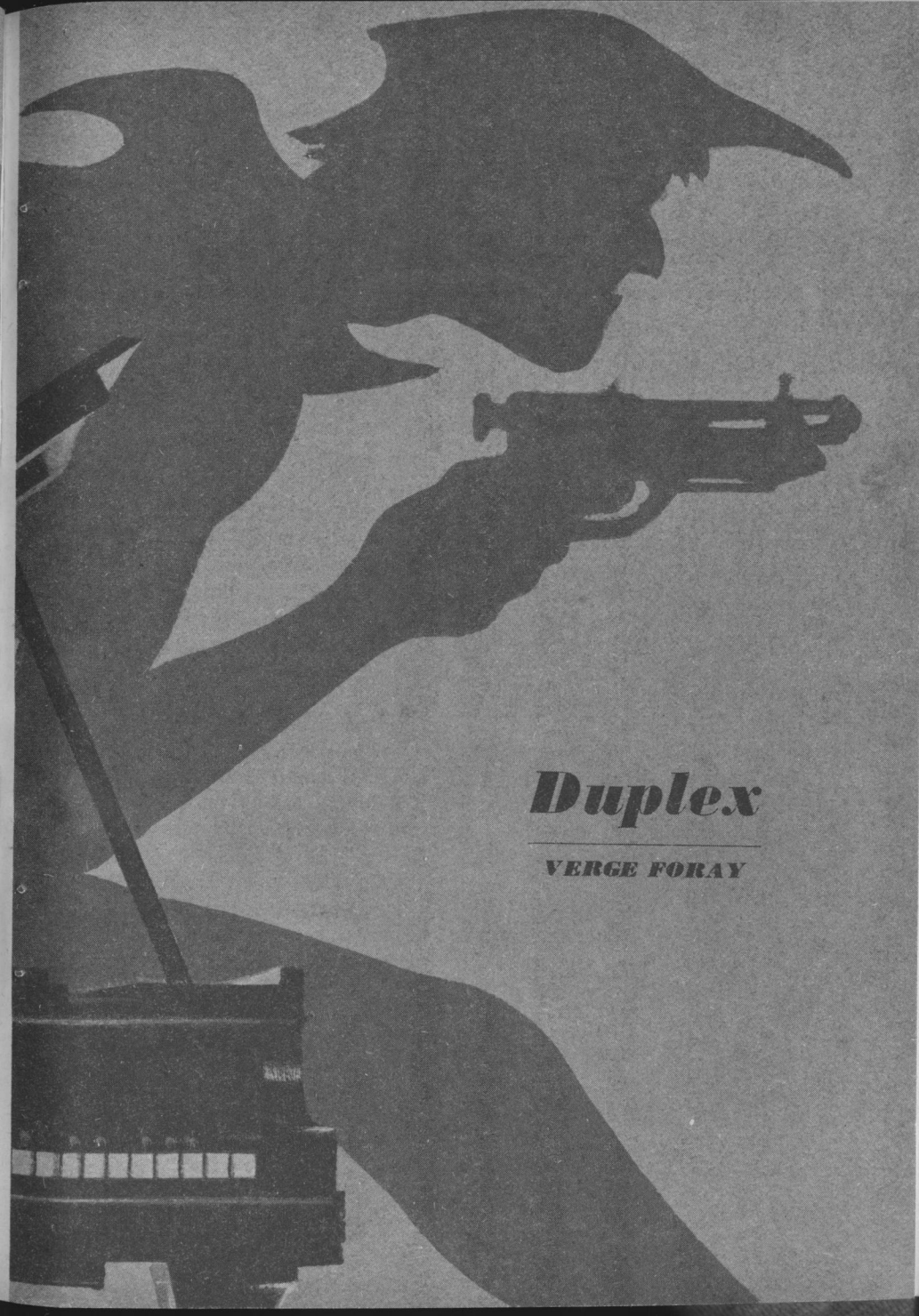
He had amazed me by quoting me verbatim. He must have a photographic memory. "Yes, Arthon," I answered.

"Earth is a colony of geniuses, Howard. In the forty years which have been those of your development of atomic weapons you have used only two bombs, both small ones. In my planet's first forty years that were the same, we used hundreds, many of them more powerful than any that are yours now. Your population is expanding so fast as to be that which is a problem to you. Our population is now one tenth of that which it was when we discovered atomic energy. The time of our discovery was more than three of your centuries back. The number of planets which are those in our Federation, as you call it, is shrinking. Eighty-seven planets which once were among those which are members are lifeless balls rolling through space now."

The violet curtain parted and we began the approach to Arthon's planet on slow drive. My white shirt was no longer violet, but I ignored it. I was looking at the ugly craters on the planet's surface, which were plainly visible, even at this distance, like planetary smallpox scars. I could easily see the black areas where nothing green grew.

A tear, running ahead to act as scout for the main body, crept out of Arthon's left eye.

"The job of keeping the peace is that which you humans think you have done poorly," he said in a voice soft as a crumbling dream. "Teach us how to do a job that is as poor. Please!" ■



Duplex

VERGE FORAY

Kent wasn't a Siamese twin, as nearly all of us are, but that meant he and his twin had a much tougher problem of communication!

Illustrated by Kelly Freas

I

The one-man clopter was zipping over New Mexico when Kent Lindstrom's left hand dropped its side of the book of Beethoven sonatas. Kent stared with annoyance as the hand reached forward to fool with the manual control wheel.

Damn it all! he fretted. It was Pard's memory, not his own, that needed refreshing on some spots in the "Hammer-Klavier"! He had been looking over the sonata, instead of utilizing the flight to Los Angeles for a relaxing nap, purely for Pard's benefit.

But did Pard pay attention? Hell, no! He let his mind stray instead, ignoring Beethoven and indulging his childish fascination with gadgetry.

The sonata volume dangling neglected from his right hand, Kent watched his left hand turn the control wheel a few inches counterclockwise, then release it. The wheel automatically snapped back into place and the clopter, having been swerved slightly from the center of the traffic beam, started correction to get back on its course.

Kent opened his mouth to advise Pard, in words that left no doubt, that it was time to quit being a kid. But at that instant a thunderous *Whap!* shook the clopter. Kent dropped the music volume and gazed anxiously at the control panel, wondering if Pard's fooling around had busted something.

The only red on the panel was coming from the cabin-pressure indicator. The clopter had taken a puncture, and its air was whistling away into the stratosphere outside. Kent grabbed for the emergency oxygen mask before he realized his left hand had already put it on his face and was now tightening its strap, getting it a bit tangled in his long, thick hair.

Despite his faults, Pard could think fast in a pinch!

"What happened?" Kent asked under the mask.

Pard took control of his neck muscles and turned his head to look down and to the right. There, in the alumalloy floor, was a hole over an inch across, the shredded metal curled upward along its edges. Through it Kent could see hazily a tiny panorama of New Mexican landscape sliding by in the late afternoon sun.

Then Pard turned his head upward to focus on the spot where the projectile had made its exit. The hole in the roof was a few feet to the rear of the hole in the floor.

"What could've done *that*?" muttered Kent.

Pard did not attempt a reply.

Kent retrieved Beethoven from the floor, but left the book unopened in his lap while he stared at the controls. The clopter was functioning perfectly, keeping to the course and velocity that were correct for its moving niche in the air-traffic pattern.

Struck by a crazy thought, Kent drew a mental line between the punctures. The line ran parallel to the position of his body, and not more than three feet to the right of his chair.

And Pard had swerved the craft *to the left* just before the projectile struck!

"You kept that thing from hitting us!" Kent said.

His head answered with the slightest nod: *Yes.*

Kent gasped: "How did you know to swerve?"

His left hand reached around to tap his right temple—Pard's half of the brain—with a finger.

"Oh, sure you're bright!" growled Kent, annoyed because the answer told him nothing. "The brightest stupe I know!" But after he simmered down for a moment he added, "Sorry, Pard. I didn't really mean that."

His left hand patted the top of his head forgivingly.

It was silly, Kent knew, to get cross with Pard for being . . . well, for being *Pard.* He wouldn't have called him a stupe if he hadn't been upset and a bit frightened by the close call they had just had.

It was Pard's way to be noncommunicative, and rather devil-may-care. (But Kent could only guess at the latter because there was no way to learn Pard's real attitude about anything.) The language center was in Kent's hemisphere of the brain. Pard could not talk, and his few unwilling attempts at writing had been such painful, meaningless scrawls that Kent had long ago quit trying to achieve two-way verbal communication with him. Pard could understand the written or spoken word with ease, but the ability to *express* words simply was not in him.

Thus, Pard was not equipped to answer such a question as "How did you know to swerve?" The reply required concepts inexpressible in the "twitch language" Pard used for such essential thoughts as "yes,"

"no," "give me control," "take over," "wake up," and "I'm going to sleep."

But this didn't mean Pard was stupid. For one thing, as Kent sometimes admitted to himself, the only reason Pard was not the better pianist of the two of them was that he did not *try* as hard as Kent. For another, Pard was often aware of environmental factors that Kent missed. The object which had hit the clopter, for instance . . .

Kent looked at the tiny row of radar meters at the left edge of the control panel. The six little indicator needles trembled constantly with fluctuations in the thin surrounding air. They would have been within Pard's range of peripheral vision even while his eyes were directed at the Beethoven score—and their movements obviously told Pard a lot more than they told him. Pard had been able to read an indication that an object was approaching from below—on a collision course, in fact—and he had swerved the craft at just the right moment to save their life.

Having figured this out, Kent felt better—about Pard, at any rate. It was easy enough to feel haunted, with another consciousness sharing his skull, without that consciousness acting upon information it could not possibly have acquired. The radar meters explained where the knowledge came from.

"I'll never bad-mouth your fooling with gadgets again!" Kent said tensely.

Pard accepted that without response.

As for the projectile . . . Well, thought Kent, objects don't shoot up from the ground of their own accord. And if they did, they wouldn't be aimed—or guided—precisely to tear through a lone man zooming past at an altitude of fifteen miles!

"Somebody tried to kill us," he said, "and that doesn't make sense!"

Yes, Pard twitched in reply. The left wrist went limp: *Relax our body.*

Kent did so, and set the chair on recline. After all, they had an important concert to play in less than three hours, and they should be alert and vigorous, in body and in minds, for the performance.

He idly opened the Beethoven volume again. The pages happened to part where a photo had been inserted in the book, and he knew what it was before looking at it closely: another picture of the "mystery girl." He suspected that Pard had found the photos some time when Kent was taking a "walking nap." Maybe a previous occupant had left them in a hotel suite. Why Pard kept scattering the photos around for him to find, Kent couldn't guess, and he didn't try to ask. A joke, perhaps. Pard was sort of peculiar about women, anyway.

He put the photo back and laid the book aside. He had to get a little rest.

The holing of the clopter, he mused, if not some kind of wild accident, *had* to be the result of mistaken identity, or perhaps the act of a crackpot who regarded anybody well-heeled enough to travel by clopter as an enemy. The attack *couldn't* have been aimed at him personally . . . and, therefore, it wouldn't be repeated.

He dozed for the remainder of the flight, but his eyes stayed open and alert. Pard was keeping watch.

II

Kent woke when Pard set the clopter down lightly on a restricted portion of the USC Arts Complex roof, but he was content to observe as Pard slid the sonata volume into his hand satchel and climbed from the craft. A roof attendant waved from some distance away, and started forward when Pard waved back.

Pard ducked under the clopter's cabin to peer up at its belly. He found the hole quickly, but after a glance at it he sidled another step toward the craft's centerline. Here he gazed up at a curious, bright-green circular spot, about eight inches in diameter, which appeared painted on the craft's underside.

If the projectile had hit that spot, Kent realized, it would have hit him as well.

"You had a target to aim at!" Kent formed the words soundlessly.

Of course, Pard twitched, combining a nod and a shrug. He picked at the edge of the spot with a fingernail until he had enough of it free to grip between his fingers. Then with one clean motion he peeled the entire spot from the metal surface. It looked like a disk of adhesive paper. Pard opened the hand satchel, slid the disk inside, and slapped it against the back of a music volume.

"Mr. Lindstrom?" called the roof attendant, peering under the craft. "Is anything wrong?"

"No," Kent replied. He took over, snapped the satchel shut, and crept out. "Something hit the clopter. I was taking a look at the hole it made."

The attendant's eyes widened. "That could've killed you!"

"Well, it didn't," Kent replied curtly. "Now if you'll direct me to my dressing room, and inform my manager Mr. Siskind that I've arrived . . ."

His recital went excellently. He played for a packed house in the main auditorium of the Arts Complex, with the program televised nationwide via the noncommercial channels. It was a golden opportunity to win public affirmation of the acclaim of the critics—that Kent Lindstrom was by all odds the foremost young pianist of the decade.

The reaction of the house proved he was doing exactly that. The audience did not wait until the end to give him a standing ovation; he got

one for the final work before the intermission break, a fantasia composed by himself.

Beethoven's "Hammer-Klavier" sonata, almost as demanding of sheer physical endurance as of technical and interpretive skills, was the sole work following intermission. The sonata is analogous to the same composer's Ninth Symphony, in that it imposes such superhuman demands on performers that a merely adequate rendition is something to marvel at.

But Kent Lindstrom considered himself two pianists rather than one. There was Kent himself, the dominant consciousness, the boss, the inhabitant of the left hemisphere of the brain, who directed the right hand at the keyboard. And there was Pard, the voiceless secondary consciousness isolated in the severed right hemisphere, who directed the left hand.

Kent Lindstrom was, therefore, the one pianist of whom it could truly be said that his right hand didn't know what his left hand was doing. Complicated counterpoint and devilishly tricky cross-rhythms, that would swamp the brain of a normal pianist with the mere task of playing notes, were handled readily by Kent Lindstrom on a division-of-labor basis, leaving both his minds with attention to spare for interpretive niceties.

He did more than *play* the "Hammer-Klavier" sonata. He did the piece justice.

The applause was tremendous and demanding, but Kent had looked forward to this moment—when he was assuredly entered among the immortals of music—with too much anticipation to waste its essence on some crowd-pleasing little triviality of an encore.

He knew what to do instead. After several bows, he returned to the piano while a complete hush fell over the house. With his hands in his lap and his gaze on the keyboard, he counted twenty seconds of silence. Then he stood suddenly and faced the audience.

"Anything I could play after the great 'Hammer-Klavier' would be a terrible anticlimax," he proclaimed in a ringing voice. "Thank you, and good evening."

He strode from the stage to a final approving roar.

At the jubilant post-concert reception, attended by numerous civic and university bigwigs plus a selection of music students and faculty, Kent quickly spotted a girl he wanted.

His head gave a barely perceptible shake: *Lay off,* Pard warned him.

Kent frowned in dull anger, but obeyed. He had been through all this several times before, and knew that when Pard told him to stay away from a girl, he had better stay away! Even if Kent was the dominant consciousness, he could not keep up a continuous guard

against Pard's sneaking enough control to make him do something absurdly embarrassing, and usually with the girl watching contemptuously.

There was the time in Washington, for instance, when Pard had him flitting around like a gay homosexual for five minutes before Kent even realized what was going on. An incident like that could be damaging, and very hard for a well-known musician to live down.

Kent griped to himself. On this night, of all nights, why can't I have a choice girl? Why's Pard so nonsensical about women, anyway?

But the giggly, blond student violinist Pard finally let him accept for the evening wasn't at all bad, even though she was a type that Kent couldn't get enthused about. He wasn't sorry to see her go when his unobtrusive business manager, Dave Siskind, routed her politely from Kent's hotel suite around two a.m.

Kent yawned and settled down with the intention of sleeping at least until noon . . .

. . . And woke before dawn, fully clothed, crouched behind a dumpster in a dark alley, with a wavering ringing in his ears that he took a moment recognizing as police sirens.

He stared around wildly. The police, he could tell by the sound, were stopping at the mouth of the alley, while more sirens wailed a couple of blocks away. He turned to retreat deeper into the alley, but Pard stopped him.

That won't work.

"Blind alley?" Kent asked.

Yes.

Kent squatted back down and thought furiously. He had found indications before that Pard was an occasional night stroller: mud on shoes that had been clean when he went to bed, a few unaccounted-for scratches and bruises—and those photos of the "mystery girl" had to come from somewhere.

But Pard had never before wakened him during one of his after-hours jaunts. Why this time? Because Pard couldn't talk?

"You're in a mess I'm supposed to talk us out of," Kent guessed.

Yes.

Kent sighed unhappily, stood up, and walked out of the alley, into the glare of the police lights. Several officers rushed forward, and he was quickly frisked.

"Got any identification?" one demanded.

Kent felt in his empty pockets. "No. I left my wallet at the hotel. What's all this about?"

"Which hotel?"

"Sheraton Sunset. I'm Kent Lindstrom. Now, officers . . ."

"Lindstrom?" a policeman interrupted, staring at him closely. "Yeah, I guess you are at that. Hey, Mike! Call in that we've found Lindstrom! He looks O.K., except for some skinned knuckles!"

Kent hadn't noticed the twinges of pain in his hands until then. He lifted them and glared at the bruised and bleeding knuckles. That goofy Pard! His hands were his *tools!* And tools were not to be abused in silly, back-alley brawls!

"Who'd you have a fight with?" the officer asked.

"I didn't ask their names," Kent replied, slightly pleased with his inspiration to make his opponents plural. "All I know is I couldn't sleep and went out for a stroll. After a while these guys jumped me. Let's see"—he peered around with a show of puzzlement—"I'm sort of turned around, but I think it happened over that way," he pointed, "maybe where those sirens are sounding."

It was a good guess. The policeman nodded. "That's about the luckiest stroll you ever took, Lindstrom!" he said. "You'll have to come down to headquarters and make a statement. I'll fill you in on the way."

"Lucky?" groaned Kent. "I'm a piano player, officer! And look at the mess I've got my hands in!"

"They'll heal," the policeman replied, "but if you'd been in your bed at three o'clock you wouldn't have! A bomb went off under it!"

There were complications at police headquarters, and Kent wound up in a cell. Whoever he had bloodied his knuckles on did not show up to complain, but there was also a question of attempted arson near the scene of the fight. And since the big-city riots of the 1960s, the police were inclined to keep a tight grip on anyone found near the scene of a set fire without a good excuse for being there.

Kent phoned his manager Siskind to get him an attorney. Then he was ushered to his private niche in the cell block, where he flopped on the bunk and quickly went to sleep.

III

When he woke he was relieved to find himself still on the bunk with his eyes closed. He sat up and peered through the bar-and-steel barriers until he spotted the keeper.

"Hey!" he called out. "When do I get breakfast?"

A man in a nearby cell chortled, "The curly-head pianner player wants his breakfast, fellers!" Kent ignored the remark and the resulting chuckles from the other prisoners.

"You get lunch in forty minutes," the keeper replied.

Kent stood up and began his morning workout as best he could within the confined space. This was his routine—a vigorous twenty minutes every morning to keep the rest of his body up to par with his hard-working hands, arms and shoulders. With an audience this time, he show-boated a bit with extended push-ups, one-leg knee-bends, double flutter-whoops and other acro-

batic exercises. The prisoners and keeper watched with gratifying awe. His knuckles, which the police surgeon had treated, gave him no pain under their bandages, so they were probably all right.

He saw that Siskind had brought his hand satchel and toilet kit to the jail for him. They were on the floor just inside his cell door. When he finished exercising he tossed the satchel on the bunk and took the kit to the tiny sink. His blade razor was missing, but the battery-powered shaver, which he used when he was in a hurry, was there. He shaved with it, washed up, and brushed his teeth.

Returning to the bunk he put his kit aside, sat down, and opened the satchel. A bright green oval gleamed out at him. He stared back at this chilling reminder that not one but two attempts on his life had been made within twenty-four hours.

"Better give this to the cops," he lipped soundlessly.

No, his head twitched firmly. *Give me control.*

He did, and Pard sat farther back on the bunk and hooked his heels over the metal edge, elevating his knees to conceal what he was doing. He took out the Debussy volume to which the green disk had adhered, propped the book on his thighs, and picked the disk loose from it.

He examined the disk closely. It was about the thickness of two sheets of typewriter paper, with about the same flexibility, Kent noted. There was no visible material on its back, but that side had a strange *dry* stickiness to the touch. It was made of stout stuff that did not tear when Pard tugged hard at it. A definite line texture could be felt when he ran a finger across the green surface. Pard explored this texture until Kent was thoroughly bored. Finally he turned it over and began abrading one small area vigorously with a fingernail.

"Pard," urged Kent silently, "quit playing with that thing and give it to the cops! It could be just the evidence they need!"

No.

"Do you know what you're doing?"

Yes.

Suddenly the disk felt different, though it looked the same. The stickiness was gone from its back. Pard had . . . had *broken* it in some way.

"Hey!" breathed Kent, with dawning comprehension. "It's electronic inside! Right?"

Yes.

"And as soon as something hits it hard enough to tear up its circuit . . ." He left the words unmouthed, his mind filled with a picture of a little projectile zipping up from the New Mexican waste to home in on the green disk and plow through it —and incidentally, through Kent Lindstrom—and of the no longer adhesive disk fluttering free to fall

in the desert, where it would never be found to incriminate anybody.

There had to be something like the disk. Otherwise the projectile could never have come so close to a bull's-eye over such a distance. Pard had deflected the clopter with split-second timing, too late for the projectile to adjust its course.

Kent gazed at the disk in awe. "I've never heard of such a thing! Is it military or something?"

Yes.

"Secret stuff?"

Yes.

"How did you know about it?"

Pard shrugged. An unanswerable question.

Worse and worse! thought Kent in sudden fear. Whoever's after me has access to secret weapons! No wonder Pard figures the cops can't help! But why am *I* in such a mess?

There was only one possible answer to that: his silent, night-walking skull companion, Pard.

"You've done something that's got us in this jam!" he accused.

Yes.

Pard was keeping his hands busy. He had curled the disk into a tight slender roll, and now was taking the plastic shell off his battery-powered shaver.

Only by an extended guessing game, Kent knew, could he ever get the full story out of Pard. That could take more weeks than somebody meant him to live! But he knew of one guess he could make as a starter.

"Is that 'mystery girl' in the photos mixed up in this?"

Yes. Pard wedged the rolled-up disk into the shaver so that it was pressed against, and perpendicular to, the windings of the tiny motor coil.

"You in love with her or something?"

Yes. Pard flicked the shaver's switch and the motor buzzed. Nothing else happened for about a second.

Then at least a dozen things happened at once.

Lights throughout the cell block flickered, and two of them exploded with dazzling flashes. Sirens whooped deafeningly. Bells clanged. Electronically-activated cell doors clicked loudly as their locks opened. The loud-speaker system blared out the first two bars of "The Star-Spangled Banner" and then went dead.

The prisoners, offered a golden opportunity, swarmed from their cells, flattened the startled keeper, and made for the nearest exits, shouting in gleeful excitement. Pard, his gadget in his hand, leaped to his feet and started to join them.

"No!" shouted Kent. "Don't be a fool, Pard!"

Pard hesitated.

"Running from the law *and* from secret killers at the same time is for TV heroes and other fictitious characters!" Kent mouthed urgently. "Now sit down and do something about that stupid gadget! Go

on! You can't go far hopping on one leg, anyhow, and my leg isn't moving a muscle until you start showing some sense!"

Pard shrugged and hopped back to the bunk. "That's more like it," said Kent, relaxing control of the right leg.

The gadget was still buzzing. Kent knew very little about electronics. When Pard read an electronics magazine after going to bed, Kent usually went to sleep immediately. But he had picked up enough general ideas to guess how the gadget worked.

The circuit in the green disk was a highly sensitive responser, meant to pick up signals from an oncoming missile, amplify and perhaps vary them in a certain manner, and send them back as instructions to the missile.

That's what the circuit did when it was spread out flat, when there was no interference between the tiny electromagnetic fields produced by its thousands of microscopic components. When rolled into a tight tube . . . well, it still did something similar, but not as a precise response to one particular signal. It was confused and undiscriminating. It responded to every blip of electromagnetic energy it picked up—from the sixty-cycle alternation in the building's electric wiring, from the fluorescent light switches, from the alarm network. And with what was, for it, an overpowering input of energy from the shaver coil to work with, it responded with roars!

"Turn it off!" mouthed Kent.

The left hand started, slowly and unwillingly, to obey, but just then the gadget quit by itself, having exhausted the battery in no more than a minute. Pard yanked out the rolled-up disk, wadded it and tossed it in the toilet bowl by the sink. He was putting the re-assembled shaver away when the lights came back on.

Seconds later a contingent of armed policemen rushed in to stare at the empty cells in angry frustration.

"Most of your guests have checked out," Kent offered.

A sergeant glowered at him and tried his cell door. It was still unlocked. "Why're you still here?" he demanded.

"Because I've done nothing to run from."

The keeper came up rubbing his bruised head. "That's Lindstrom," he told the sergeant. "The piano player."

"Oh, yeah." The sergeant watched as Kent strolled over to the toilet bowl, flushed it.

"What happened to the lights and things, Sergeant?" Kent asked.

"That's no concern of yours—or mine either," the sergeant grunted, walking away.

The escapees were brought in one and two at a time during the early afternoon, and returned disgruntled to their cells. Lunch was over an hour late.

IV

Around three o'clock Kent was taken to an interview room, where his manager Siskind introduced him to the attorney he had hired, and to a couple of police technicians.

"Mr. Lindstrom," the lawyer said briskly, "I believe we can wrap this business up in a hurry, thanks in no small part to your display of good faith during that jailbreak today. There is no real evidence against you in this arson business, but the police could hold you a couple of days on suspicion alone. I've explained to the proper authorities that you have an important schedule to maintain, and they're willing to be reasonable.

"Thus, Mr. Lindstrom, if you will submit to questioning under the polygraph, sometimes known as the lie detector, to demonstrate your innocence to these gentlemen—"

"I don't trust those polygraph gadgets," Kent broke in. "I read something somewhere about being inaccurate."

"The device has shortcomings," the attorney admitted, "but these experts are aware of them, and take them into acocunt. Also, I'm here to see that the questioning stays relevant, that no 'fishing expeditions' are attempted. This is a quick way to clear yourself, Mr. Lindstrom."

Kent hesitated. A polygraph could be dangerous for him, in more ways than one. Maybe he *was* last night's arsonist. Or, more precisely, maybe Pard was. Then there was the fact of Pard's existence. Only Kent knew that his brain had an extra occupant, and he wanted to keep that information to himself. A lie-detector test could betray Pard's presence in some manner.

He was about to reject the examination when Pard twitched a signal.

Yes.

Kent rubbed his nose to hide his mouth while he asked, "You mean take the test?"

Yes. I'm going to sleep.

That ought to solve the problem, Kent decided. With Pard asleep, he certainly could not react to the polygraph.

"O.K.," Kent said. "Let's get it over with."

The police technicians took several minutes to rig him for the examination, during which Kent assured himself that Pard had dozed off. The questioning had hardly started when the door opened and a distinguished, graying man was ushered in.

"This is Mr. Byers," said the officer with him. "He represents the owners of that warehouse."

"Yes," said Byers, "and if, as I've just learned upon arriving in the building, the charges against this young man are to depend on a single polygraph examination, I must insist on being present during the examination. I don't like these attempts to shortcut justice, gentlemen," he went on with a stern

frown. "Nor do I like to see the law be made a respecter of persons, especially a respecter of a person who, while laying claim to a certain artistic notoriety, is not known for the stability of his deportment. But I'm a realist, gentlemen: I'm aware of the pressures under which the police must attempt to carry out their duties. Thus, since I have little choice in the matter, I'll go along with this procedure, provided I am present."

Kent had a feeling that Byers wasn't nearly so put out by the lie-detector test as he claimed to be.

"Any objections?" asked one of the officers.

"Nah," grunted Kent. "Let the old square stay."

"Providing Mr. Byers refrains from interfering with the proper conduct of the test," amended Kent's attorney.

"O.K. Let's proceed," said the officer.

First there were the usual trial questions to establish Kent's true-and-false reactions. Then the technician in charge got down to business.

QUESTION: When you retired last night, you found you could not go to sleep?

ANSWER: Well, I went halfway to sleep. Not fully.

Q.: Why didn't you take a pill?

A.: I don't take pills unless I'm really sick.

Q.: So you went walking?

A.: Yes.

Q.: Wasn't that a strange thing to do at that time of night, and in an unfamiliar city?

A.: Depends on what you think is strange. I do it every now and then.

Q.: Where did you walk?

A.: I don't know. As you said, Los Angeles is not familiar to me.

Q.: When did you leave the hotel?

A.: Between two and three. Maybe two forty-five.

Q.: Are you aware that two attempts were made on your life, yesterday and last night?

A.: I sure am!

Q.: Why didn't you report the first one to the police?

A.: Because I thought it might be some crazy accident at first. You know about it now, so what's the difference?

Q.: Who's trying to kill you?

A.: I don't know.

Byers was hovering over the other technician, watching the tale told by the polygraph needles. His frown was taking on a touch of puzzled doubt.

Q.: Why would someone want to kill you?

A.: It must be over some girl. I don't know what else.

Q.: What girl?

A.: I have no idea who she is.

Byers went over to whisper into the questioner's ear. The man looked annoyed, but nodded.

Q.: You've been intimate with a number of girls, then?

A.: Well, yes. A man in my position has so many—

Q.: Have you ever displayed homosexual tendencies?

A.: No!

Q.: Do you want to reconsider that answer?

A.: Oh, there was that foolishness in Washington last year! But that was just a put-on! An act! Maybe it was in bad taste, but that's all it was!

Q.: O.K. Now, about last night. Who were the men in the brawl with you?

A.: I don't know. I couldn't identify them if I saw them.

Q.: Are you sure one of them wasn't the night watchman of the warehouse?

A.: No, I'm not sure of that. I don't even know what building you mean when you say the warehouse. All I know is, I wasn't looking for a fight, with a watchman or anybody else.

Q.: We think someone got an oily rag out of a garage trash can, wrapped it around a rock, set it afire, and threw it through the warehouse window. Did you do that, or anything similar to that, last night?

A.: No.

Q.: Do you carry matches, or a lighter?

A.: Not often. I don't smoke. Sometimes I have matches if I've been with a girl who does. I don't recall having any last night.

The questioner sat back in his chair and glanced around. "Anything else?" he asked.

Byers was furious. "This whole thing's a farce!" he stormed. "This long-haired young ruffian is obviously abnormal in mind, and can fool your machine!"

The questioner glared at him. "You seem convinced of Lindstrom's guilt, Byers," he said coldly, "but if you have any evidence to that effect you've withheld it from the police! And let's remember two things. One, your clients are going to have some tall explaining to do about what the firemen found in their warehouse—"

"My clients were unaware of what use some unauthorized trespassers were making of their premises!" Byers protested.

"Two," the officer continued relentlessly, "somebody has tried to kill Lindstrom, and you're showing an unaccountable animosity toward him. Could there be a connection, Mr. Byers?"

"Absurd!"

"Will you sit in Lindstrom's chair and repeat that?"

"I'll have nothing to do with your rigged machines!" snapped Byers, drawing back. He headed for the door, firing a parting comment over his shoulder: "This country is in a sad condition when officers of the law start siding with hoodlums and beatniks!"

"Did I pass the test O.K.?" Kent asked as the technicians detached the monitoring devices from him.

"Yes. You're free to go. But you should ask for police protection till we get to the bottom of this."

He nodded and asked cautiously, "What was going on in that warehouse, anyway?"

"Illicit arms storage," the chief technician replied.

"Stolen rifles and such, huh?"

"Not exactly rifles. More firepower than that. Military stuff. Enough to tear this city apart!"

Kent had a stunned feeling of unreality, as if he were involved in a silly dream. How could a harmless pianist get tangled up in this deadly game, he wondered plaintively.

But tangled up he was, thanks to Pard. That green disk was a military device. And now a cache of military armament! It tied together, and tied him in!

V

He and Dave Siskind rode back to the hotel in a police car, since the officers did not want to risk him in a taxi. He had little to say on the way, and if Siskind took his silence for fright, he was not inclined to disagree.

"Dave," he asked at last, "did you find out who that guy Byers represented?"

"Yeah. An old couple named Morgan. Right-wing oddballs. But the police figure they're innocent dupes, and Byers is really fronting for somebody else."

A couple of blocks later Siskind asked softly, "Want me to cancel everything for a while?"

"I don't know. What's next on the schedule?"

"The Tchaikovsky in Toronto, with the dress tomorrow night. I ought to be on my way now, and you're booked on TransAm at 9:47 this evening."

Kent thought it over. The temptation was to stick to the schedule, to act as if nothing were wrong.

"I'll let you know in a little while, after we get to the hotel," he said.

As soon as he was alone in his room he woke Pard.

"Well, I'm out of jail," he mouthed, "but maybe I would be safer in. Here's what happened." Quickly he filled Pard in, then said, "The question is, do we stick to the schedule?"

Yes.

"Suits me. I'll tell Siskind I'll be on the TransAm flight."

No.

"Huh? Now what?"

Pard tapped Kent's side of the skull: *Use your brain.*

Kent tried it. "Oh," he muttered. "I see your point. No innocent bystanders, huh? Except *me*."

Yes.

Kent called Siskind in. "Dave, I'm going to stay on schedule, but after what's happened I'd better not travel with other people. They might get hurt. See if the police will make secret arrangements for me to leave on another fast clopter—maybe from the hotel roof."

His manager nodded. "That makes sense. I'll travel with you this time. Maybe I can be—"

Kent was shaking his head. "No. By myself, Dave."

Siskind shrugged helplessly. "You're the boss. Good luck." He reached the door and turned to say, "That was a great performance last night, Kent. The recording of it will be a classic, no matter what!"

"Why, thanks, Dave."

His manager left him wondering if he had just heard his own funeral oration.

The clopter was waiting on the roof at 7:30. He walked to it in the twilight, escorted by Dave and two policemen, then ducked down and scooted underneath the craft.

"Hey!" a policeman objected.

"Just curious," Kent explained, coming out. "The clopter I came in had a hole in it, and I wondered if this was the same bucket."

"No. That one's impounded," said the officer.

Kent climbed into the doorway and stood on tiptoes to examine the roof. "It had a hole in its top, too," he explained. No green spot, nor even a slight irregularity in the clean metal, could he see.

Satisfied, he got in, waved, and took off.

As soon as he was established in the northeast traffic pattern he got a twitch from Pard: *Give me control.*

"Boy, if you could only talk," Kent moaned, "I'd give you control from here on out!"

Pard twisted out of the seat, which was not easy in the cramped compartment, and methodically began pulling the seat to pieces. "What now?" Kent demanded.

His skull-mate ignored him and kept working until he found what he was after. It was under a reglued manufacturer's label on the shock-cushion assembly.

Another green disk!

Squatting in the clutter of seat components, Pard got a razor blade from his toilet kit and hurriedly sliced the disk into tiny shreds. These he wadded into the remains of the label. He tugged the emergency-vent plug out of the side of the cabin and allowed the escaping air to yank the wad out of the clopter entirely. Then he shoved the plug back in place and waited for the air pressure to normalize. When he was breathing easily again he reassembled the seat and wriggled back into it.

Relax, his wrist twitched.

What was Pard up to, anyway? Kent wondered fretfully. And how

could he *possibly* have got mixed up with the kind of people who stole secret weapons and planted bombs under beds? Kent simply didn't *mingle* with such grim individuals, so how could Pard have managed to do so? Of course, there were those midnight strolls of Pard's, but how involved could a man get who couldn't communicate? Yet, Pard was entangled in something, as the "mystery girl's" pictures testified. And Pard said he was in love with her!

Kent mumbled, "You sure that girl is worth all this?"

Yes.

"How do you know? Have you kissed her?"

No.

"Touched her at all?"

No.

Kent sneered. "One of those I-worship-thee-from-afar bits, huh? You're an oddball, Pard! You really are!" He sat back huffily,

staring ahead into the starry night. "She's the reason you won't let me get involved with any kind of girl except cheap fluff," he guessed after a moment.

Yes.

"And you keep strewing her pictures around for me to find. Am I supposed to fall for her, too?"

Yes.

"Huh!" Kent grunted disgustedly. But he had to admit that the "mystery girl" looked most appealing, with that uncertain little smile. Maybe she was right for him. It would be fun to meet her and find out. Besides, he was twenty-four years old, and ought to be thinking about marriage. And his wife should meet Pard's approval, because in a way she would be Pard's wife, too.

Poor old Pard, he mused. A mind living all these, let's see . . . these eighteen years in isolation, practically incommunicado. What strange thoughts would such a mind have by now?

He and Pard had been one person at first, so whatever Pard was now was what Kent himself would probably be if he had been stuck with the voiceless half of their brain. Kent tried to imagine himself in that situation, but it was too much for him to picture. It was a wonder, he decided, that Pard hadn't gone raving mad long ago!

He had been too young at the time of their separation to recall many details. That was in the year of the big Florida hurricane, when he was six . . . A lot of loud noise and the house tearing up all around him, and something hurting his head, and his mother and father never being found . . .

He had no memory of being violently epileptic at the little rural hospital where the rescuers took him. He was told about that a week or two later, after he had been operated on and was well. The old doctor had been awfully nice to him, and had said how sorry he was that the hospital didn't have the equipment to make him well with just a small operation instead of a big one.

Kent remembered some of the doctor's words:

"We had to give you a partner, son, to live inside you. You and he must be friends, and always work and play together, because he can make you do things you don't want to do if you fuss with each other, or he can keep his side of your body from doing what you tell it, if he wishes. And probably only one of you will be able to talk, and the one who talks should be especially nice to the other one. And the one who can talk must never tell other people about his partner, because other people might think you are still sick, and make you stay in a hospital all the time."

When he was older, Kent had read up on the treatment of epilepsy, to learn what had been done to him.

It was a drastic cure worked out some ten years earlier, back in the 1960s, and justifiable only in the most violent cases even then. It had soon become outmoded as neural research learned how to pinpoint more precisely the cause of epilepsy in an injured brain. But that old country neurosurgeon in Florida had doubtless done his best under emergency conditions.

The operation amounted, quite simply, to slashing the two hemispheres of the brain apart. The connective neural tissues near the core of the brain—the corpus callosum and the lesser commissures—were cut, breaking communication between hemispheres and at the same time disrupting the epileptic syndrome.

The consequences of such an operation were less severe than one might expect, especially in an adult patient. Either hemisphere can direct almost all body functions. The two hemispheres begin their existence in a nearly balanced state, but during childhood one becomes increasingly dominant as the seat of consciousness—the left hemisphere in right-handed persons and vice versa—while the other becomes responsible for less exhalted sensory and motor functions. Thus, in the adult patient there would be no emphatic "twoness," no great awareness within the severed secondary hemisphere.

But as the old doctor had known or suspected, this was not necessarily true of a six-year-old. Consolidation of ego in a single hemisphere would have only started, primarily with the shift of language functions to one center. A major portion of Kent Lindstrom could never move out of the secondary hemisphere, because the bridges were down, and would grow—if it grew at all—as a separate ego, a silent partner—Pard.

So there they were—as far as Kent knew the only human of their kind in existence—a duplex man, two functioning minds in one body. And a hell of an inconvenience to each other—except at the piano, of course.

But Kent could console himself that Pard was basically a nice, reasonably sane guy, even if he was mixed up in something pretty weird. The mob was out to kill him, which proved he wasn't on their side. And the upshot of his acts in Los Angeles had been the exposure of that weapons cache.

Also, Pard's special interests—electronic gadgetry and the like—might be trivial, but there was nothing unwholesome about them.

"Pard," Kent said at last, "those characters know we're headed for Toronto. Won't they be waiting for us?"

Yes.

"We've got to stay alive and get to the bottom of this," said Kent, "and our chances of doing either in Toronto don't seem worth a damn.

If I talked to this chick of yours, would she fill me in?"

Yes.

"Where is she?"

Pard pulled a map out of the rack and put a finger on New York City.

"I'm sure to be recognized there!" Kent protested.

Pard swooped a finger through the air and down on a little town in New Jersey, then rubbed it along the map to the big city. Kent nodded.

"Yeah, it might help to land in a cornball town and go the rest of the way by train. But I wish I had a disguise!"

Pard made clipping motions around his head.

"That's what I was afraid you would do," Kent glummed. Nevertheless, he took the scissors and a small mirror from his toilet kit and began shearing his long curly locks. He had trimmed his coiffure frequently—but far less severely—in the past, and could do a neat job of it. But when he had the mop down to businessman-length, he stared in the mirror with sad misgivings.

"I don't know what my fans in Toronto will think of this," he mourned, "if I ever get to Toronto."

VI

He reached Manhattan shortly after midnight. The town, away from the tourist-trap centers, was resting quietly.

Pard walked into a well-kept residential section and halted in a shadowed spot near the beginning of a long block of brownstones. He watched and listened intently for a minute, then moved cautiously ahead. Halfway down the block he paused in front of a house and looked around again.

"Where is she?" Kent mouthed.

Pard shrugged: *I don't know.*

"Is this where she lives?" Kent persisted.

Yes-no.

"If you're trying to confuse me, you're doing great!"

Pard didn't respond. He went up the steps of the house, and Kent saw the row of apartment bell buttons. Pard quickly mashed every button, then hurried down the steps and across the street, where he hid behind an illegally parked car.

Lights came on in the apartments, and after a couple of minutes someone opened the door and peered outside. Kent could hear loud words being exchanged, but couldn't understand them. Five minutes later the house was dark again.

Pard stayed a little longer behind the car, then strolled away.

Mystified, Kent hazarded, "Was that some kind of code to find out if she was home?"

After a pause: *Yes.*

"Not quite right, huh?"

Yes.

By subway and bus Pard went into the New Jersey suburbs. He

wound up in front of a home that Kent put in the seventy thousand dollar class. The place was dark and silent.

Pard eased across the lawn, then around the corner and along the side of the house. An empty garbage can stood behind a side porch. Pard picked up the can and flung it with all his strength against the wall of the house.

A shrill feminine scream, followed by enraged male curses, came from inside, and Pard scooted behind a neighbor's garage. He peeked out to see the porch light come on and a heavy man lurch out carrying a mean-looking rifle. The man looked at the garbage can, cursed some more, and glared out into the night, his eyes halting on Pard's hiding place much too long for Kent's mental comfort. At last the man stalked back inside, slammed the door, and turned off the light.

As Pard crept away and headed back for the bus line, Kent growled angrily, "Are you supposed to be accomplishing something?"

Yes.

"Damned if I can see what!" Kent snapped. "If this is the way you spend your nights out, I wonder why you bother!"

Pard napped while Kent returned to the town where he had left the clopter. He had breakfast there just after dawn, and refueled the clopter. Pard had indicated he wanted to head west again.

"Where to now?" he asked when they were airborne. Pard opened the map and pointed to Green River, Wyoming. "The girl's somewhere around there, you think?"

Yes.

"I hope you're right for a change!" Kent snapped, thinking of the rehearsal with the Toronto Symphony he seemed destined to miss that evening. A dress rehearsal at that! A concert artist who didn't show up for engagements could get a stinky reputation, no matter how good he was!

He must have unconsciously mouthed his fretful thoughts, because Pard put an imaginary pistol to his head and pulled the trigger, to remind him that some gents whose instruments were more percussive than those of an orchestra were also waiting in Toronto. Kent simmered down quickly.

Pard landed the clopter at a public field in Green River, and steered Kent to a rent-a-car agency. The girl behind the desk looked like a person of culture, which worried Kent briefly, but she did not recognize his name when he signed for the car. He decided she couldn't be so very cultured after all.

From a distance the place looked like a ranch out of a TV western. It was about fifty miles out of Green River, a distance that took Pard nearly an hour and a half to drive over narrow country roads that were by turn pot-holed and

rutted. They saw no other car during the final ten miles.

Pard parked out of sight and approached the house on foot, staying under cover. Kent wondered where Pard had learned his infiltration technique. They hadn't had military training—the civilian draft having ended a decade before they came of age—but Pard dashed from tree to bush to gully as if he knew what he was doing.

The frightening thing to Kent was that Pard thought it advisable to sneak up on the ranchhouse in this manner. Here he was, miles from nowhere without even a peashooter, and Pard was behaving as if he were going up against a machine-gun nest!

"This is crazy!" Kent mouthed.

Relax.

"Nuts to relaxing! Just when our career was starting to look so great . . ."

But he didn't interfere with Pard's actions. Pard seemingly knew the score, and this was probably better than just waiting to be killed, and—

Machine-gun slugs stitched the dirt four feet from where Pard had crouched behind a bush, and the air was rent by the weapon's startling chatter. Pard hugged the ground, staring at the house still over a hundred yards away.

A loudspeaker bellowed at him: "SURPRISE, LINDSTROM! DIDN'T EXPECT REMOTE CONTROLLED DEFENSES, DID YOU! WALK FORWARD WITH YOUR HANDS UP!"

Pard crouched a moment longer, then stood up and started toward the house. *Take over,* he twitched.

The man on the loudspeaker lowered the volume to a more conversational level and said jovially, "That's one of the advantages of this rustic setting. It makes people think in terms of cowboys toting six-shooters! No gun without a man behind it. So fools and telepaths rush in!" The voice stopped and a mine exploded fifty feet behind Kent, knocking him flat on his face.

"You're not hurt!" the voice snapped. "Get up and come on! That was to remind you of two things: that you're never out of my range, and I don't care greatly if you wind up dead!"

Kent got to his feet, groggy with concussion, and plodded through the yard and onto the porch. The door opened and two guys with pistols came out.

"Inside, Buddy!" one of them barked, stepping aside.

Kent went through the door and saw a third man who was covering him from in front.

"Down on your belly!" this one ordered. Kent obeyed, and only then did one of the men step forward to frisk him. "Roll over real slow," he was told. He did so, and the man finished frisking him.

"Now get up and move! Down the hall and down the stairs!"

Kent stood and moved off, no-

ticing that the gunmen stayed a careful distance from him at all times, with their pistols leveled at his middle. Their caution was puzzling, but not comforting. They looked intelligent as well as tough, and they weren't giving him a chance to try anything desperate, even if he had the nerve, which he definitely did not! But maybe Pard did!

"Nothing rash," he pleaded silently.

Relax.

VII

He was steered into a room where three people were waiting: A beetle-browed man sitting behind a desk, wearing an army general's uniform. Mr. Byers from Los Angeles, standing by the desk and smiling triumphantly. And the "mystery girl," in a chair in a corner of the room with her right wrist manacled to a hook in the wall.

Kent felt slightly acquainted with all three.

The man behind the desk said, "I'm sure there's no need for introductions, so—"

"I disagree," said Kent, determined to show some spunk if only verbally. "Mr. Byers I've met, but the young lady I've only admired from afar. And as for you, General Preston, I know who you are—hero of the VietNam wars, conservative presidential timber, and all that—but I don't know you in your present role. Do they give out medals these days for shooting piano players?"

Preston chuckled. "Good boy! I admire brashness in the face of danger! You might have made a decent soldier, Lindstrom, if this sick land of ours didn't regard 'decent soldier' as a contradictory term! To save argument I'll go along with your pretense of ignorance. The young lady's name is Peggy Blodget, of course.

"As for myself—I assume you are also pretending ignorance of my political views?"

"It's no pretense," said Kent. "Politics bore me."

"Very well. Since the collapse of communism in the early 1970s, this once great nation of ours has gone to pot, Lindstrom!" The general's eyes glittered. "We're giving away our unmatched wealth to good-for-nothing loafers! We, the greatest power in the world, have gone flabby! We no longer exercise our strength, either diplomatically or militarily! We don't lead by precept! We've turned into a bunch of bleeding-hearts and soft touches! What we don't give away we waste on effeminate living. You're a prime example, boy! A potential fighting man, playing sissy slop on the piano!"

"What's sissy about the 'Hammer-Klavier'?" Kent flared.

"Shut up and listen! I'm no man to waste words! I'm a man of action, a man who makes his

speeches, but who then goes a step further than the cheap politicians who are ruining our country! I back up my speeches with deeds!"

"Such deeds as shooting sissy piano players?" Kent retorted.

"Such as eliminating any fool who gets in my way!" the general told him grimly. "And you, interfering with our Miss Blodget here, were doing exactly that!"

Kent shrugged. "But what can you gain from doing things like that, and stealing secret weapons, general? A man like you! What are you after?"

Preston stared at him. "I'm after this nation's salvation, boy! That can be won only if my friends and myself assume top leadership, preferably with the support of the public, but without it if the public prefers to remain asleep!"

"Dictatorship, huh?" muttered Kent, and then he rushed on before the general had time to blow his top: "But how does Miss Blodget figure in this? She doesn't look the type."

"Miss Blodget, as you well know, has a special talent," said the general. "And she was favorably impressed by my speeches. Thus, when she realized the patriotic thing for her to do was to offer her talent to her country, she came to me." He turned and gazed at the young woman, then added, "Unfortunately, Miss Blodget's patriotism lacks realism. She is slow to convince that to make an omelet, eggs must be broken. So she attempted desertion, first without and later with your assistance."

"What's this talent of hers?" asked Kent.

General Preston fidgeted impatiently. "I'm getting tired of this game!" he snapped. "We will waste no more time telling you things you've known for months!"

The girl spoke for the first time. "I'm a telepath, Kent. That makes me useful to the general when I'm within my eighty-yard range of the United Nations, or the White House, or the Pentagon. Of course, he doesn't get my help willingly."

"Shut up!" bellowed Preston. "You answer my questions, nobody else's!" He glared at Kent. "When I sought to eliminate you, boy, it was because you were in my way. But I can use you alive now. Miss Blodget is sentimental about her home town —Los Angeles. That was the major present purpose of our arms cache there. I had to pose a very real, very serious threat to the peace of her city, to bring her to terms and win her cooperation! Since she's telepathic, she can't be bluffed.

"Now, thanks to you, that threat and our most important supply of weapons has been stolen from us! And you've earned yourself a new job! You, boy, are my replacement for Los Angeles! Obviously, Miss Blodget cares very much what happens to you! She'll cooperate to keep you safe!" He smiled coldly and continued:

"That's why I set this little trap for you, with her as the bait. Mr. Byers was sent to Los Angeles to feed you the information that Miss Blodget was being brought here." The general paused and gazed at Kent curiously. "I was beginning to wonder, however, if you were going to fall for it. Byers had never been to this ranch before. So he didn't know it was my chief stronghold, and would be a trap for you. Also, he didn't know my real purpose in sending him to see you. What made you suspicious, Lindstrom? Why didn't you get here last night when I expected you? I even had a responser hidden in your clopter to warn us of your approach. Where did you go first?"

Kent shrugged distractedly and didn't reply. Pard, he remembered, had been sleeping the whole time Byers had been near him yesterday. Was that why he didn't get Preston's message? And Peggy Blodget was a telepath with an eighty-yard range . . . and Pard knew her. Also, Pard had acted so strangely in New York and New Jersey last night, waking people up and then moving on as if he had learned something from them, and . . . and it all began to make a terrifying kind of sense!

But why hadn't Pard ever *told* him?

"It would be hard for him to explain," answered Peggy, "and he knew you wouldn't take the news very well."

"I told you to shut up, girl!" roared Preston. She grinned a sad but unbowed little grin, and Kent suddenly knew she was the most wonderful girl in the universe.

Preston was speaking to him again. "Later on, Lindstrom, I may give you an assignment similar to Miss Blodget's—her covering the U.N. and Washington and you on a roving basis, each responsible for the other's safety. But that would require dividing my inner circle—the gentlemen in this room today—into two teams, with several new members to be trusted with the secret of Miss Blodget and yourself. That would be risky right now. Later, perhaps . . .

"But now, Lindstrom, let's put Miss Blodget into a proper frame of mind. She must feel pity for you, and a sense of responsibility. You both know what I have in mind, but the real experience should be far more convincing than my mental image of it. I believe, Lindstrom, that the end segment of the little finger is quite important to a piano player. Isn't that true?"

Kent nodded slowly.

"The removal of yours, from both hands, will not be extremely painful," Preston continued. "I'm no savage who goes in for idle torture! But I believe this will have a salutary effect on you and Miss Blodget with a minimum of bloodshed. Gentlemen, you may proceed!"

Give me control, twitched Pard.

"No!" Kent yelled aloud. "The Chopin Configuration!"

Yes, agreed Pard.

"What's that?" asked the general as two of his henchmen, after shoving their pistols into shoulder holsters, moved in on their captive while the third covered them.

Kent had neither the time nor the intention to explain that the "Chopin Configuration" was a special way of sharing responsibilities between Pard and himself—a way he hoped would enable them to fight like two men instead of one. In several of the first Chopin compositions he had learned to play, the left-hand part was far more demanding than the right-hand part. Kent had found that the best way to handle these pieces was to give Pard control of the entire body, except for the right hand and arm. This arrangement he called the "Chopin Configuration," although he used it frequently in playing other works.

And now, if there was going to be a fight, Kent did not intend to sit jittering helplessly in his skull while Pard alone took on five able-bodied men! Especially not with Peggy watching!

"Take the eyes, too!" Peggy called, and he knew she was relaying a message from Pard, who could fight without seeing.

"Your show of indifference doesn't move me, Miss Blodget," chuckled General Preston, misinterpreting her meaning. "Just the small fingertips, gentlemen!"

Kent lashed out with a sudden judo chop at the neck of the man on his side, but the blow landed on the chin and stunned the man only slightly, while—

The man on Pard's side moved in swiftly, and Pard gave with his motion, clamped the man's throat hard in the bend of his arm and swung him around as a shield against the covering gunman, who was looking for a clear shot, while—

Kent kept grabbing at his staggered opponent, and finally caught his jacket arm and jerked him into the melee, and fumbled under the man's jacket for his gun, while—

Pard broke his man's neck, then whirled the tangle around once and flung the body at the feet of the advancing gunman, where it flopped disconcertingly to the gunman's momentary dismay, then reached around to clamp his fingers on the throat of Kent's reviving opponent, while—

Kent yanked out the man's pistol just in time to raise it and shoot the advancing gunman as Pard's motion brought that enemy into view, while—

Pard went for the knife in the man's belt and slung it at Byers, who had moved away from the desk and was drawing his own pistol, but the knife missed, while—

General Preston had extracted his old army revolver from the desk and was aiming it at the no longer shielded Lindstrom, while—

Kent located Byers and put a bul-

let in that worthy's arm, causing him to drop his gun and lurch toward the door, while—

Peggy removed a slender shoe and threw it awkwardly with her free left hand at General Preston's temples, but only grazed his nose, while—

Preston whirled angrily and snapped a shot at her, and missed because she knew when to duck, while—

Kent finally got focused on the general, and put a bullet squarely between his eyes.

The rest was mere mop-up.

Kent's first opponent was still moving. He was crawling rapidly toward Byers' gun when Kent's bullet stopped him for good.

Pard ran out in the hall after Byers, whose retreating back was thirty feet away.

"Shoot him!" shouted Peggy.

Kent didn't raise the gun.

"Idiot!" snapped Peggy as Pard suddenly reached the left hand over, yanked the pistol from Kent's grasp, and drilled Byers.

"Why'd ya do that?" Kent mumbled thickly. "He had no fight left in him!"

"Because he knew about us," Peggy called out. "He was the only one left who did!"

Pard went back in the room, examined the bodies briefly, then got a key from Preston's pocket and unsnapped Peggy's manacles. She immediately went to the desk, studied the array of controls for a moment, then did things to them.

"Five minutes to get out of here," she said, dashing for the door with Pard following.

As they ran across the yard Kent puffed, "How is it you can talk if you and Pard are . . . are alike?"

"Because I'm a natural telepath. He seems to be accidental. That operation isolated him at an age when the urge to communicate was very strong. My hemispheres are joined."

"You're the only one he's found?" asked Kent.

"Yes."

"I'm glad it's you, Peggy. You're a beautiful girl."

She laughed lightly. "Keep running. This place is going to blow sky-high in a couple of minutes!"

"We'll be running the rest of our lives!" Kent fretted.

"No. We've chopped the head off Preston's monster, and it'll die now. We'll even make that Toronto rehearsal this evening!" She slid into an erosion gully and Pard leaped down beside her. They huddled there and waited.

A few seconds later all hell broke loose behind them. The sound and concussion of air and earth hit them with solid, jolting blows. Pard held her closely. It was like being next door to a major battlefield.

But it ended quickly. Peggy lifted her head with a half-frightened giggle. "We're safe, but we'd better scram!"

They climbed out of the gully and walked on swiftly toward the car.

"This has been a rough couple of days, Peggy," said Kent, "but I'm suddenly quite sure it was worth it!"

"Why, thank you, kind sir!" she smiled winningly.

"I'm especially glad for Pard," he added. "Life must've been pretty dismal for him up to now. It's great to find somebody he likes, and who can talk to him. He shouldn't feel so secondary from now on!"

"Pard? Secondary?" asked Peggy.

"Yeah. You know. Having to play second fiddle to me all the time."

She looked amused but said nothing. Kent was vaguely uncomfortable about the way this conversation was going. But of course, he told himself, she can anticipate my words before I say them! No wonder she responds a little strangely! I'll get accustomed to that!

They reached a level path and her hand caught his. An instant later he was delighted to find her in his arms, and the kiss she gave him was hard to believe. It was magnificent!

Then his bright new world turned dark—because she was murmuring passionately into his ear: *"Pard, oh dear, wonderful Pard! I love you so!"*

Kent was dismally certain he would *never* get accustomed to that! ■

continued from page 58

And repair parts of dural and magnesium alloy, and the super-alloy special heat-treatment steels essential to the operation of those planes couldn't have been produced.

They'd have been operational only so long as the 100-plus octane gas in their tanks held out, and they had no breakdowns.

The ultra-modern supersonic, nuclear-warhead-rocket-armed, radar-equipped jet fighter, however, with target-seeking missiles, would, curiously, be in better state. Jet engines are less fussy in their fuel demands than were the WWII piston engines.

What would have happened if one of those immensely powerful machines got loose among the WWI enemy . . . ?

Dean has a beautifully thought-out story based on that.

The French who got involved with that magnificent monster might well say, "Ah, Monsieur, ce n'est pas un gourmet; c'est un gourmand."

THE EDITOR

It's right over your nose

Concerning the nature of certain remarkable radiation sources astrophysicists have discovered —and a speculation as to what they may be . . .

BEN BOVA

Illustrated by Kelly Freas

All right, we're all science-fiction people and we all firmly believe that there must be intelligent life out among the stars. Probably older, smarter races are zooming around the galaxy while we sweat over dinky little Mars probes and Apollo missions.

So when are we going to get some evidence—some cold, hard facts—that confirms this belief? I don't mean statistics or speculation, I mean *evidence*: something we can see, hear, taste, touch, or smell.

And when I say "we," I mean you and me, friend. The here-and-now generation. I want evidence of intelligent interstellar races for *us*, not our descendants.

Yeah, I know all about Project Ozma and the attempts to pick up intelligent radio signals. But figure it out. How many stars can we reach with our radio equipment? The nearest fifty? Make it the nearest five hundred, or even five thousand if you want to. There are 100 billion stars in the Milky Way galaxy. If intelligence is as rare a phenomenon as everybody seems to think it is, the chances of getting to chat with an intelligent race during our lifetimes are something like fifty in a billion, at best.

And even if we did hear some squawks and sizzles that have an ordered pattern to them, you and I would be long a-moldering before the scientific community definitely decided that they were from an intelligent source.

O.K., They're out there—we hope. But probably not close enough to reach by interstellar phone. And certainly nobody expects to find another intelligent race within the solar system.

So you run smack into a familiar problem: interstellar flight. If we have any hope of seeing or hearing Them, either They have to get close enough to make at least radio contact, or we have to go out and find Them.

Strictly speaking, anything is possible. It's just that some things are less probable than others. And most scientists rate interstellar flight about as probable as having the Great Sphinx of Gizeh get up and dance the hora.

But let's take a look at physics instead of opinions.

Let's see if we can envision an interstellar vehicle, based strictly on what we know at the moment about the natural universe. None of this hyperspace business; it's a useful gimmick for fiction, but we don't know if it exists or whether we could use it if it does. (Suppose hyperspace is actually discovered some day and we find out that it's *slower* than normal spaceflight? Shazam!)

Well anyway, let's try to construct an interstellar vehicle and then see if we can find anything in the heavens that fits the description. After all, we've got some fairly decent telescopes and radio receivers.

Maybe, if we know what to look for, we can come up with a hunk of evidence that says They're really out there.

We'll assume that the interstellar ship will be propelled by rockets. We're forced into it. No other propulsion system that we know of today can do the job. Well, there's solar sailing, but that would take generations to get as far as Pluto . . . let alone Alpha Centauri. So we'll try to live with rocket propulsion.

Dr. Edward Purcell, Nobel Laureate in physics from Harvard University, did just that a few years ago. He worked out the equations for interstellar flight; they're published in a book called "Interstellar Communication."* Only, Dr. Purcell did the job to show that interstellar flight is not only impossible, it's hogwash—pure and unadulterated.

He pointed out that the best you could hope for was a speed of about ninety-nine percent of the velocity of light. O.K., we can accept that. Relativity theory says that you can't go faster than light. But at ninety-nine percent of *c* there's a time-stretching effect that allows you to cover enormous distances while hardly aging a moment. Combine that with cryogenically suspended animation during the dull parts of the trip, and you've got the possibility of exploring practically the whole known universe within a human lifetime.

But how do you get that speed? Purcell showed that if you use a nuclear fusion engine—even a fusion drive that's one hundred percent efficient—your rocket vehicle needs about 1.6 billion tons of propellent for every ton of payload. Billion. A bit uneconomical.

So Purcell looked at the possibility of using a matter-antimatter annihilation rocket. Then you only need forty thousand tons of propellant—half of it antimatter—for each ton of payload. Two small problems arise. First, you need something to hold the antimatter. Maybe a magnetic bottle could do it. Second, the rocket exhaust of such an engine would pour out something like 10^{18} watts of gamma rays. This is slightly more energy than the sun lavishes on Earth . . . and sunlight isn't pure gamma radiation, either. If you turned on that engine, you'd bake Earth—or whatever planet you're close to—to a frazzle.

Purcell concludes, "Well, this is preposterous . . . And remember, our conclusions were forced on us by the elementary laws of mechanics."

I'm with him all the way, except for the word, "preposterous." That's his opinion. It would have been Leif Ericson's opinion if one of his Viking buddies had shown him the blueprints for a nuclear submarine. It would have been Or-

*Published by W. A. Benjamin Inc., New York, 1963.

ville Wright's opinion if he had ever seen sketches of the Boeing swing-wing supersonic transport.

All that Purcell's equations really show is that interstellar ships should be bulky so-and-so's. Great, for us evidence-seekers. As for radiating 10^{18} watts—marvelous! That kind of light bulb should be visible for long distances. (Dare we assume that if They're smart enough to build such an engine, They won't turn it on until They're clear of planetary neighborhoods?)

Incidentally, the physicist R. W. Bussard suggested several years ago that a form of interstellar ramjet could get around the billion-to-one ratio of propellant to payload. Bussard envisioned a ship with an enormous funnel—some four thousand kilometers across—to scoop up the very thin hydrogen gas that lies between the stars. The hydrogen is fed to a fusion reactor rocket engine. So you might not have to carry all that propellant, after all. You just scoop it up as you go along.

But there's another consideration that leads me to suspect that interstellar ships should be big. The time problem.

Sure, you can bat around at ninety-nine percent *c*, and sleep most of the time in a deep-freeze. But you can't go home again. You might cover a thousand light-years in a subjective twinkling of an eye, but when you doubled back to your homeworld, two thousand years would have elapsed there. Even in a very, *very* stable culture, things would have changed so much that you'd likely feel out of place. And even if your friends have tremendous life spans, they'd either be so different from you as to be virtual strangers, or they'd be the biggest bores in the galaxy. People change, and cultures change, over the millennia.

So all interstellar voyages are going to be one way, in effect. Unless our concept of the universe is glaringly wrong.

This means that a ship will become all the home its crew ever knows. Which, in turn, means that the crew's family is going to be abroad. The ships will be little cities of their own—and maybe not so little, either. For just as the Old Testament patriarchs begat new generations, interstellar families are apt to grow, if They're anything like us.

Several people have mentioned in the past that a hollowed-out asteroid might make a good spaceship. Why not consider a larger body, something the size of the Moon or Mars? There'll be plenty of room for families and cargo, and lots of hydrogen fuel locked away in the planet's rocks. All the natural resources of a full-sized world would be right there. Sure, the planetship would be getting smaller all the time, but you could probably pick up another unpopulated chunk or two in your travels.

You might have to live underground when you're in-between stars, but you'd have to live indoors in a factory-built ship anyway. At least, on a reasonable-sized planet, you might be able to live outdoors when you got close enough to a star to warm up your atmosphere.

The propulsion system that pushes a planet through interstellar space at relativistic speeds would have to be so powerful that it boggles the imagination. But it is not beyond the known laws of physics!

Either a nuclear fusion or antimatter drive could do the job. For the Bussard-type ramjet, that four-hundred-kilometer-wide scoop isn't so very big, if we're thinking in terms of a planet-sized vehicle.

So we *can* dream up an interstellar ship, even with our comparatively feeble understanding of the physical universe. Sure, the ship is impossible for us to build . . . right now. But it's the engineering that we don't know how to do. The physics is all there.

O.K., we know what to look for. At least, we think we know one of the things that we might be looking for. Is there anything resembling this planet-sized, fusion or antimatter breathing dingus within sight of our telescopes?

Well, what would it look like through a telescope?

Probably, what we'd see would be the ship's giant exhaust plume: a huge, hot glob of ionized gas . . . a plasma that expands from the ship's exhaust nozzles to enormous dimensions in the hard vacuum of interstellar space. The plasma would show a decided redshift, since the ship would be moving at tremendous speeds, close to the velocity of light. And unlike any natural heavenly body, the rocket exhaust might fluctuate unpredictably as the ship changed course or power settings.

Are you thinking what I'm thinking?

Over the past four years, astronomers have gone practically buggy trying to figure out just what the so-called "quasi-stellar objects" might be.

Quasars show enormous redshifts—amounting to speeds of up to eighty percent of the velocity of light. Because of these redshifts, astronomers at first thought that the quasars must be very distant galaxies, out on the edge of the observable universe, and their redshifts are caused by the general expansion of the universe.

But the damned things twinkle! Some of them brighten up and dim down over the course of a year or two, others within a few weeks; still others, inside of a couple of days. No galaxy could behave that way, unless everything we know about physics is haywire.

So now many astronomers are leaning toward the idea that the quasars are relatively close by, perhaps not far from the Milky Way

galaxy, perhaps actually within it.

The quasars are apparently composed of very hot gases, plasmas that are strongly ionized at temperatures of some 30,000°K. The size of the quasars is up for grabs: if they're very distant, then they must be galaxy-sized; but if they're close to the Milky Way, or inside it, they could be of stellar size, or even smaller.

Neither cosmologists, astronomers nor physicists have been able to determine what produces the enormous light and radio-wave power output of the quasars. Ordinary physical processes, even the nuclear fusion of the type that powers conventional stars, won't fill the bill. Something else is burning inside the quasars.

Could it be a fusion reactor of the type that we might build some day? That would run much hotter than the fusion reactions that power sun-like stars. Or might it be an antimatter device? Some cosmologists have suggested that the quasars might be natural collisions of matter and antimatter.

But if the quasars are interstellar ships, if what we're seeing is part of the normal interstellar traffic of the galaxy—why are all the ships heading away from us? Why haven't we seen any quasar/ships approaching this general neighborhood?

Maybe because we're out toward the galaxy's edge, and most of the traffic is in the star-rich central regions. More likely, though, the answer is that such approaching objects—be they natural or artifact—would have an enormous blueshift. Such blueshifts would be very difficult to detect on Earth. The light would be shifted so far into the ultraviolet, X ray, and gamma ray portions of the spectrum that it couldn't penetrate our protective blanket of air, which is opaque to such wavelengths.

During the past few years, rocket-borne instruments *have* detected powerful X-ray regions in the sky. Most of them seem to be clustered toward the central parts of the Milky Way galaxy. X-ray astronomy is pretty new, and facts are fairly scarce. But there's a possibility that an object moving toward Earth at the same kind of speed that the quasars are moving away from us might appear to us as an X-ray source.

Remember, the quasars—whatever they are—are intrinsically ultraviolet objects. It's only because their redshifts move their natural UV light into regions of the spectrum where we can see it from the ground that we've been able to detect them at all. Take an object that's emitting deep-UV, hurl it toward Earth at eighty percent or more of light speed, and you might well get an X-ray "star."

So there could be interstellar ships heading in our direction, then.

Why don't we do something to attract their attention? ■

The Mind Reader

ROBERT CHILSON

It's no trick at all to devise a military mind-reader. The trick lies in figuring out how simple that trick is!

Illustrated by Leo Summers

The Golden Eagle was at forty thousand feet, six hundred miles per hour, when Washington crawled over the horizon and spread out like a lichen growing at superspeed. The robot's infrared eyes had detected the fireball of heat radiation from miles of paved streets, brick, concrete and metal buildings long since. The boiling, glowing mountain of turbulent air over the city was also plainly visible, and the microwave beacons of the television stations provided a ready-made reference grid.

The Eagle checked the angles of each station, cross checked with the angles of the various radio stations, and shifted its course south slightly. The sunbright glow of its electric jets faded, and the vee-shaped robot began to slide down a long, gentle slope. The dark band of the Potomac River, crossed with the bright slashes of bridges, expanded as the Golden Eagle approached. On the visual spectrum it could see much more detail, including surface cars and the low-flying aircars that were similar in shape to itself.

Senator Willis poured the general a drink, saying, "Before you go before the Committee, I'd like to hear the details myself. You know that everybody was expecting this thing to go on like Vietnam—and to end pretty much the same way."

General Chambers nodded. "But we were winning that one, up till the end. We should've had better sense than to try to pacify the delta with our own men. And scheduling the election gave the country to the Reds. We shouldn't have done that so soon, and certainly shouldn't have left right after."

Willis frowned, shrugged his heavy shoulders, said, "Political necessity. We couldn't hold off on elections any longer because of left-wing pressure in this country. Then everybody forgot about South Vietnam—after all, we'd won, hadn't we?"

"But you didn't make that mistake in Cambodia. Why was your election there valid when it wasn't in South Vietnam?"

"We had the people behind us, and there were no insurgents left to

terrify them." General Chambers smiled reminiscently, his lean face lighting up. He was slender and tall and blond, and his hair was just starting to turn slightly. He was somewhat younger than Willis, and a living legend, due to his actions in South Vietnam.

"You've heard of Sayer's brilliant work in Brazil's northwest territories, of course," he said. "We had his entire team of agricultural scientists on the job, for one thing. For another, the Thais managed to stand behind us—though the pressure on them was terrific after South Vietnam began to help the AI officially. We had had considerable experience in dealing with villagers in both South Vietnam and Thailand, and we were careful not to make the same mistakes."

"But you were able to win the villagers over in only six months?"

"Well, six months is long enough for one rice crop to mature. Actually, though, Sayers' first crop in the Phnomh Penh area—our beachhead—took ten months. It took a while to persuade them to plant the new rice. The thing is, the AI weren't locals. The people didn't support either the government or the AI, and we got there first. They simply never had time to put their propaganda across."

The Golden Eagle's maser and laser detectors picked up an object, sharply seen on laser, on a near-intercept course. The object had the shape of a great wing, a passenger plane, but when the Eagle attempted to cross check, it found itself puzzled. The radio spectrum crackled with background static, with static from the jets just over and around the city, and from the robot's own jets, but none seemed to be coming from the wing ahead. Ultraviolet sensors reported only sky glow ahead; it was too far away to detect the glow of the jets in the city in this thick air. Infrared revealed a glowing cloud trailing behind a glowing wing, quite distinct from the glare of the city beyond. Visible light revealed a bright red, yellow, and black-trimmed wing with two vertical dorsal fins dividing it into thirds.

It had to be an airplane, but planes, the robot knew, were propelled by electric jets. This one wasn't. Therefore it might not be a plane, despite the fact that it looked like one. It had been programmed not to believe one set of sensors alone, and was quite well aware that two completely different objects may have similar appearances; a parking lot may at times resemble a pond on infrared from fifty thousand feet. The robot's programmers had given it orders to check everything three times before coming to any decision. Even with the route recorded for it, a robot occasionally got lost.

It speeded up its jets and surged ahead to intercept the airplane's course. As it approached the plane,

the Golden Eagle fell off to the left and paralleled its flight for ten seconds. The wing was a standard stol aircraft, nuclear powered, submach, approaching the airport and with its jets off at an unusual distance from ground. The Eagle made a note that planes sometimes cut power in the air but that they were nevertheless airplanes, and returned to its own course.

One of the five hundred passengers glanced up and to the left through the sheet of curving transpex that was the leading edge of the giant flying wing and saw the golden-brown, gold-headed robot wing. He pointed and several hundred passengers craned their necks eagerly. After several seconds some of them began to fumble with fist-sized visual recorders, but the Eagle's jets glowed brightly and it turned and bounced over the top of the wing.

The cadet pilot's hair stood on end and the pilot swore. "That's much too close! Make a note of the time and we'll file a complaint."

"How far away are they supposed to stay?"

"I'm not certain exactly; a safe maneuvering distance. Depends on the robot, its load, and the kind of plane it's approaching. A wing this big *is* pretty stable. At least it went over us; if it'd gone under and we had happened to lose a couple hundred rpm, at this low speed we'd have dropped enough to knock it out of the air."

"Which brings us to the main point. Whatever in the world are Vampires? They've got the world in a flap. All kinds of rumors—backed up by facts!—are going around. You read Alsop's column, didn't you? And there are even wilder rumors loose."

"I know. We started some of those rumors ourselves. Psychological warfare, you know."

"You did? Well . . . how much of Alsop's guess was right? You know he interviewed dozens of peasants and captives—from South Vietnam and some even from North Vietnam."

"Well, his statement of the effectiveness of the Vampires is correct—conservative if anything. People all over southeast Asia are terrified of them. The general description is right, small nuclear-electric veetol wings, but they've all got the size too large. They're robot craft."

"Robots! Really?"

"One of the most vivid descriptions of Vampire attack is that of a defector from the AI, a volunteer 'sympathizer' from South Vietnam. He and a group of AI, mostly from South Vietnam, were moving west by night, several days' march from the Mekong, when a wind seemed to pass over the jungle. The line of marching men froze, looking up, as they had instantly realized that this was no wind.

"The leader of the troop had time to shout, 'Vam Pai!' and he and several of the other men lifted

their rifles and fired at the treetops.

"The actual Vampire was in view for perhaps two seconds. It was described as being 'black as night', slow-flying, low—'brushing the trees which rustled in its path,' and as being huge—'its wings overspread the jungle and cast darkness over the land.'

"That is, it was a veetol or stol wing—veetol undoubtedly, in those jungles—probably a one- or two-man craft flying very low, since we know that no large numbers of big wings have been dispatched to southeast Asia. Its impellors, of course, made the wind sound and rustled the leaves of the trees.

"The description of the attack continues, 'I looked up in surprise. The Vam Pai was outlined for one instant against the sky, and was gone as I fumbled with my rifle. When it was gone I looked at my comrades and some were down. Eight out of nineteen men were dead, including all our officers.' The description of the silhouette of the craft tallies with that of a small vee-shaped fighter.

"Other reports confirm this experience, many adding the detail of the flares frequently fired by Vampires. These are fired ahead of and below the machine, to blind and confuse the enemy. All reports agree that there is no flash and report of gunfire from the Vampires even when they are firing grenades. All AI who defected attributed their survival (many were attacked several times—one at least nine times—without being wounded) to their fear of Vampires or their peaceful intentions toward them—many of these had decided to defect weeks earlier—or even to their prayers. Indeed, quite a large number of defectors affirm that they deliberately and consciously prayed to the Vampires for deliverance and were spared."

"That's what's so secret about the whole thing. Naturally we couldn't permit a public hearing . . ."

"Hold on. I can understand you wanting to keep the robots secret, but what about the mind-reading gunsight? Isn't that your secret?"

General Chambers laughed again. "That's part of it. The secret of it is, that it doesn't exist at all."

"But, General—the reports! Good Heavens—completely documented, detailed—everybody in Cambodia and South Vietnam is convinced that they're true. Time after time the Vampires attacked and took only the most intelligent, capable men—hard-core Communist recruiters and trained officers especially. The unofficial kill rate on known attacks was a figure of forty-seven percent—the most able and aggressive half was killed every time. Even when the AI were moving prisoners, only AI were killed. Not a single case of Vampire attack on Cambodians is known."

"There were some, a few Cambodian converts to the AI were

shot. But the kill rate on them was less than ten percent. They weren't very capable or aggressive. None of the conscripted locals were shot."

"But you say that the Vampires weren't equipped with, uh, 'telepathic' gunsights?"

"No. We started that rumor to terrify the enemy and to reassure the locals. In fact they were standard mail robots—Golden Eagles. The smallest size, right off the assembly line."

As the Golden Eagle approached the city, its speed fell off steadily, until it was going slower than the hundred-and-twenty-five-miles-an-hour cars of the Skyway system. The time was after ten o'clock, so the big trains of fifty and twenty-five-passenger cars were gone. Here and there an occasional twelve- or six-passenger car whipped along the hundred-twenty-five-foot-high urban-suburban routes. The robot followed one of these rails into the city, staying well above the air-car traffic and well away from the depots where the fifty- and hundred-passenger air buses lifted off.

Using mostly its visual sensors, the Eagle identified buildings as they came past beneath, as it slowed and dropped still more. A flat roof appeared ahead, ringed with an array of colored lights and dotted with the vees of Golden Eagles. The robot jockeyed slightly to bring the lights into line and cut its jets completely. The impellers in its wings were already spinning; they were speeded up to maintain altitude, but speed fell way off. As it approached the edge of the roof the impellers were inched down; then the robot was on ground effect, five feet above the roof, fifteen miles per hour. It fell off to one foot and five mph and the Eagle lowered its feet. The front pods touched down, their small high-resistance wheels turning reluctantly. The robot tipped forward, sank still more, and abruptly was motionless.

"Golden Eagles? But how could they tell the difference between the locals and the insurgents?"

General Chambers smiled grimly. "The obvious method. If they shoot, they're hostile. The Eagles were given a couple of tons of armor plating, plus an equal amount of ammo, and outfitted with four thirty-caliber solenoidal machine guns—the electronic guns you've read about—firing explosive bullets. Then there's a pair of grenade launchers, about two-inch muzzle, rifled. All these guns are silent and flashless, even on infrared. The bullets and grenades were fired only at rifle or artillery flashes—the Vampires did a fearsome job on field artillery—or at chemical-powered vehicles in specified areas. We used only nuclear-electrics, of course."

"Hm-m-m. That kept them from attacking you or the Cambodians. But you haven't explained what made the AI think they were one- or

two-man planes. And that 'shoot only when shot at' business would limit their efficiency, wouldn't it?"

"Oh yes, greatly. But they were fielded by Special Forces, closely followed by the Regular Army; the Cambodian army naturally had to occupy the cleared area. As for the size of them," the general smiled slowly, "fearful things always seem larger than they are. They were seen by night, by men who lacked sophistication in modern aircraft, and then only in glimpses. Another thing that contributed to their fear was the Vampires' silence. We baffled the jets to keep them from ambushing them."

"Baffled?"

"We took twice as much air from the impellers and fed half of it to the jets cold, to form a jacket of cooler air around the plasma exhaust. Then trailing cones were extended around this, partly to block off the light until the exhaust had cooled below incandescence. You know that the glow behind an electric jet is never very long; air cools off rapidly. The combination of air jacket and cone reduced the usual whistle to a hiss quieter than the 'pell rush. These cone-shaped shields were retracted whenever the Vampire was at high altitude and speed —one thousand feet and one hundred miles per hour was the usual setting."

"If that's high altitude and speed, no wonder the Vampires were able to patrol every footpath. General, I'd appreciate it if you'd go over your over-all strategy again, filling in the role of the Vampires."

Ports in the Golden Eagle's belly slid open and five containers, each holding a ton of first-class mail, dropped onto the roof. The trapdoor, registering the weight, unlatched itself and slid them one by one down to the giant chutes that took them to the sorter. A five-hundred-pound container with four hundred pounds of mail and a hundred pounds of weights followed them and was sent down a smaller chute. The weights that had brought the Eagle's payload up to a balanced six tons were shunted into one corner of the room.

Several men now entered the room, two driving handling machines. Unloading could be purely automatic, but loading still had to be done "by hand"—i.e., under human direction. The handling machines quickly pulled three one-ton containers out of the freight elevator and loaded them into the mobile tower which boosted them up into the body of the robot, where they were seized and held. A half-ton container followed, and the robot requested and received a thousand pounds of weights.

Seconds passed while the robot juggled weights and containers to achieve balance. Each container was gripped at both ends by adjustable arms. Each set of arms could easily be swung from left to right,

as much as a foot in either direction.

Satisfied, the robot closed its ports, spun its impellers, and lifted off on ground effect. Threading its way among the other robot wings on the roof, it lifted off the roof in a well-spaced line of other Eagles. A few minutes later it was pulling up at a steep angle and a heavy acceleration: destination, Chicago.

"Well, it's easier to see with a map. But we first established a beachhead around Phnomh Penh, without too much opposition from the local villagers. That's what made the first part so expensive—buying their support. The Annamese insurgents were coming west from South Vietnam across the Mekong. We closed the river to night traffic and patrolled it with Vampires, and our daylight foot patrol on the west bank kept more than an occasional saboteur from landing. We took a lot of casualties there, and the Cambodian army a lot more, checking on those little boats. But fish could still be brought down from the Tonle Sap, since we interdicted the river above the mouth of the lake's outlet. To make a long story short, we occupied all the land south of the Tonle Sap, west of the Mekong, in the first three months. There wasn't much pressure on us then; we were an 'aid mission' and everybody was watching the Central American Common Market.

"After it began to hot up, we moved north of the lake to link hands with the Thais. Thailand is secure, you know, and there were almost no AI in that area. They came through Laos and Vietnam and followed the Mekong south, occupying between a third and a half of Cambodia."

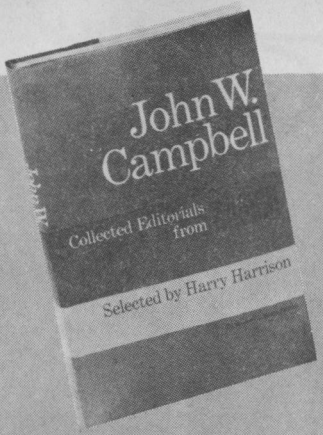
"There was considerable public pressure on you to move east across the top of the country to close the Laotian border, I remember."

"The American people—refused is the only word—to believe that South Vietnam was training, arming, and supporting the Annamese insurgents. That name, by the way, is misleading. There's no connection between the modern Southeast Asians and the ancient Annamese."

"Hm-m-m—yes, I read an article that stressed the differences between ancient and modern nations. Go on."

"That's about it. We interdicted the Mekong with Vampires and ran our north-and-south pincer around the eastern end of the lake. That nearly ended it. Of course, the last five months were the worst, it got very rugged east of the river at times, and of course there's no clearly defined border. But holes in the ground are only a last resort, you can't squat in them all the time. And the Vampires were on patrol night and day at the last. With the death of the most able half of them, the rest broke under the pressure; over thirty percent defected, in fact."

"There it is again. You say they can't read minds, but they were able to pick out and kill only the most



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able half of a group of AI. How?"

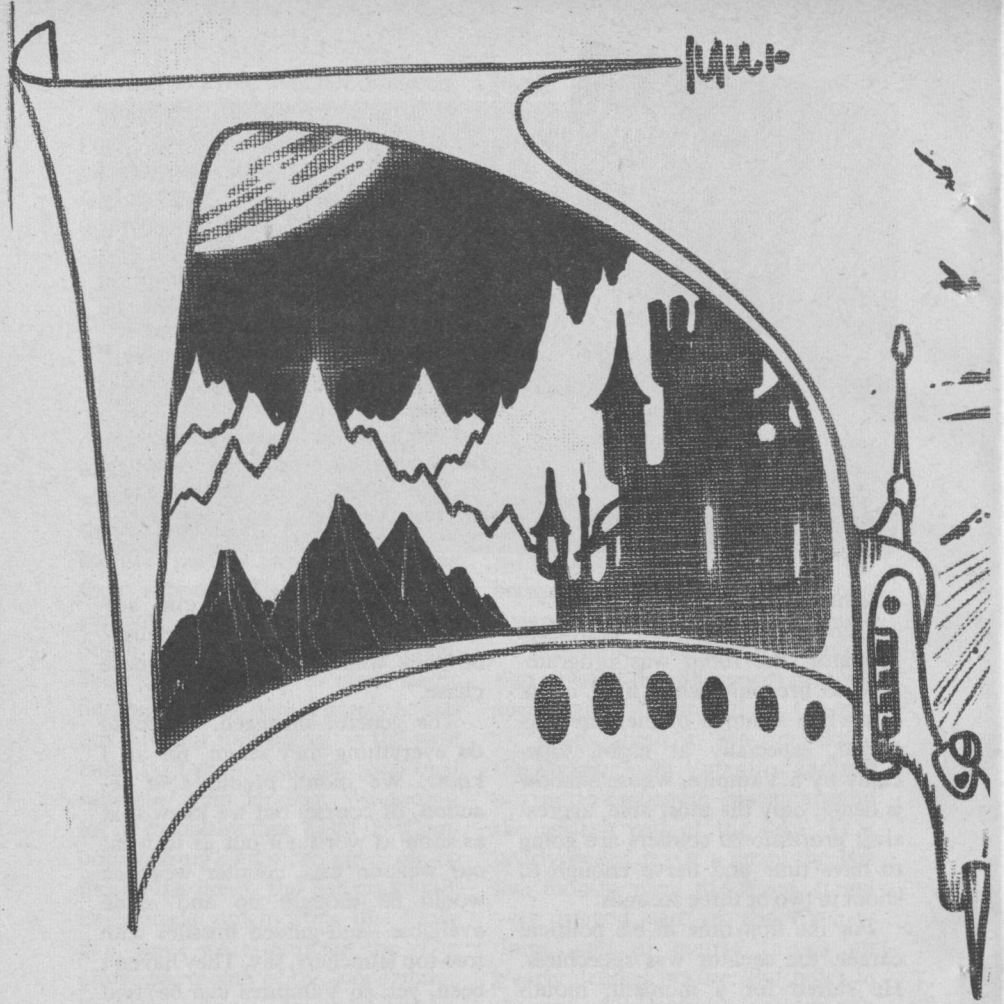
General Chambers chuckled. "Senator, the robot was programmed to fire only when fired upon. But when a bunch of men are surprised, especially at night, especially by a Vampire, whose shadow is death, only the most able, aggressive, professional soldiers are going to have time and nerve enough to shoot in two or three seconds."

For the first time in his political career, the senator was speechless. He stared for a moment, mouth half-open, then recovered himself. "Of course! So obvious, yet so hard to see. Mostly because of those rumors you spread. No wonder the AI collapsed like a pricked balloon. Why, the Russians even announced the development of an experimental helmet designed to 'ground out' thought waves. Did you hear about it? They intend to make them available to South Vietnam and any others attacked by us imperialists. So they went off on a wild-goose chase."

The general shrugged. "It could do everything they claim, for all I know. We didn't predict that reaction, of course, but we knew that as soon as word got out as to what our weapon was, counter weapons would be thought up and made available—self-guided missiles with tree-top launchers, say. They haven't been, yet, so Vampires can be used in the High Plateau rebellion in South Vietnam. Tran Chin's government may well collapse before the Reds catch on."

"Let them break their backs transporting helmets, eh?"

"Break their backs *developing* them. There's only one thing better than an ignorant enemy—a misinformed one." ■



Satan's World

Poul Anderson

Second of Four Parts. Satan's World was impossible; a world near absolute zero, orbiting less than 100 megamiles from a blue-white super-giant star. Which was why it was worth trillions to its possessor— and to the alien race trying to grab it!

Illustrated by Kelly Freas

SYNOPSIS

The Polesotechnic League is theoretically just a mutual-benefit organization of interstellar companies. In practice—given the scale of its operation and the spread of laissez-faire economics—it represents a kind of super-feudalism. Its members act like nearly independent barons, dealing with entire governments on the planets, sometimes making or breaking them, dominating even the powerful nations of the Solar Commonwealth. But the League has its own problems and limitations. Space is too huge; there are too many worlds. Several score light-years from Sol begin those regions which are almost entirely unexplored. Closer in, exploration and development are still incomplete. The sheer volume of data makes it impossible to understand the total situation at any given time, or to lay rational plans for the future.

A new enterprise, Serendipity, Inc., offers a partial solution. Its computers, advanced in this respect beyond any other known machines, do more than collect and correlate information. They search their memory banks along association chains beginning with a particular client or problem, somewhat as a living brain does but with vastly greater scope. Thus many a datum, recorded but then forgotten, is found to be useful to someone. Naturally, the highly competitive merchant princes of the League are suspicious at first of an outfit which sets up to buy and sell information. But Serendipity soon proves that it favors no one, keeps the secrets entrusted to it, and renders an invaluable service. Over the years, it grows immensely. This despite the fact that the six founder-partners, though human, are of unknown background and keep strictly to themselves. After all, Technic civili-

zation has a high regard for privacy, and eccentrics are common.

David Falkayn, born on the autonomous colony planet Hermes, takes a vacation in the Solar System. While there, he decides to visit Serendipity's office in Lunograd on the Moon, and see if it can turn up anything for him. He is a trade pioneer for Nicholas van Rijn's Solar Spice & Liquors Company. His job is to discover new sources and new markets in space, which can then be quietly exploited before the competition learns about them. But through various exploits, he has become somewhat prominent. A girl who calls herself Veronica has latched onto him. He can tell that she is a commercial spy, out to learn what she can about van Rijn's operations so that the rivals of the latter can get the jump on him. Such attempts are taken for granted, along with bribery, blackmail, burglary, and much else. Falkayn isn't worried. Competition is not literally cutthroat; it is regulated by the covenant of the League so as to protect the psychobiological integrity of the individual, hence ruling out procedures like murder, kidnapping, and brainscrub. Enjoying Veronica's company, Falkayn simply jollies her along, and leaves her behind when he goes to Serendipity, Inc.

There he talks to Thea Beldaniel, one of the owners. She leads him to an isolation room where he consults a computer. The machine associates him with his discovery, some years ago, of planets freakishly captured by a blue giant star. No other case has ever been found. But nonhuman explorers did come upon one analogous oddity. A sunless "rogue" planet is approaching the B-type star Beta Crucis, some two hundred light-years hence. It will pass by in a tight hyperbolic orbit and recede into space. The explorers saw no significance in this cosmic accident, and their report never reached the Solar System until the ceaseless information-gathering activity of SI chanced to net it. Even then, the machine did not "think" of the matter until Falkayn's presence "reminded" it. Now it suggests that here may be the greatest bonanza in galactic history. Absolute secrecy should be preserved. Falkayn agrees.

Emerging, he finds Thea Beldaniel friendlier than before. She invites him to visit her and her partners in their Lunar Alpine castle, to discuss a mutually profitable idea. Since no one but nonhuman guards and servants has ever been there before, and since the cenobitical owners of SI may change their minds at any moment, Falkayn leaps at the opportunity to learn something more about their by now key operation. He postpones doing anything about the rogue planet and goes straight from Lunograd, stopping only to notify the other members of his trade team.

These are nonhuman themselves: the small, quick, short-tempered Cynthian xenobiologist Chee Lan, and the gigantic, placid, dragonlike planetologist Adzel from Woden. They fret a little at the delay, but not too much. Veronica frets more, since Falkayn has stood her up; her interest in him has become personal rather than professional.

At the castle, Falkayn meets three other SI stockholders: Kim Yoon-Kun, Anastasia Herrera, and the wife of Hugh Latimer. Latimer himself, and Thea Beldaniel's sister, are absent "on business." Though his hosts try to prevent it, he sees the lift-off of an interstellar ship that he is certain contains those two. It becomes plain that he was invited here simply to get him out of the way while something else happens. Thea tries to allay his suspicions with a story about the background of her group—their shipwreck as children, their adoption by kindly nonhumans who want to stay outside of Technic civilization but who did send them back with a grubstake of rare metals and later supplied them with computer parts. This only makes Falkayn warier. When he declares that he will leave, he is taken prisoner.

Chee Lan and Adzel try repeatedly to call him in the following days. At last they are granted an audiovisual contact. Falkayn tells them he is quitting Solar S & L, joining SI, and marrying Thea. His comrades are convinced that he has been made a puppet by brainscrub techniques. Getting no satisfaction from the Lunar police—who much favor well-behaved SI over the rowdy remainder of the League—they appeal to Nicholas van Rijn. He agrees that Falkayn probably is controlled. Formal action will take too long to organize. A rescue mission, therefore, will be extremely illegal. Van Rijn can stall off the authorities for a whi'e. But Chee and Adzel must risk their own lives and liberty to get their friend back.

PART 2

VII

Adzel paused at the air lock. "You will be careful, won't you?" he asked.

Chee bristled. "You're the one to worry about, running around without a keeper. Watch yourself, you oversized clatterbrain." She blinked. "Rats and roaches! Something in my eyes. Get started—out of my way."

Adzel closed his faceplate. Encased in space armor, he could just fit inside the lock. He must wait until he had cycled through before securing his equipment on his back. It included a small, swivel-mounted automatic cannon.

Muddlin' Through glided from him, low above soaring, jagged desolation. Mottled paint made her hard to see against that patchwork

of blinding noon and ink-black shadow. When past the horizon, she climbed.

Adzel stayed patiently put until the seething in his radio earplugs was broken by the Cynthian's voice: "Hello, do you read me?"

"Like a primer," he said. Echoes filled his helmet. He was aware of the mass he carried, protective but heavy; of the smells, machine and organic, already accumulating; of temperature that began to mount and prickle him under the scales.

"Good. This beam's locked onto you, then. I'm stabilized in position, about a hundred and fifty kilometers up. No radar has fingered me yet. Maybe none will. All check, sir?"

"Ja." Van Rijn's words, relayed from a hired maser in Lunograd, sounded less distinct. "I have talked with the police chief here and he is not suspecting. I got my boys set to start a fracas that will make distractions. I got a judge ready to hand out injunctions if I tell him. But he is not a very high judge, even if he is expensive like Beluga caviar, so he can't make long stalls either. Let the Lunar Federal police mix in this affair and we got troubles. Ed Garver would sell the soul he hasn't got to jail us. You better be quick like kissing a viper. Now I go aboard my own boat, my friends, and light candles for you in the shrine there, to St. Dismas, and St. Nicholas, and especial to St. George, by damn."

Adzel couldn't help remarking, "In my studies of Terrestrial culture, I have encountered mention of that latter personage. But did not the Church itself, as far back as the twentieth century, decide he was mythical?"

"Bah," said van Rijn loftily. "They got no faith. I need a good fighting saint, who says God can't improve the past and make me one?"

Then there was no time, or breath, or thought for anything except speed.

Adzel could have gone quicker and easier on a grav sled or some such vehicle. But the radiations would have given him away. Afoot, he could come much nearer before detection was certain. He bounded up the Alpine slopes, over razorback ridges, down into ravines and out their other sides, around crater walls and crags. His heart slugged, his lungs strained, in deep steady rhythm. He used the forward tendency of his mass—great inertia at low weight—and the natural pendulum-periods of his legs, to drive himself. Sometimes he overleaped obstacles, soaring in an arc and landing with an impact that beat through his bones. He kept to the shade wherever possible. But pitilessly, at each exposure to sunlight, heat mounted within his camouflaged armor faster than his minimal cooling system could shed it. Glare filters did not entirely pro-

tect his eyes from the raw sun-dazzle. No human could have done what he did—hardly anyone, indeed, of any race, except the children of a fiercer star than Sol and a vaster planet than Earth.

Twice he crouched where he could and let a patrol boat slip overhead. After an hour, he wormed his way from shadow to shadow, evading a watchpost whose radar and guns stood skeletal against the sky. And he won to the final peak unheralded.

The castle loomed at the end of an upward road, black witch-hatted towers above battlemented walls. With no further chance of concealment, Adzel started openly along the path. For a moment, the spatial silence pressed in so huge that it well-nigh smothered pulse, breath, air pump, foot thuds. Then: "Who goes there? Halt!" on the standard band.

"A visitor," Adzel replied without slacking his even trot. "I have an urgent matter to discuss and earnestly request admittance."

"Who are you? How did you get here?" The voice was female human, accented, and shrill with agitation. "Stop, I tell you! This is private property. No trespassing."

"I humbly beg pardon, but I really must insist on being received."

"Go back. You will find a gatehouse at the foot of the road. You may shelter there and tell me what you have to say."

"Thank you for your kind offer." Adzel kept advancing. "Freelady . . . ah . . . Beldaniel, I believe? It is my understanding that your partners are presently at their office. Please correct me if I am wrong."

"I said go back!" she screamed. "Or I open fire! I have the right. You have been warned."

"Actually, my business is with Captain Falkayn." Adzel proceeded. He was quite near the main portal. Its outer valve bulked broad in the fused-stone wall. "If you will be good enough to inform him that I wish to talk to him, *viva voce,* we can certainly hold our discussion outdoors. Permit me to introduce myself. I am one of his teammates. My claim upon his attention therefore takes precedence over the seclusion of your home. But I have no real wish to intrude, Freelady."

"You're not his companion. Not anymore. He resigned. He spoke to you himself. He does not want to see you."

"With profoundest regret and sincerest apologies for any inconvenience caused, I am compelled to require a direct confrontation."

"He . . . he isn't here. I will have him call you later."

"Since you may conceivably be in error as to his whereabouts, Freelady, perhaps you will graciously allow me to search your premises?"

"No! This is your last warning! Stop this instant or you'll be killed!"

Adzel obeyed; but within the armor, his muscles bunched. His left hand worked the cannon control. In his palm lay a tiny telescreen whose crosshairs centered on the same view as the muzzle. His right hand loosened his blast pistol in its holster.

"Freelady," he said, "violence and coercion are deplorable. Do you realize how much merit you have lost? I beg of you—"

"Go back!" Half hysterical, the voice broke across. "I'll give you ten seconds to turn around and start downhill. One. Two."

"I was afraid of this," Adzel sighed. And he sprang—but forward. His cannon flung three shaped charges at the main gate. Fire spurted, smoke puffed, shrapnel flew, eerily soundless except for a quiver through the ground.

Two energy beams flashed at him, out of the turrets that flanked the entry port. He had already bounded aside. His cannon hammered. One emplacement went down in a landslide of rubble. Smoke and dust whirled, veiling him from the other. By the time it had settled, he was up to the wall, beneath the gun's reach.

The outer valve sagged, twisted metal. "I'm headed in," he said to Chee Lan, and fired through the chamber. A single shell tore loose the second, less massive barrier. Air gushed forth, momentarily white as moisture froze, vanishing as fog dissipated under the cruel sun.

Inside, an illumination now undiffused fell in puddles on a disarrayed antechamber. Through its shadows, he noticed a few pictures and a brutally massive statue. The artistic conventions were foreign to anything he had encountered in all his wanderings. He paid scant attention. Which way to David, in this damned warren? Like a great steel hound, he cast about for clues. Two hallways led off in opposite directions. But one held empty rooms; the chambers fronting on the other were furnished, albeit sparsely. *Hmm-m, the builders plan on enlarging the castle's population sometime. But with whom, or what?* He galloped down the inhabited corridor. Before long he encountered a bulkhead that had automatically closed when pressure dropped.

Beldaniel's retainers were probably on the other side of it, spacesuited, expecting to give him a full barrage when he cracked through. She herself was no doubt on the phone, informing her partners in Lunograd of the invasion. With luck and management, van Rijn could tie up the police for a while. They must be kept off, because they were bound to act against the aggressor, Adzel. No matter what allegations he made, they would not ransack the castle until warrants had been issued. By that time, if it ever came, the Serendipity gang could have covered their tracks as regarded Falkayn in any of numerous ways.

But Beldaniel herself might attempt that, if Adzel didn't get busy. The Wodenite retreated to the foreroom and unlimbered his working gear. No doubt another chamber, belonging to the adjacent airseal section, lay behind this one. Though gastight, the interior construction was nowhere near as ponderous as the outworks. What he must do was enter unnoticed. He spread out a plastic bubblecloth, stood on it and stuck its edges to the wall. His cutting torch flared. He soon made a hole, and waited until air had leaked through and inflated to full pressure the tent that now enclosed him. Finishing the incision, he removed the panel he had burned out and stepped into an apartment.

It was furnished with depressing austerity. He took a moment to pull the door off a closet—yes, female garb—and inspect a bookshelf. Many volumes were in a format and symbology he did not recognize; others, in Anglic, were texts describing human institutions for the benefit of visiting extraterrestrials. Boddhisatva! What sort of background did this outfit have, anyway?

He opened his faceplate, removed an earplug, and cautiously stuck his muzzle out into the hall. Clanks and rattles came to him from around a corner where the bulkhead must be. Hoarse words followed. The servants hadn't closed their helmets yet . . . They were from several scarcely civilized planets, and no doubt even those who were not professional guards were trained in the use of modern weapons as well as household machinery. Cat-silent in his own armor, Adzel went the opposite way.

This room, that room, nothing. *Confound it—yes, I might go so far as to say curse it—David must be somewhere near . . . Hold!* His wilderness-trained hearing had picked up the least of sounds. He entered a boudoir and activated its exterior scanner.

A woman went by, tall, slack-suited, vigorous-looking in a lean fashion. Her face was white and tense, her breath rapid. From van Rijn's briefing, Adzel recognized Thea Beldaniel. She passed. Had she looked behind her, she would have seen four and a half meters of dragon following on tiptoe.

She came to a door and flung it wide. Adzel peeked around the jamb. Falkayn sat in the chamber beyond, slumped into a lounger. The woman hurried to him and shook him. "Wake up!" she cried. "Oh, hurry!"

"Huh? Uh. Whuzza?" Falkayn stirred. His voice was dull, his expression dead.

"Come along, darling. We must get out of here."

"Uhhh . . ." Falkayn shambled to his feet.

"Come, I say!" She tugged at his arm. He obeyed like a sleepwalker. "The tunnel to the spaceport. We're off for a little trip, my dear."

Adzel identified the symptoms. Brainscrub drugs, yes, in their entire ghastliness. You submerged the victim into a gray dream where he was nothing but what you told him to be. You could focus an encephaloductor beam on his head and a subsonic carrier wave on his middle ear. His drowned self could not resist the pulses thus generated; he would carry out whatever he was told, looking and sounding almost normal if you operated him skillfully but in truth a marionette. Otherwise he would simply remain where you stowed him.

In time, you could remodel his personality.

Adzel trod full into the entrance. "Now that is too bloody much!" he roared.

Thea Beldaniel sprang back. Her scream rose, went on and on. Falkayn stood hunched.

A yell answered, through the hallways. *My mistake,* Adzel realized. *Perhaps not avoidable. But the guards have been summoned, and they have more armament than I do. Best we escape while we may.*

Nonetheless, van Rijn's orders had been flat and loud. "You get films of our young man, right away, and you take blood and spit samples, before anything else. Or I take them off you, hear me, and not in so polite a place neither!" It seemed foolish to the Wodenite, when death must arrive in a minute or two. But so rarely did the old man issue so inflexible a directive that Adzel decided he'd better obey.

"Excuse me, please." His tail brushed the shrieking woman aside and pinned her gently but irresistibly to the wall. He tabled his camera, aimed it at Falkayn, set it on Track, and left it to work while he used needle and pipette on the flesh that had been his comrade. (And would be again, by everything sacred, or else be honorably dead!) Because he was calm about it, the process took just a few seconds. He stowed the sample tubes in a pouch, retrieved the camera, and gathered Falkayn in his arms.

As he came out the door, half a dozen retainers arrived. He couldn't shoot back, when he must shield the human with his own body. He plowed through, scattering a metallic bow wave. His tail sent two of the opposition off on an aerial somersault. Bolts and bullets smote. Chaos blazed around him. Some shots were deflected, some pierced the armor—but not too deeply, and it was self-sealing and he was tough. None could match his speed down the hall and up the nearest rampway. But they'd follow. He couldn't stand long against grenades or portable artillery. Falkayn, unprotected, would be torn to pieces sooner than that. It was necessary to get the devil out of this hellhole.

Up, up, up! He ended in a tower room, bare and echoing, its viewports scanning the whole savage moonscape. Beldaniel, or someone,

must have recovered wits and called in the patrols, because several boats approached swift above the stonelands. At a distance, their guns looked pencil thin, but those were nasty things to face. Adzel set Falkayn down in a corner. Carefully, he drilled a small hole in a viewport through which he could poke the transmitter antenna on his helmet.

Since Chee Lan's unit was no longer locked on his, he broadened the beam and increased the power. "Hello, hello. Adzel to ship. Are you there?"

"No." Her reply was half sneer, half sob. "I'm on Mars staging a benefit for the Sweet Little Old Ladies' Knitting and Guillotine Watching Society. What have you bungled now?"

Adzel had already established his location with reference to published photographs of the castle's exterior and van Rijn's arbitrary nomenclature. "David and I are in the top of Snoring Beauty's Tower. He is indeed under brainscrub. I estimate we will be attacked from the ramp within five minutes. Or, if they decide to sacrifice this part of the structure, their flitters can demolish it in about three minutes. Can you remove us beforehand?"

"I'm halfway there already, idiot. Hang on!"

"You do not go aboard, Adzel," van Rijn cut in. "You stay outside and get set down where we agreed, hokay?"

"If possible," Chee clipped. "Shut up."

"I shut up to you," van Rijn said quietly. "Not right away to God."

Adzel pulled back his antenna and slapped a sealing patch on the hole. Little air had bled out. He loomed over Falkayn. "I have a spacesuit here for you," he said. "Can you scramble into it?"

The clouded eyes met his without recognition. He sighed. No time to dress a passive body. From the spiraling rampwell, barbaric yells reached his ears. He couldn't use his cannon; in this narrow space, concussion would be dangerous to an unarmored Falkayn. The enemy was not thus restricted. And the patrols were converging like hornets.

And *Muddlin' Through* burst out of the sky.

The spaceship was designed for trouble—if need be, for war. Chee Lan was not burdened by any tenderness. Lightnings flashed, briefly hiding the sun. The boats rained molten down the mountain. The spaceship came to a halt on gravfields alongside the turret. She could have sliced through, but that would have exposed those within to hard radiation. Instead, with tractor and pressor beams, she took the walls apart.

Air exploded outward. Adzel had clashed shut his own faceplate. He fired his blaster down the ramp, to discourage the servants, and collected Falkayn. The human was

still unprotected, and had lost consciousness. Blood trickled from his nostrils. But momentary exposure to vacuum is not too harmful; deep-sea divers used to survive greater decompressions, and fluids do not begin to boil instantaneously. Adzel pitched Falkayn toward an open air lock. A beam seized him and reeled him in. The valve snapped shut behind him. Adzel sprang. He was caught likewise and clutched to the hull.

Muddlin' Through stood on her tail and grabbed herself some altitude.

Shaken, buffeted, the castle and the mountains reeling beneath him, Adzel still received van Rijn's orders to Chee Lan:

". . . You let him down by where I told you. My yacht fetches him inside five minutes and takes us to Lunograd. But you, you go straight on with Falkayn. Maybe he is thick in the noddle, but he can tell you what direction to head in."

"Hoy, wait!" the Cynthian protested. "You never warned me about this."

"Was no time to make fancy plans, critchety-crotchety, for every possible outgo of happenings. How could I tell for sure what would be the circlestances? I thought probable it would be what it is, but maybe could have been better, maybe worse. Hokay. You start off."

"Look here, you fat pirate, my shipmate's drugged, hurt, sick! If you think for one picosecond he's going anywhere except to a hospital, I suggest you pull your head—the pointed one, that is—out of a position I would hitherto have sworn was anatomically impossible, and—"

"Whoa down, my furry friendling, easy makes it. From what you describe, his condition is nothing you can't cure en route. We fixed you with a complete kit and manual for unscrubbing minds and making them dirty again, not so? And what it cost, yow, would stand your hair on end so it flew out of the follicles! Do listen. This is big. Serendipity puts its whole existing on stake for whatever this is. We got to do the same."

"I like money as well as you do," Chee said with unwonted slowness. "But there are other values in life."

"Ja, ja." Adzel grew dizzy from the whirling away of the land beneath. He closed his eyes and visualized van Rijn in the transmitter room, churchwarden in one fist, chins wobbling as he ripped off words, but somehow a-crackle. "Like what Serendipity is after. Got to be more than money.

"Think hard, Chee Lan. You know what I deducted from the facts? Davy Falkayn *had* to be under drugs, a prisoner chained worse than with irons. Why? Because a lot of things, like he wouldn't quit on me sudden . . . but mainly, he is human and I is human, and I say a healthy lecherous young man what would throw over Veronica—

even if he didn't think Veronica is for anything except fun—what would throw over a bouncer-bouncer like that for a North Pole like Thea Beldaniel, by damn, he got something wrong in his upper story. So it looked probabilistic he was being mopped in the head.

"But what follows from this? Why, Serendipity was breaking the covenant of the Polesotechnic League. And that meant something big was on foot, worth the possible consequentials. Maybe worth the end of Serendipity itself—which is for sure now guaranteed!

"And what follows from that, little fluffymuff? What else, except the purpose was not commercial? For money, you play under rules, because the prize is not worth breaking them if you got the sense you need to be a strong player. But you could play for different things—like war, conquest, power—and those games is not nice, ha? The League made certain Serendipity was not doing industrial espionaging. But there is other kinds. Like to some outsider—somebody outside the whole of civilizations we know about—somebody hidden and ergo very, very likely our self-appointed enemy. *Nie?*"

Adzel's breath sucked in between his teeth.

"We got no time for fumblydiddles," van Rijn went on. "They sent off a messenger ship two weeks ago. Leastwise, Traffic Control records clearing it from the castle with two of the partners aboard personal. Maybe you can still beat their masters to wherever the goal is. In every case, you and Falkayn makes the best we got, right now in the Solar System, to go look. But you wait one termite-bitten hour, the police is in action and you is detained for material witnesses.

"No, get out while you can. Fix our man while you travel. Learn what gives, yonderwards, and report back to me, yourselfs or by robocourier. Or mail or passenger pigeon or whatever is your suits. The risk is big but maybe the profit is in scale. Or maybe the profit is keeping our lives or our freedom. Right?"

"Yes," said Chee faintly, after a long pause. The ship had crossed the mountains and was descending on the rendezvous. Mare Frigoris lay darkling under a sun that stood low in the south. "But we're a team. I mean, Adzel—"

"Can't go, him," van Rijn said. "Right now, we are also ourselfs making crunch of the covenant and the civil law. Bad enough you and Falkayn leave. Must be him, not Adzel, because he's the one of the team is trained special for working with aliens, new cultures, diddle and counter-diddle. Serendipity is clever and will fight desperate here on Luna. I got to have evidences of what they done, proofs, eyewitnessing. Adzel was there. He can show big, impressive testimonials."

"Well—" The Wodenite had nev-

er heard Chee Lan speak more bleakly. "I suppose. I didn't expect this."

"To be alive," said van Rijn, "is that not to be again and again surprised?"

The ship set down. The tractor beam released Adzel. He stumbled off over the lava. "Fare you well," said Chee. He was too shaken for any articulate answer. The ship rose anew. He stared after her until she had vanished among the stars.

Not much time passed before the merchant's vessel arrived; but by then, reaction was going at full tide through Adzel. As if in a dream, he boarded, let the crew divest him of his gear and van Rijn take over his material from the castle. He was only half conscious when they made Lunograd port, and scarcely heard the outraged bellows of his employer—was scarcely aware of anything except the infinite need for sleep and sleep and sleep—when he was arrested and led off to jail.

VIII

The phone announced: "Sir, the principal subject of investigation has called the office of Mendez and is demanding immediate conference with him."

"Exactly as I expected," Edward Garver said with satisfaction, "and right about at the moment I expected, too." He thrust out his jaw. "Go ahead, then, switch him to me."

He was a short man with thinning hair above a pugdog face; but within a severe gray tunic, his shoulders were uncommonly wide. The secretarial machines did not merely surround him as they would an ordinary executive or bureaucrat; somehow they gave the impression of standing guard. His desk bore no personal items—he had never married—but the walls held numerous pictures, which he often animated, of himself shaking hands with successive Premiers of the Solar Commonwealth, Presidents of the Lunar Federation, and other dignitaries.

His words went via wire to a computer, which heard and obeyed. A signal flashed through electronic stages, became a maser beam, and leaped from a transmitter perched above Selenopolis on the ringwall of Copernicus. It struck a satellite of Earth's natural satellite and was relayed north, above barren sunbeaten ruggedness, until it entered a receiver at Plato. Coded for destination, it was shunted to another computer, which closed the appropriate connections. Because this moon is a busy place with heavy demands on its communication lines, the entire process took several milliseconds.

A broad countenance, moustached and goateed, framed in the ringleted mane that had been fashionable a generation ago, popped into Garver's phone screen. Little jet eyes, close set to an enormous crag of a nose, widened. "Pox and

pestilence!" exclaimed Nicholas van Rijn. "I want Hernando Mendez, police chief for Lunograd. What you doing here, you? Not enough busybodying in the capital for keeping you happy?"

"I am in the capital . . . still," Garver said. "I ordered any call from you to him passed directly on to me."

Van Rijn turned puce. "You the gobblehead told them my man Adzel should be arrested?"

"Your monster Adzel," Garver retorted.

"Who you for calling anybody monsters?" van Rijn sputtered. "Adzel got more milk of human kindness, *ja,* with plenty butterfat, too, than what thin, blue, sour yechwater ever oozes from you, by damn!"

The director of the Federal Centrum of Security and Law Enforcement checked his temper. "Watch your language," he said. "You're in bad trouble."

"We was getting out of trouble, us. Self-defense. And besides, was a local donnerblitz, no business of yours." Van Rijn tried to look pious. "We come back, landed in my yacht, Adzel and me, after he finished. We was going straight like arrows with crow feathers to Chief Mendez and file complaints. But what happened? He was busted! Marched off the spacefield below guard! By whose commandments?"

"Mine," Garver said. "And I'd have given a lot to include you, Freeman." He paused. "Though I think I'll get what I need for that very shortly. I'm coming to Lunograd and take personal charge of investigating this affair. Consider yourself warned. If you leave Federation territory, I'll take it as prima facie evidence of guilt. Maybe I won't be able to extradite you from Earth, or wherever you go, on a Commonwealth warrant—though I'll try—but I'll slap a hold on everything your Solar Spice & Liquors Company owns here, right down to the last liter of vodka. And your Adzel will serve a mighty long term of correction, whatever you do, van Rijn. Likewise his accomplices, if they dare come back in reach."

He leaned forward. "I've been waiting for this chance," he continued stacatto. "For years I've waited. I've watched you and your fellow plutocrats in your Polesotechnic League make a mockery of government—intrigue, bribe, compel, corrupt, ignore every inconvenient law, make your private deals, set up your private economic systems, fight your private battles, act like barons of an empire that has no legal existence but that presumes to deal with whole civilizations, make vassals of whole worlds—bring back the rawest kind of feudalism and capitalism! This 'freedom' you boast about, that your influence has gotten written into our very Constitution, it's nothing but license. License to sin, gamble, indulge in vice . . . and the League

supplies the means, at a whopping profit!

"I can't do much about your antics outside the Commonwealth. Not much about them any place, I admit, except on Luna. But that's a beginning. If I can curb the League here in the Federation, I'll die glad. I'll have laid the foundation of a decent society everywhere. And you, van Rijn, are the beginning of the beginning. You have finally gone too far. I believe I've got you!"

He sat back, breathing hard.

The merchant had turned impassive. He took his time about opening a snuffbox, inhaling, sneezing, and dribbling a bit on the lace of his shirtfront. Finally, mild as the mid-oceanic swell of a tsunami, he rumbled: "Hokay. You tell me what you think I done wrong. Scripture says sinful man is prone to error. Maybe we can find out whose error."

Garver had gathered calm. "All right," he said. "No reason why I should not have the pleasure of telling you personally what you could find out for yourself.

"I've always had League activities watched, of course, with standing orders that I'm to be told about anything unusual. Slightly less than a week ago, Adzel and the other xeno teamed with him—yes, Chee Lan of Cynthia—applied for a warrant against the information brokers, Serendipity, Inc. They said their captain, David Falkayn, was being held prisoner under brainscrub drugs in that Alpine castle the SI partners keep for a residence. Naturally, the warrant was refused. It's true the SI people are rather mysterious. But what the flame, you capitalists are the very ones who make a fetish of privacy and the right to keep business details confidential. And SI is the only member of the League that nothing can be said against. All it does, peacefully and lawfully, is act as a clearinghouse for data and a source of advice.

"But the attempt did alert me. Knowing what you freebooters are like, I thought violence might very well follow. I warned the partners and suggested they call me directly at the first sign of trouble. I offered them guards, but they said they had ample defenses." Garver's mouth tightened. "That's another evil thing you Leaguers have brought. Self-defense, you call it! But since the law does say a man may keep and use arms on his own property—" He sighed. "I must admit SI has never abused the privilege."

"Did they tell you their story about Falkayn?" van Rijn asked.

"Yes. In fact, I talked to him myself on the phone. He explained he wanted to marry Freelady Beldaniel and join her outfit. Oh, yes, he *could* have been drugged. I don't know his normal behavior pattern. Nor do I care to. Because it was infinitely more plausible that you simply wanted him snatched away

before he let his new friends in on your dirtier secrets.

"So." Garver bridged his fingers and grinned. "Today, about three hours ago, I got a call from Freeman Kim at the SI offices. Freelady Beldaniel had just called him. A space-armored Wodenite, obviously Adzel, had appeared at the castle and demanded to see Falkayn. When this was denied him, he blasted his way in, and was rampaging loose at that moment.

"I instructed Chief Mendez to send out a riot detachment. He said he was already preoccupied with a riot—a brawl, at least—among men of yours, van Rijn, at a warehouse of yours. Don't tell me that was coincidence!"

"But it was," van Rijn said. "Ask them. They was bad boys. I will scold them."

"And slip them a fat bonus after they get out of jail."

"Well, maybe for consoling them. Thirty days on britches of the peace charges makes them so sad my old gray heart is touched . . . But go on, Director. What did you do?"

Garver turned livid. "The next thing I had to do was get an utterly baseless injunction quashed. One of your kept judges? Never mind now; another thing to look into. The proceedings cost me a whole hour. After that, I could dispatch some men from my Lunograd division. They arrived too late. Adzel had already gotten Falkayn. The damage was done."

Again he curbed his wrath and said with bitter control: "Shall I list the different kinds of damage? SI's private, but legitimate, patrollers had been approaching the tower where Adzel was, in their gravboats. Then a spaceship came down. Must have been a spaceship, fully armed, acting in closely planned coordination with him. It wiped out the boats, broke apart the tower, and fled. Falkayn is missing. So is his one-time partner Chee Lan. So is the vessel they habitually used—cleared from Lunograd spaceport several standard days ago. The inference is obvious, don't you agree? But somehow, Adzel didn't escape. He must have radioed you to pick him up, because you did, and brought him back. This indicates that you have also been in direct collusion, van Rijn. I know what a swarm of lawyers you keep, so I want a little more evidence before arresting you yourself. But I'll get it. I'll do it."

"On what charges?" the other man asked tonelessly.

"For openers, those brought by the Serendipity partners, with eyewitness corroboration from Freelady Beldaniel and the castle staff. Threat. Mayhem. Invasion of privacy. Malicious mischief. Extensive destruction of property. Kidnapping. Murder."

"Whoa, horsey! Adzel told me, maybe he banged up those servants and guards a little, but he's a Buddhist and was careful not to kill

anybody. That gun tower he shot out, getting in, was a standard remote-control type."

"Those patrol boats were not. Half a dozen one-seaters, smashed by energy beams. O.K., the pilots, like the rest of the castle staff, were nonhuman, non-citizen hirelings. But they were sophonts. Killing them in the course of an illegal invasion was murder. Accessories are equally guilty. This brings up the charge of conspiracy and—"

"Never mind," van Rijn said. "I get a notion somehow you don't like us much. When you coming?"

"I leave as soon as I can set matters in order here. A few hours." Garver peeled lips up from his teeth again. "Unless you care to record a confession at once. You'd save us trouble and might receive a lighter sentence."

"No, no. I got nothings to confess. This is such a terrible mistake. You got the situation all arsey-free versey. Adzel is gentle like a baby, except for some babies I know what are frightening ferocious. And me, I am a poor lonely old fat man only wanting a tiny bit profit so he does not end up like a burden on the welfare."

"Stow it," Garver said, and moved to break the connection.

"Wait!" van Rijn cried. "I tell you, everything is upwhirled. I got to unkink things, I see, because I try hard for being a good Christian that loves his fellow man and not let you fall on your ugly flat face and get laughed at like you deserve. I go talk with Adzel, and with Serendipity, too, before you come, and maybe we straighten out this soup you have so stupid-like brewed."

A muscle jumped at the corner of Garver's mouth. "I warn you," he said, "if you attempt any threat, bribery, blackmail—"

"You call me names," van Rijn huffed. "You implicate my morals. I don't got to listen at your ungentlemanly language. Good day for you, Gorgonzola brain." The screen blanked.

Luna being a focal point for outsystem traffic, the jails of the Federation's member cities are adjustable to the needs of a wide variety of species. Adzel's meticulous fairness compelled him to admit that with respect to illumination, temperature, humidity, pressure, and weight, he was more at home in his cell than under Earth conditions. But he didn't mind the latter. And he did mind the food here, a glutinous swill put together according to what some fink of a handbook said was biologically correct for Wodenites. Still more did he suffer from being too cramped to stretch his tail, let alone exercise.

The trouble was, individuals of his race were seldom met off their planet. Most were primitive hunters. When he was brought in, by an understandably nervous squad of policemen, the warden had choked.

"Ullah akhbar! We must house this cross between a centaur and a crocodile? And every elephant-size unit already filled because of that cursed science-fiction convention—"

Thus it was with relief, hours later, that Adzel greeted the sergeant in the phonescreen who said, "Your, uh, legal representative is here. Wants a conference. Are you willing?"

"Certainly. High time! No reflection on you, officer," the prisoner hastened to add. "Your organization has treated me with correctness, and I realize you are bound to your duty as to the Wheel of Karma." The sergeant in his turn made haste to switch over.

Van Rijn's image squinted against a glare too faithfully reproduced. Adzel was surprised. "But . . . but I expected a lawyer," he said.

"Got no time for logic choppers," his boss replied. "We chop our own logics, *ja,* and split and stack them. I mainly should tell you, keep your turnip hatch dogged tight. Don't say one pip. Don't even claim you is innocent. You are not legally requisitioned to tell anybody anything. They want the time of day, let them send out their flatfeetsers and investigate."

"But what am I doing in this kennel?" Adzel protested.

"Sitting. Loafing. Drawing fat pay off me. Meanwhiles I run around sweating my tired old legs down to the knees. Do you know," van Rijn said pathetically, "for more than an hour I have had absolute no drink? And it looks like I might miss lunch, that today was going to be Limfjord oysters and stuffed Pacific crab a la —"

Adzel started. His scales crashed against unyielding walls. "But I don't belong here!" he cried. "My evidence—"

Van Rijn achieved the amazing feat for a human of outshouting him. *"Quiet!* I said upshut you! Silence!" He dropped his tone. "I know this is supposed to be a sealed circuit, but I do not put past that Garver he plugs one of his trained seals in the circuit. We keep what trumps we hold a while yet, play them last like Gabriel. Last trump —Gabriel—you understood me? Ha, ha!"

"Ha," said Adzel hollowly, "ha."

"You got privacy for meditating, plenty chances to practice asceticisms. I envy you. I wish I could find a chance for sainthood like you got there. You sit patient. I go talk with the people at Serendipity. Toodle oodle." Van Rijn's features vanished.

Adzel crouched motionless for a long while.

But I had the proof! he thought, stunned. *I took those photographs, those body-fluid samples, from David in the castle . . . exactly as I'd been told to . . . proof that he was, indeed, under brainscrub. I handed the material over to Old Nick when he asked for it, before we landed. I assumed he'd know*

best how to use it. For certainly that would justify my breaking in. This civilization has a horror of personality violations.

But he—the leader I trusted—he hasn't mentioned it!

When Chee Lan and a cured Falkayn returned they could testify, of course. Without the physical evidence Adzel had obtained, their testimony might be discounted, even if given torporifically. There were too many ways of lying under those drugs and electropulses that interrogators were permitted to use on volunteers: immunization or verbal conditioning, for instance.

At best, the situation would remain difficult. How could you blink the fact that intelligent beings had been killed by unauthorized raiders? (Though Adzel had more compunctions about fighting than the average roamer of today's turbulent frontiers, he regretted this particular incident only mildly in principle. A private war remained a war, a type of conflict that was occasionally justifiable. The rescue of a shipmate from an especially vile fate took priority over hardboiled professional weapon wielders who defended the captors of that shipmate. The trouble was, however, Commonwealth law did not recognize private wars.) But there was a fair chance the authorities would be sufficiently convinced that they would release, or convict and then pardon, the raiders.

If the proof of brainscrubbing was laid before them. And if Chee and Falkayn came back to tell their story. They might not. The unknowns for whom Serendipity had been an espionage front might find them and slay them before they could learn the truth. *Why did van Rijn not let me go, too?* Adzel chafed. *Why, why, why?*

Alone, the exhibits would at least get him out on bail. For they would show that his attack, however illegal, was no wanton banditry. It would also destroy Serendipity by destroying the trust on which that organization depended—overnight.

Instead, van Rijn was withholding the proof. He was actually off to dicker with Falkayn's kidnappers.

The walls seemed to close in. Adzel was born to a race of rangers. A spaecship might be cramped, but outside burned the stars. Here was nothing other than walls.

Oh, the wide prairies of Zatlakh, earthquake hoofbeats, wind whooping off mountains ghost-blue above the great horizon! After dark, fires beneath a shaken aurora; the old songs, the old dances, the old kinship that runs deeper than blood itself. Home is freedom. Ships, outfarings, planets and laughter. Freedom is home. Am I to be sold for a slave in his bargain?

Shall I let him sell me?

IX

Puffing like an ancient steam locomotive, Nicholas van Rijn entered

the central office. He had had previous dealings with Serendipity, in person as well as through subordinates. But he had never been in this particular room before, nor did he know anyone besides the owners who had.

Not that it differed much from the consultation cubicles, except for being larger. It was furnished with the same expensive materials in the same cheerlessly functional style, and the same strong white light spilled from its fluoropanels. Instead of a desk there was a large table around which several beings could sit; but this was equipped with a full battery of secretarial machines. Weight was set at Earth standard, atmosphere a little warmer.

Those partners who remained on Luna awaited him in a row behind the table. Kim Yoon-Kun was at the middle, slight, stiff, and impassive. The same wary expressionlessness marked Anastasia Herrera and Eve Latimer, who flanked him. Thea Beldaniel showed a human touch of weariness and shakenness—eyes dark-shadowed, the fine lines deepened in her face, hands not quite steady—but less than was normal for a woman who, a few hours ago, had seen her castle stormed by a dragon.

Van Rijn halted. His glance flickered to the pair of great gray-furred four-armed tailed bipeds, clad alike in traditional mail and armed alike with modern blasters, who stood against the rear wall. Their yellow eyes, set beneath bony prominences that looked like horns, glowered back out of the coarse faces. "You did not need to bring your Gorzuni goons," he said. His cloak swirled as he spread his hands wide, then slapped them along his tight plum-colored culottes. "I got no arsenal, me, and I come alone, sweet and innocent like a pigeon of peace. You know how pigeons behave."

"Colonel Melkarsh heads the patrol and outpost crews on our grounds," Kim stated. "Captain Urugu commands the interior guards and therefore the entire household servant corps. They have the right to represent their people, on whom your agents have worked grievous harm."

Van Rijn nodded. You can preserve secrets by hiring none except nonhumans from barbarian cultures. They can be trained in their jobs and in no other aspects of Technic civilization. Hence they will keep to themselves, not mix socially with outsiders, blab nothing, and at the end of their contracts go home and vanish into the anonymity of their seldom-visited planets. But if you do this, you must also accept their codes. The Siturushi of Gorzun make fine mercenaries—perhaps a little too fierce—and one reason is the bond of mutual loyalty between commanders and troops.

"Hokay," the merchant said.

"Maybe best. Now we make sure everybody gets included in the settlement we reach." He sat down, extracted a cigar, and bit off the end.

"We did not invite you to smoke," Anastasia Herrera said frigidly.

"Oh, that's all right, don't apologize, I know you got a lot on your minds." Van Rijn lit the cigar, leaned back, crossed his legs, and exhaled a blue cloud. "I am glad you agreed to meet private with me. I would have come out to your home if you wanted. But better here, *nie?* What with police swarming around grounds and trying to look efficient. Here is maybe the one place in Lunograd we can be sure nobody is dropping eaves."

Melkarsh growled, deep in his throat. He probably knew some Anglic. Kim said: "We are leaning backward to be accommodating, Freeman van Rijn, but do not overstrain our patience. Whatever settlement is reached must be on our terms and must have your full cooperation. And we cannot guarantee that your agents will go unpunished by the law."

The visitor's brows climbed, like black caterpillars, halfway up his slanted forehead. "Did I hear you right?" He cupped one ear. "Maybe, in spite of what extrarageous fees I pay for antisenescence treating, maybe at last in my old age I grow deaf? I hope you are not crazy. I hope you know this wowpow is for your sakes, not mine, because I don't want to squash you flat. Let us not beat around the barn." He pulled a stuffed envelope from his waistcoat pocket and threw it on the table. "Look at the pretty pictures. They are duplicates, natural. Originals I got someplace else, addressed to police and will be mailed if I don't come back in a couple hours. Also biological specimens—what can positive be identified for Falkayn's, because on Earth is medical records of him what include his chromosome patterns. Radioisotope tests will prove samples was taken not many hours ago."

The partners handed the photographs around in a silence that grew deeper and colder. Once Melkarsh snarled and took a step forward, but Urugu restrained him and both stood glaring.

"You had Falkayn under brainscrub," van Rijn said. He wagged a finger. "That was very naughty. No matter what we Solar Spicers may be guilty of, police going to investigate you from guzzle to zorch. And no matter what is then done with you, Serendipity is finished. Just the suspicion that you acted not so nice will take away your customers and their money."

They looked back at him. Their faces were metal-blank, aside from Thea Beldaniel's, on which there flickered something akin to anguish. "We *didn't*—" she half sobbed; and then, slumping back: "Yes. But I . . . we . . . meant him no real harm. We had no choice."

Kim waved her to silence. "You must have had some reason for not introducing this material officially at the outset," he said, syllable by syllable.

"Ja, ja," van Rijn answered. "Don't seem my boy was permanent hurt. And Serendipity does do a real service for the whole Polesotechnic League. I carry no big grudge. I try my best to spare you the worst. Of course, I can't let you go without some loss. Is not possible. But you was the ones brought in the policemen, not me."

"I admit no guilt," Kim said. His eyes kindled. "We serve another cause than your ignoble money-grubbing."

"I know. You got bosses somewhere out in space don't like us. So we can't so well let your outfit continue for a spy and maybe someday a saboteur. But in spirit of charity, I do want to help you escape terrible results from your own foolishness. We start by calling off the law dogs. Once they got their big sticky teeth out of our business—"

"Can they be called off . . . now?" Thea Beldaniel whispered.

"I think maybe so, if you cooperate good with me. After all, your servants inside the castle did not suffer more from Adzel than some bruises, maybe a bone or two broken, right? We settle damage claims out of court with them, a civil and not a criminal matter." Van Rijn blew a thoughtful smoke ring. "You do the paying. Now about those patrol boats got clobbered, who is left that saw any spaceship hit them? If we—"

Melkarsh shook off his companion's grasp, jumped forward, raised all four fists and shouted in the dog Latin that has developed from the League's common tongue: "By the most foul demon! Shall my folk's heads lie unavenged?"

"Oh, you get weregild you can take to their relatives," van Rijn said. "Maybe we add a nice sum for you personal, ha?"

"You believe everything is for sale," Melkarsh rasped. "But honor is not. Know that I myself saw the spaceship from afar. It struck and was gone before I could arrive. But I know the type for one that your companies use, and I will so declare to the Federation's lawmen."

"Now, now," van Rijn smiled. "Nobody is asking you should perjure. You keep your mouth shut, don't volunteer information you saw anything, and nobody will ask you. Especial since your employers is going to send you home soon—next available ship, or maybe I myself supply one—with pay for your entire contract and a fat bonus." He nodded graciously at Urugu. "Sure, my friend, you too. Don't you got generous employers?"

"If you expect I will take your filthy bribe," Melkarsh said, "when I could avenge my folk by speaking—"

"Could you?" van Rijn answered.

"Are you sure you pull me down? I don't pull down easy, with my big and heavy foundation. You will for certain destroy your employers here, what you gave your word to serve faithful. Also, you and yours will be held for accessories to kidnap and other bad behavings. How you help your folk, or your own honor, in a Lunar jail? Ha? Far better you bring back weregild to their families and story of how they fell nobly in battle like warriors should."

Melkarsh snatched for air but could speak no further. Thea Beldaniel rose, went to him, stroked his mane and murmured, "He's right, you know, my dear old friend. He's a devil, but he's right."

The Gorzuni gave a jerky nod and stepped backward.

"Good, good!" van Rijn beamed. He rubbed his hands. "How glad I am for common sense and friendliness. I tell you what plans we make together." He looked around. "Only I'm terrible thirsty. How about you send out for a few bottles beer?"

X

Reaching Lunograd, Edward Garver went directly to the police complex. "Bring that Wodenite prisoner to an interrogation room," he ordered. With a nod at the three hard-countenanced men who accompanied him: "My assistants and I want to grill him ourselves. Make his environment as uncomfortable as the law allows—and if the law should happen to get stretched a trifle, this case is too big for recording petty details."

Thus Adzel found himself in air strangely thin and wet, cold enough for his scales to frost over, and in twice the gravity of his home planet. He was almost blind beneath the stimulated light of a distant red dwarf sun, and could surely not look through the vitryl panel behind which Garver's team sat under Earth conditions. As time passed, no one offered food or drink. The incessant questions were projected shrill, on a frequency band painful to eardrums adapted for low notes.

He ignored them.

"Answer me!" Garver yelled after half an hour. "Do you want to be charged with obstructing justice, on top of everything else?"

"In point of fact, yes," Adzel astonished them by replying. "As I am merely standing upon my right to keep silent, such an accusation would cap the ridiculousness of these proceedings."

Garver jabbed a button. Adzel must needs wince. "Is something wrong?" asked the team member who had been assigned the kindliness role.

"I suffered quite a severe electric shock through the floor."

"Dear me. Perhaps a wiring defect. Unless it was your imagination. I realize you're tired. Why don't we finish this interview and all go get some rest?"

"You are making a dreadful mistake, you know," Adzel said mildly. "I admit I was somewhat irritated with my employer. Now I am far more irritated with you. Under no circumstances shall I cooperate. Fortunately, my spacefaring has accustomed me to exotic surroundings. And I regard this as an opportunity to gain merit by transcending physical discomfort." He assumed the quadrupedal equivalent of the lotus position, which is quite a sight. "Excuse me while I say my prayers."

"Where were you on the even-watch of—"

"Om mani padme hum."

An interrogator switched off the speaker system. "I don't know if this is worth our trouble, chief," he said.

"He's a live organism," Garver growled. "Tough, yeh, but he's got his limits. We'll keep on, in relays, till we grind him down."

Not long afterward, the phone buzzed in the chamber and Mendez's image said deferentially: "Sir, I regret the interruption, but we've received a call. From the Serendipity people." He gulped. "They . . . they're dropping their complaint."

"What?" Garver leaped from his chair. "No! They can't! I'll file the charges myself!" He stopped. The redness ebbed from his cheeks. "Put them on," he said coldly.

Kim Yoon-Kun looked out of the screen. Was he a shade less collected than before? At his back loomed van Rijn. Garver suppressed most of his automatic rage at glimpsing that man. "Well?" he said. "What is this nonsense?"

"My partners and I have conferred with the gentleman here." Kim said. Each word seemed to taste individually bad; he spat them out fast. "We find there has been a deplorable misunderstanding. It must be corrected at once."

"Including bringing the dead back to life?" Garver snorted. "Never mind what bribes you've been tempted by. I have proof that a federal crime was committed. And I warn you, sir, trying to conceal anything about it will make you an accessory after the fact."

"But it was no crime," Kim said. "It was an accident."

Garver stared past him, at van Rijn who smiled and puffed on a large cigar.

"Let me begin from the beginning," Kim said. "My partners and I would like to retire. Because Serendipity, Inc. does satisfy a genuine need, its sale will involve considerable sums and many different interests. Negotiations are accordingly delicate. This is especially true when you consider that the entire value of our company lies in the fact that its services are rendered without fear or favor. Let its name be tainted with the least suspicion of undue influence from outside, and it will be shunned. Now everyone knows that we are strang-

ers here, aloof from society. Thus we are unfamiliar with the emotional intricacies that may be involved. Freeman van Rijn generously"—Kim had a fight to get the adverb out— "offered us advice. But his counselling must be done with extreme discretion, lest his rivals assume that he will turn Serendipity into a creature of his own."

"You . . . you . . ." Garver heard himself squeak, as if still trying to grill Adzel, "you're selling out? To whom?"

"That is the problem, Director," Kim said. "It must be someone who is not merely able to pay, but is capable of handling the business and above suspicion. Perhaps a consortium of nonhumans? At any rate, Freeman van Rijn will, sub rosa, be our broker."

"At a fat commission," Garver groaned.

Kim could not refrain from groaning back: "Very fat." He gathered himself and plowed on:

"Captain Falkayn went as his representative to discuss matters with us. To preserve the essential secrecy, perforce he misled everyone, even his long-time shipmates. Hence that story about his betrothal to Freelady Beldaniel. I see now that this was a poor stratagem. It excited their suspicions to the point where they resorted to desperate measures. Adzel entered violently, as you know. But he did no real harm, and once Captain Falkayn had explained the situation to him, we were glad to accept his apologies. Damage claims will be settled privately. Since Captain Falkayn had completed his work at our home anyhow, he embarked with Chee Lan on a mission related to finding a buyer for us. There was nothing illegal about his departure, seeing that no laws had been broken. Meanwhile Freeman van Rijn was kind enough to fetch Adzel in his personal craft."

"No laws broken? What about the laws against murder?" Garver yelled. His fingers worked, as if closing on a throat. "I've got them . . . you . . . for that!"

"But no, Director," Kim said. "I agree the circumstances looked bad, for which reason we were much too prompt to prefer charges. By 'we' I mean those of us who were not present at the time. But now a discussion with Freelady Beldaniel, and a check of the original plans of the castle, have shown what actually happened.

"You know the place has automatic as well as manned defenses. Adzel's disruptive entry alerted the robots in one tower, which then overreacted by firing on our own patrol boats as these came back to help. Chee Lan, in her spaceship, demolished the tower in a valiant effort to save our people, but she was too late.

"A tragic accident. If anyone is to blame, it is the contractor who installed those machines with inadequate discriminator circuits. Unfortunately, the contractor is nonhu-

man, living far beyond the jurisdiction of the Commonwealth . . ."

Garver sat.

"You had better release Adzel immediately," Kim said. "Freeman van Rijn says he may perhaps be induced not to generate a great scandal about false arrest, provided that you apologize to him in person before a public newscaster."

"You have made your own settlement—with van Rijn?" Garver whispered.

"Yes," said Kim, like one who had been rammed with a bayonet.

Garver rallied the fragments of his manhood. "All right," he got out. "So be it."

Van Rijn looked over Kim's shoulder. "Gloat," he said and switched off.

The space yacht lifted and swung toward Earth. Stars glittered in every viewport. Van Rijn leaned back in his lounger, hoisted a foamful mug, and said, "By dam, we better celebrate fast. No sooner we make planetfall but we will be tongue-dragging busy, you and me."

Adzel drank from a similar mug which, however, was filled with prime whiskey. Being large has some advantages. His happiness was limited. "Will you let the Serendipity people go scot-free?" he asked. "They are evil."

"Maybe not evil. Maybe plain enemies, which is not necessarily same thing," van Rijn said. "We find out. For sure not scot-free, though, any more than what you glug down at my expense like it was beer is free Scotch. No, you see, they has lost their company, their spy center, which was their whole *raison d'etre*. Off that loss, I make a profit, since I handle the selling."

"But you must have some goal besides money!" Adzel exclaimed.

"Oh, *ja, ja,* sure. Look, I did not know what would happen after you rescued Davy boy. I had to play on my ear. What happened was, Serendipity tried striking back at us through the law. This made special dangers, also special opportunities. I found four things in my mind."

Van Rijn ticked the points off on his fingers. "One," he said, "I had to get you and my other loyal friends off the hook. That was more important by itself than revenge. But so was some other considerates.

"Like two, I had to get the government out of this business—for a while at least. Maybe later we must call it back. But for now, these reasons to keep it out. Alpha, governments is too big and cumbersome for handling a problem with so many unknowns as we got. Beta, if the public in the Commonwealth learned they have a powerful enemy some place we don't know, they could get hysterical and this could be bad for developing a reasonable type policy, besides bad for business. Gamma, the longer we can work private, the better chance for cutting ourselves a share of whatever pies may be floating around in

space, in exchange for our trouble."

He paused to breathe and gulp. Adzel looked from this comfortable saloon, out the viewport to the stars that were splendid but gave no more comfort than life could seize for itself; and no life was long, compared to the smallest time that any of those suns endured. "What other purposes have you?" he asked mutedly.

"Number three," van Rijn said, "did I not make clear Serendipity is in and for itself a good idea, useful to everybody? It should not be destroyed, only passed on into honest hands. Or tentacles or paws or flippers or whatever. Ergo, we do not want any big hurrah about it. For that reason too, I must bargain with the partners. I did not want them to feel like Samson, no motive not to pull down the whole barbershop.

"And four." His tone turned unwontedly grave. "Who are these X beings? What do they want? Why are they secret? Can we maybe fix a deal with them? No sane man is after a war. We got to learn more so we can know what is best to do. And Serendipity is our one lonesome lead to its masters."

Adzel nodded. "I see. Did you get any information?"

"No. Not really. That I could not push them off of. They would die first. I said to them, they must go home and report to their bosses. If nothings else, they got to make sure their partners who has already left is not seized on returning to Luna and maybe put in the question. So hokay, they start, I have a ship that trails theirs, staying in detection range the whole way. Maybe they can lure her into a trap, maybe not. Don't seem worth the trouble, I said, when neither side is sure it can outfox the other. The most thickly sworn enemies always got *some* mutual interests. And supposing you intend to kill somebody, why not talk at him first? For worst, you have wasted a little time; for best, you learn you got no cause to kill him."

Van Rijn drained his mug. "Ahhhh! Well," he said, "we made a compromise. They go away, except one of them, in a ship that is not followed. Their own detectors can tell them this is so. The one stays behind and settles legal details of transferring ownership. That is Thea Beldaniel. She was not too unwilling, and I figure she is maybe more halfway human than her friends. Later on, she guides one ship of ours to a rendezvous agreed on, some neutral spot, I suppose, where maybe we can meet her bosses. They should be worth meeting, what made so brilliant a scheme like Serendipity for learning all about us. *Nie?*"

Adzel lifed his head with a jerk. "I beg your pardon?" he exclaimed. "Do you mean that you personally and . . . and I—"

"Who else?" van Rijn said. "One reason I kept you back. I need to

be sure some fellow besides me will be around I can trust. It is going to be a cold journey, that one. Like they used to say in Old Norse and such places, 'Bare is brotherless back.' " He pounded the table. "Cabin boy!" he thundered. "Where in hell's name is more beer?"

XI

In the decade or so that had passed since the Lemminkainenites found it, the rogue had fallen a long way. Watching Beta Crucis in the bow viewscreen, Falkayn whistled, low and awed. "Can we even get near?" he asked.

Seated amidst the control boards, flickering and blinking and clicking instruments, soft power-throb and quiver, of *Muddlin' Through*'s bridge, he did not look directly at the star, nor at a true simulacrum. Many astronomical units removed, it would still have burned out his eyes. The screen reduced brightness and magnified size for him. He saw an azure circle, spotted like a leopard, wreathed in an exquisite filigree of ruby, gold, and opal, a lacework that stretched outward for several times its diameter. And space behind was not dark, but shimmered with pearliness through a quarter of the sky before fading into night.

Falkayn's grip tautened on the arms of his chair. The heart thuttered in him. Seeking comfort for a rising, primitive dread, he pulled his gaze from the screen, from all screens, to the homely traces of themselves that his team had put on unused patches of bulkhead. Here Chee Lan had hung one of those intricate reticulations that her folk prized as art; there he himself had pasted up a girlie picture; yonder Adzel kept a bonsai tree on a shelf —*Adzel, friend, now when we need your strength, the strength in your very voice, you are two light-centuries behind us.*

Stop that, you nit! Falkayn told himself. *You're getting spooked. Understandable, when Chee had to spend most of our voyage time nursing me out of half-life. The horror hasn't quite left me. But damnation, there's work to do. And I've seen bigger, brighter stars than this one.*

Only a few, of course. The blue giants are also monsters in their rarity. And the least of them is terrifying to contemplate. Those flecks on the photosphere were vortices that could each have swallowed a planet like Jupiter. That arabesque of filaments comprised the prominences—the mass equivalents of whole earths, vaporized, ionized, turned to incandescent plasma, spewed millions of kilometers into space, some forever lost and some raining back—yet given its faerie patterns by magnetic fields great enough to wrestle with it. The corona fluoresced across orbital distances because its gas was sleeted through and through by the particles, stripped atoms, hard and soft quanta of a star whose radiance

was an ongoing storm, eight hundred and fifty times the measure of Sol's, a storm so vast that it could endure no longer than a hundred megayears before ending in the thunderclap of a supernova. Falkayn looked upon its violence and shivered.

He grew aware that the ship's computer had spoken. "I beg your pardon?" he said automatically.

"I am not programmed to take offense; therefore apologies to me are superfluous," said the flat artificial voice. "However, I have been instructed to deal as circumspectly with you as my data banks and ideational circuits allow, until you have fully recovered your nervous equilibrium. Accordingly, it is suggested that you consider indulgence as having been granted you as requested."

Falkayn relaxed. His chuckle grew into a guffaw. "Thanks, Muddlehead," he said. "I needed that." Hastily: "Don't spoil it by telling me you deduced the need and calculated your response. Just start over."

"In reply to your question as to whether we can come near, the answer depends upon what is meant by 'near.' Context makes it obvious that you wish to know whether we can reach the planet of destination with an acceptable probability of safety. Affirmative."

Falkayn turned to Chee Lan, who hunkered in her own chair—it looked more like a spiderweb—on his right. "I distinctly remember telling Muddlehead to lay off that stupid 'affirmative, negative' business, when a plain 'yes' or 'no' was good enough for Churchill," he sighed. "Why did you countermand?'

"I didn't," the Cynthian answered. "I don't care either way. What are the nuances of the Anglic language to me? If it has any," she sneered. "No, blame Adzel."

"Why him?"

"The ship came new to us from the yard, you recall, so the computer's vocabulary was engineerese. It's gotten modified in the course of work with us. But you may recall, too, that while we were on Luna, we ordered a complete inspection. You were hot on the tail of your Veronica creature, which left Adzel and me to make arrangements. Old butterheart was afraid the feelings of the engineers would be hurt, if they noticed how little use we have for their dialect. He instructed Muddlehead—"

"Never mind," Falkayn said. To the ship: "Revert to prior linguistic pattern and give us some details about our next move."

"Instrumental observation appears to confirm what you were told of the planet itself," said the machine. Falkayn nodded. Though he had only recovered the full use of his free will in the past several days, Chee had been able to get total-recollection answers from him quite early in the trip. "However, the noise level is too high for exactitude

at our present distance. On the other hand, I have determined the orbit with sufficient precision. It is, indeed, a hyperbola of small eccentricity. At present, the rogue is near periastron, the radius vector having a length of approximately one-point-seven-five astronomical units. It will make the closest approach, approximately zero-point-nine-three astronomical units, in approximately twenty-seven-point-three-seven days, after which it will naturally return to outer space along the other arm of the hyperbola. There is no evidence of any companion body of comparable size. Thus the dynamics of the situation are simple and the orbit almost perfectly symmetrical."

Chee put a cigarette in an interminable ivory holder and puffed it alight. Her ears twitched, her whiskers bristled. "What a time to arrive!" she snarled. "It couldn't be when the planet's decently far off from that bloated fire balloon. Oh, no! That'd be too easy. It'd put the gods to the trouble of finding somebody else to dump their garbage on. We get to go in while the radiation peaks."

"Well," Falkayn said, "I don't see how the object could've been found at all, if it hadn't happened to be coming in, close enough to reflect a detectable amount of light off its cryosphere. And then there was the galactic communications lag. Sheer luck that I ever heard about the discovery."

"You could have heard a few years earlier, couldn't you?"

"In that event," Muddlehead said, "the necessity would have remained of making later, short-range observations, in order to ascertain whether surface conditions are indeed going to become suitable for an industrial base. The amount and the composition of frozen material could not have been measured accurately. Nor could its behavior have been computed beforehand in sufficient detail. The problem is too complex, with too many unknowns. For example, once a gaseous atmosphere has begun to form, other volatile substances will tend to recondense at high altitudes, forming clouds which will in time disappear but which, during their existence, may reflect so much input radiation that most of the surface remains comparatively cold."

"Oh, dry up," Chee said.

"I am not programmed or equipped to—"

"And blow away." Chee faced the human. "I see your point, Dave, as well as Muddlehead's. And of course the planet's accelerating as it moves inward. I got a preliminary orbital estimate a few watches back, while you were asleep, that says the radius vector changes from three to one a.u. in about ten standard weeks. So little time, for the irradiation to grow ninefold! But I do wish we could've arrived later, anyhow, when the thing's outward bound and cooling off."

"Although not prepared for detailed meteorological calculations," Muddlehead said, "I can predict that the maximum atmospheric instability will occur after periastron passage. At present, most of the incident stellar energy is being absorbed by heats of fusion, vaporization, et cetera. Once this process has been completed, energy input will continue large. For example, at thirty astronomical units the planet will still be receiving approximately as much irradiation as Earth; and it will not get that far out for a number of years. Thus temperatures can be expected to soar, and storms of such magnitude will be generated that no vessel dares land. Ground observation may as yet be feasible for us, given due precautions.

Falkayn grinned. He felt better by the minute: if not able to whip the cosmos, at least to let it know it had been in a fight. "Maybe our luck is the best possible," he said.

"I wouldn't be the least bit surprised," Chee replied sourly. "Well, Muddlehead, how do we make rendezvous?"

"The force screens can, of course, ward off more particle radiation than we will receive, even if a stellar storm occurs," said the computer. "Electromagnetic input is the real problem. Our material shielding is insufficient to prevent an undesirable cumulative X-ray dosage in the period required for adequate study. The longer wavelengths could similarly overload our thermostatting capabilities. Accordingly, I propose to continue under hyperdrive."

Falkayn drew his pipe from a pocket of his gray coveralls. "That's a pretty close shave, so few a.u. at faster-than-light," he warned. He left unspoken the possibilities: imperfect intermesh with the star's gravitational field tearing the ship asunder; a brush with a solid body, or a moderately dense gas, producing a nuclear explosion as atoms tried to occupy the same volume.

"It is within the one percent safety margin of this vessel and myself," Muddlehead declared. "Besides spending less time in transit, during that transit we will not interact significantly with ambient photons or material particles."

"Good enough," Chee said. "I don't fancy the nasty little things buzzing through my personal cells. But what about when we reach the planet? We can take station in its shadow cone and let its bulk protect us—obviously—but what can we then observe of the surface?"

"Adequate instruments are available. As a trained planetologist, Adzel could make the most effective use of them. But no doubt you two with my assistance can manage. Furthermore, it should be possible to pay brief visits to the daylight side."

"Bully-o," Falkayn said. "We'll grab some lunch and a nap and be on our way."

"You can stuff your gut and wig-

gle your epiglottis later," Chee said. "We proceed *now*."

"Huh? Why?"

"Have you forgotten that we have rivals? That messengers departed weeks ago to inform them? I don't know how long the word took to get back there, or how fast they can send an expedition here, but I don't expect them to dawdle very much or be overly polite if they find us." Chee jerked her tailtip and spread her hands, a shrugging gesture. "We might or might not be able to take them in a fight, but I'd really rather delegate the job to a League battle fleet. Let's get our data and out."

"Hm-m-m . . . yes. I read. Carry on, Muddlehead. Keep every sensor alert for local dangers, though. There're bound to be some unpredictable ones." Falkayn loaded his pipe. "I'm not sure van Rijn would call for a fleet action at that," he murmured to the Cynthian. "It might impair his claim to the planet. He might have to share some of the profit."

"He'll squeeze every millo he can out of this," she said. "Of course. But for once, he's seen something bigger than money. And it scares him. He thinks the Commonwealth —maybe the whole of Technic civilization—is at war and doesn't realize the fact. And if this rogue is important enough to the enemy that they risked, and lost, a spy organization they'd spent fifteen years developing, it's equally important to us. He'll call in the League; even the different governments and navies, if he must. I talked to him, after we'd hooked you from the castle."

The humor dropped out of Falkayn. His mouth drew into harsh lines. *I should know what kind of conflict this is,* he thought, *considering what was done to me.*

He couldn't remember clearly. It was as if he tried to reconstruct a fever dream. Everything was vague and grotesque; time twisted about, dissolved and took new evanescent shapes, like smoke; he had been trapped in another universe and another self, and they were not his own, and he could not bring himself to confront them again in memory, even were he able. He had desired Thea Beldaniel as he had desired no other woman since his first youth; he had adored the undefined Elder Race as he had adored no gods in his life; he had donned a cool surface and a clear logical mind at need, and afterward returned to his dim warm abyss. Yet somehow it was not he who did these things, but others. They used him, entered and wore him . . . How could he find revenge for so inward a rape?

He forced lightness back into voice and brain. "If Old Nick really does end up having to settle for a fraction of the wealth, hoo-hah! They'll hear his screams in the Magellanic Clouds. But maybe we can save his bacon—and French toast and scrambled eggs and coffee royal and, uh, yes, it was coconut cake,

last time I had breakfast with him. Ready, Muddlehead?"

"Stand by for hyperdrive," said the computer.

The power-hum deepened. Briefly, the screened sky became a blur. Then the system adjusted, to compensate for billions of quantum microjumps per second. Stars aft assumed their proper colors and configurations. Forward, where Beta Crucis drowned them out, its disk swelled, until it seemed to leap with its flames into the ship. Falkayn crouched back in his seat and Chee Lan bared her fangs.

The moment passed. The vessel resumed normal state. She must swiftly attain the proper position and kinetic velocity, before the heightened power of the sun blasted through her defenses. But her internal G-fields were manipulated with such suppleness by the computer that the two beings aboard felt no change of weight. In minutes, a stable condition was established. The ship lay two radii from the rogue's ground level, balancing gravitational and centrifugal forces with her own thrust. Her riders peered forth.

The wide-angle screen showed an immense black circle, rimmed with lurid white where the star's rays were refracted through the atmosphere. Behind this, in turn, glowed corona, and wings of zodiacal light. The planetary midnight was not totally unrelieved. Auroras flung multi-colored banners from the poles; a wan bluishness flickered elsewhere, as the atoms and ions of sun-split molecules recombined in strange ways; lightning, reflected by immense cloud banks further down, created the appearance of running will-o'-the-wisps; here and there glowered a red spark, the throat of a spouting volcano.

In the near-view screens, mere fractions of the globe appeared, shouldering into heaven. But there you saw, close and clear, the pattern of weather, the range of rising mountains and new-born oceans. Almost, Falkayn imagined he could hear the wind-shriek, rain-roar, thunder-cannonade, that he could feel the land shake and split beneath him, the gales whirl boulders through a blazing sky. It was long before he could draw his gaze free of that scene.

But work was on hand, and in the watches that followed, he inevitably lost some of his awe amidst the instruments. With it vanished the weakness that his imprisonment had left in him. The basic anger, the drive to scrub out his humiliation in blood, did not go; but he buried it deep while he studied and calculated. What he was witnessing must be unique in the galaxy—perhaps in the cosmos—and fascinated him utterly.

As the Lemminkainenites had concluded, this was an ancient world. Most of its natural radioactivity was long spent, and the chill

had crept near its heart. But part of the core must remain molten, to judge from the magnetism. So stupendous an amount of heat, insulated by mantle and crust and frozen oceans and a blanket of frozen atmosphere averaging ten or twenty meters thick, was slow to dissipate. Nevertheless, for ages the surface had lain at a temperature not far above absolute zero.

Now the cryosphere was dissolving. Glaciers became torrents, which presently boiled away and became stormwinds. Lakes and seas, melting, redistributed incredible masses. Pressures within the globe were shifted; isostatic balance was upset; the readjustments of strata, the changes of allotropic structure, released catastrophic, rock-melting energy. Quakes rent the land and shocked the waters. Volcanoes awoke by the thousands. Geysers spouted above the ice sheath that remained. Blizzard, hail, and rain scourged the world, driven by tempests whose fury mounted daily until words like "hurricane" could no more name them. Hanging in space, Falkayn and Chee Lan took measurements of Ragnarok.

And yet—and yet—what a prize this was! What an incredible all-time treasure house!

XII

"Frankly," Chee Lan said, "speaking between friends and meaning no offense, you're full of fewmets. How can one uninhabitable piece of thawed hell matter that much to anybody?"

"Surely I explained, even in my wooze," Falkayn replied. "An industrial base, for the transmutation of elements."

"But they do that at home."

"On a frustratingly small scale, compared to the potential market." Falkayn poured himself a stiff whiskey and leaned back to enjoy digesting his dinner. He felt he had earned a few hours' ease in the saloon. Tomorrow they were to land, having completed their investigations from orbit, and things could get shaggy. "How about a poker game?"

The Cynthian, perched on the table, shook her head. "No, thanks! I've barely regained my feeling for four-handed play, after Muddlehead got rich enough in its own right to bluff big. Without Adzel, the development's apt to be too unfamiliar. The damned machine'll have our hides." She began grooming her silken fur. "Stick to business, you. I'm a xenologist. I never paid more attention than I could help to your ugly factories. I'd like a proper explanation of why I'm supposed to risk my tailbone down there."

Falkayn sighed and sipped. He would have taken for granted that she could see the obvious as readily as he. But to her, with her biological heritage, cultural background, and special interests, it was not obvious. *I wonder what she sees that I miss?*

How could I even find out? "I don't have the statistics in my head," he admitted. "But you don't need anything except a general knowledge of the situation. Look, there isn't an element in the periodic table, nor hardly a single isotope, that doesn't have some use in modern technology. And when that technology operates on hundreds of planets, well, I don't care how minor a percentage of the consumption is Material Q. The total amount of Q needed annually is going to run into tons at a minimum—likelier into megatons.

"Now nature doesn't produce much of some elements. Even in the peculiar stars, transmutation processes have a low yield of nuclei like rhenium and scandium—two metals I happen to know are in heavy demand for certain alloys and semiconductors. Didn't you hear about the rhenium strike on Maui, about twenty years ago? Most fabulous find in history, tremendous boom; and in three years the lodes were exhausted, the towns deserted, the price headed back toward intergalactic space. Then there are the unstable heavy elements, or the shorter-lived isotopes of the lighter ones. Again, they're rare, no matter how you scour the galaxy. When you do find some, you have to mine the stuff under difficult conditions, haul it a long way home . . . and that also drives up the cost."

Falkayn took another swallow. He had been very sober of late, so this whiskey, on top of cocktails before dinner and wine with, turned him loquacious. "It isn't simply a question of scarcity making certain things expensive," he added. "Various projects are *impossible* for us, because we're bottlenecked on materials. We could progress a lot faster in interstellar exploration, for instance—with everything that that implies—if we had sufficient hafnium to make sufficient polyergic units to make sufficient computers to pilot a great many more spaceships than we can build at present. Care for some other examples?"

"N-no. I can think of several for myself," Chee said. "But any kind of nucleus can be made to order these days. And is. I've seen the bloody transmutation plants with my own bloody eyes."

"What had you been doing the night before to make your eyes bloody?" Falkayn retorted. "Sure, you're right as far as you go. But those were pygmy outfits you saw. They can't ever keep up with the demand. Build them big enough, and their radioactive waste alone would sterilize whatever planets they're on. Not to mention the waste heat. An exothermic reaction gives it off directly. But so does an endothermic one . . . indirectly, via the powersource that furnishes the energy to make the reaction go. These are nuclear processes, remember. E equals m c squared. One gram of difference, between raw material and final product, means nine times ten to the thirteenth joules. A plant

turning out a few tons of element per day would probably take the Amazon River in at one end of its cooling system and blow out a steam jet at the other end. How long before Earth became too hot for life? Ten years, maybe? Or any life-bearing world? Therefore we can't use one, whether or not it's got sophont natives. It's too valuable in other ways—quite apart from interplanetary law, public opinion, and common decency."

"I realize that much," Chee said. "This is why most existing transmuters are on minor, essentially airless bodies. Of course."

"Which means they have to install heat exchangers, feeding into the cold mass of the planetoid," Falkayn nodded. "Which is expensive. Worse, it puts engineering limitations on the size of a plant, and prohibits some operations that the managers would dearly love to carry out."

"I hadn't thought about the subject before," Chee said. "But why not use sterile worlds—new ones, for instance, where life has not begun to evolve—that have reasonable atmospheres and hydrospheres to carry off the heat for you?"

"Because planets like that belong to suns, and circle 'em fairly close," Falkayn answered. "Otherwise their air would be frozen, wouldn't it? If they have big orbits, they might retain hydrogen and helium in a gaseous state. But hydrogen's nasty. It leaks right in between the molecules of any material shielding you set up, and bollixes your nuclear reactions good. Therefore you need a world about like Earth or Cynthia, with reasonably dense air that does not include free hydrogen, and with plenty of liquid water. Well, as I said, when you have a nearby sun pouring its own energy into the atmosphere, a transmutation industry of any size will cook the planet. How can you use a river if the river's turned to vapor? Oh, there have been proposals to orbit a dust cloud around such a world, raising the albedo to near 100. But that'd tend to trap home-grown heat. Cost-effectiveness studies showed it would never pay. And furthermore, new-formed systems have a lot of junk floating around. One large asteroid, plowing into your planet, stands a good chance of wrecking every operation on it."

Falkayn refreshed his throat. "Naturally," he continued, "once a few rogues had been discovered, people thought about using them. But they were *too* cold! Temperatures near absolute zero do odd things to the properties of matter. It'd be necessary to develop an entire new technology before a factory could be erected on the typical rogue. And then it wouldn't accomplish anything. Remember, you need liquid water and gaseous atmosphere —a planet's worth of both—for your coolants. And you can't fluidify an entire cryosphere. Not within his-

torical time. No matter how huge an operation you mount. The energy required is just plain too great. Figure it out for yourself sometime. It turns out to be as much as all Earth gets from Sol in quite a few centuries."

Falkayn cocked his feet on the table and elevated his glass. "Which happens to be approximately what our planet here will have received, in going from deep space to Beta C. and back again," he finished. He tossed off his drink and poured another.

"Don't sound that smug," Chee grumbled. "You didn't cause the event. You are not the Omnipotent: a fact which often reconciles me to the universe."

Falkayn smiled. "You'd prefer Adzel, maybe? Or Muddlehead? Or Old Nick? Hey, what a thought, creation operated for profit! But at any rate, you can see the opportunity we've got now, if the different factors do turn out the way we hope; and it looks more and more like they will. In another ten years or so, this planet ought to have calmed down. It won't be getting more illumination than your home world or mine; the cold, exposed rocks will have blotted up what excess heat didn't get re-radiated; temperature will be reasonable, dropping steadily but not too fast. The transmutation industry can begin building, according to surveys and plans already made. Heat output can be kept in balance with heat loss: the deeper into space the planet moves, the more facilities go to work on it. Since the air will be poisonous anyway, and nearly every job will be automated, radioactive trash won't pose difficulties either.

"Eventually, some kind of equilibrium will be reached. You'll have a warm surface, lit by stars, lamps here and there, radio beacons guiding down the cargo shuttles; nuclear conversion units on every suitable spot; tons of formerly rare materials moving out each day, to put some real muscle in our industry—" The excitement caught him. He was still a young man. His fist smacked into his other palm. "And *we* brought it about!"

"For a goodly reward," Chee said. "It had better be goodly."

"Oh, it will be, it will be," Falkayn burbled. "Money in great, dripping, beautiful gobs. Only think what a franchise to build here will be worth. Especially if Solar S & L can maintain rights of first reconnaissance and effective occupation."

"As against commercial competitors?" Chee asked. "Or against the unknown rivals of our whole civilization? I think they'll make rather more trouble. The kind of industry you speak of has war potentials, you know."

The planet rotated in a little over thirteen hours. Its axis was tilted about eleven degrees from the normal to the plane of its hyperbolic orbit. *Muddlin' Through* aimed for

the general area of the arctic circle, where the deadly day would be short, though furnishing periodic illumination, and conditions were apparently less extreme than elsewhere.

When the ship spiraled the globe at satellite altitude and slanted downward, Falkayn drew a sharp breath. He had glimpsed the sun side before, but in brief forays when he was preoccupied with taking accurate measurements. And Beta Crucis had not been this near. At wild and ever-mounting velocity, the rogue would soon round the blue giant. They were not much farther apart now than are Earth and Sol.

With four times the angular diameter, this sun raged on the horizon, in a sky turned incandescent. Clouds roiled beneath, now steaming white, now gray and lightning-riven, now black with the smoke of volcanoes seen through rents in their reaches. Elsewhere could be glimpsed stony plains, lashed by terrible winds, rain, earthquake, flood, under mountain ranges off whose flanks cascaded the glacial melt. Vapors decked half a continent, formed into mist by the chill air, until a tornado cut them in half and a pack of gales harried the fragments away. On a gunmetal ocean, icebergs the size of islands crashed into each other; but spume and spindrift off monstrous waves hid most of their destruction. As the spaceship pierced the upper atmosphere, thin though it was, she rocked with its turbulence, and the first clamor keened through her hull plates. Ahead were stacked thunderstorms.

Falkayn said between his teeth: "I've been wondering what we should name this place. Now I know." But then they were in blindness and racket. He lacked any chance to speak further.

The internal fields held weight steady, but did not keep out repeated shocks nor the rising, raving noise. Muddlehead did the essential piloting—the integration of the whole intricate system which was the ship—while the team waited to make any crucial decisions. Straining into screens and meters, striving to make sense of the chaos that ramped across them, Falkayn heard the computer speak through yells, roars, whistles, and bangs:

"The condition of clear skies over the substellar point and in early tropical afternoons prevails as usual. But this continues to be followed by violent weather, with wind velocities in excess of five hundred kilometers per hour and rising daily. I note in parentheses that it would already be dangerous to enter such a meteorological territory, and that at any moment it could become impossible even for the most well-equipped vessel. Conditions in the polar regions are much as previously observed. The antarctic is undergoing heavy rainfall with frequent super-squalls. The north polar country remains comparatively

cold; thus a strong front, moving southward, preserves a degree of atmospheric tranquillity at its back. I suggest that planetfall be made slightly below the arctic circle, a few minutes in advance of the dawn line, on a section of the larger northern continent which appears to be free of inundation and, judging from tectonic data, is likely to remain stable."

"All right," Chee Lan said. "You pick it. Only don't let the instruments overload your logic circuits. I guess they're feeding you information at a fantastic rate. Well, don't bother processing and evaluating it for now. Just stash it in your memory and concentrate on getting us down safe!"

"Continuous interpretation is necessary, if I am to understand an unprecedented environment like this and conduct us through it," Muddlehead answered. "However, I am already deferring consideration of facts that do not seem to have immediate significance, such as the precise reflection spectra off various types of ice fields. It is noteworthy that—" Falkayn didn't hear the rest. A bombardment of thunder half deafened him for minutes.

And they passed through a wild whiteness, snow of some kind driven by a wind that made the ship reel. And they were in what felt, by contrast, like utter peace. It was night, very dark. Scanner beams built up the picture of a jagged highland, while the ship flew on her own inorganic senses.

And landed.

Falkayn sagged a moment in his chair, simply breathing. "Cut fields," he said, and unharnessed himself. The change to planetary weight wasn't abrupt; it came within five percent of Earth pull, and he was used to bigger differences. But the silence rang in his ears. He stood, working the tension out of his muscles, before he considered the viewscreens again.

Around the ship lay a rough, cratered floor of dark rock. Mountains rose sheer in the north and east. The former began no more than four kilometers away, as an escarpment roofed with crags and streaked with the white of glaciers. Stars lit the scene, for the travelers had passed beneath the clouds, which bulked swart in the south. Alien constellations shone clear, unwavering, through wintry air. Often across them streaked meteors; like other big, childless suns, Beta Crucis was surrounded by cosmic debris. Aurora danced glorious over the cliffs, and southeastward the first luster of morning climbed into heaven.

Falkayn examined the outside meters. The atmosphere was not breathable—CO, CO_2, CH_4, NH_4, H_2S, and such. There was some oxygen, broken loose from water molecules by solar irradiation, retained when the lighter hydrogen

escaped into space, not yet recombined with other elements. But it was too little for him, and vilely cold to boot, not quite at minus 75 degrees Celsius. The ground was worse than that, below minus 200. The tropics had warmed somewhat more. But an entire world could not be brought from death temperature to room temperature in less than years—not even by a blue giant—and conditions upon it would always vary from place to place. No wonder its weather ran amok.

"I'd better go out," he said. His voice dropped near a whisper in the frozen quietness.

"Or I." Chee Lan seemed equally subdued.

Falkayn shook his head. "I thought we'd settled that. I can carry more gear, accomplish more in the available time. And somebody's got to stand by in case of trouble. You take the next outing, when we use a gravsled for a wider look around."

"I merely wanted to establish my claim to an exterior mission before I go cage-crazy," she snapped.

That's more like the way we ought to be talking. Heartened, Falkayn proceeded to the air lock. His suit and his equipment were ready for him. Chee helped him into the armor. He cycled through and stood upon a new world.

An old one, rather: but one that was undergoing a rebirth such as yonder stars had never seen before.

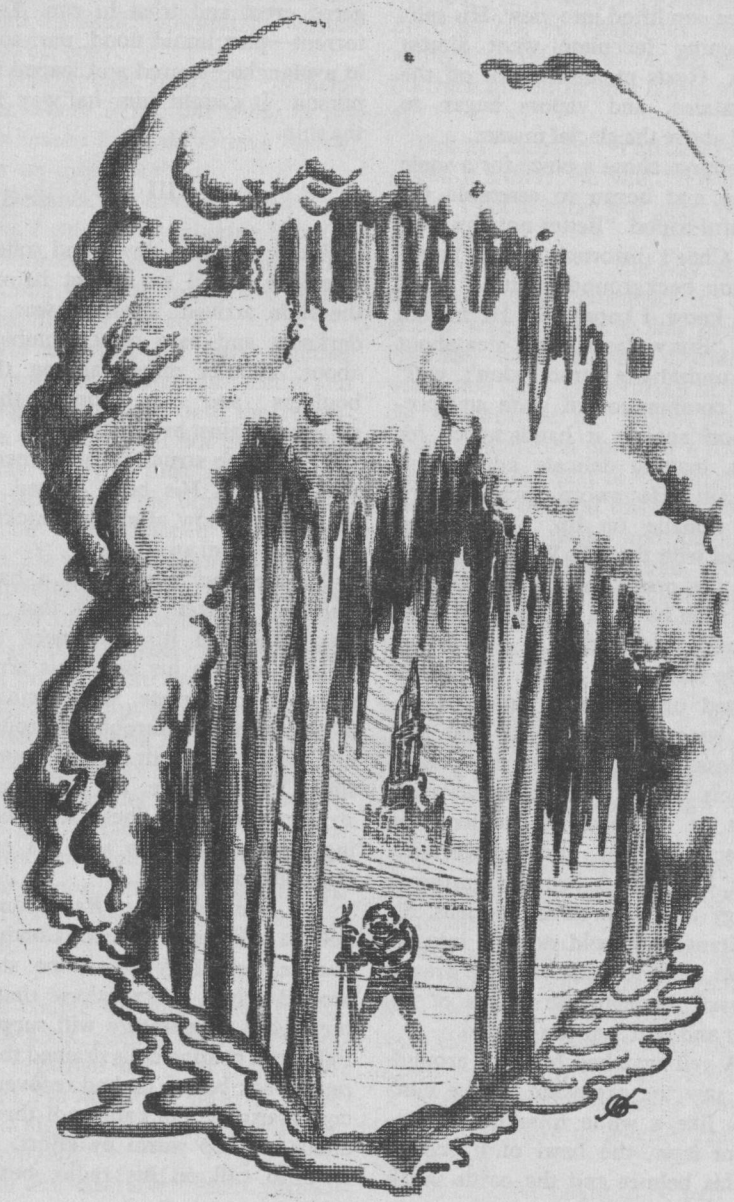
He breathed deeply of chemical-tainted recycled air and strode off. His movements were a trifle clumsy, he stumbled now and then, on the thick soles attached to his boots. But without them, he would probably have been helpless. *Muddlin' Through* could pump heat from her nuclear power plant into her landing jacks, to keep them at a temperature their metal could stand. But the chill in these rocks would suck warmth straight through any ordinary space brogan. His feet could freeze before he knew it. Even with extra insulation, his stay outdoors was sharply limited.

The sun bounded him more narrowly, though. Day was strengthening visibly, fire and long shadows across desolation. The shielding in his armor allowed him about half an hour in the full radiance of Beta Crucis.

"How are things?" Chee's voice sounded faint in his earplugs, through a rising buzz of static.

"Thing-like." Falkayn unlimbered a counter from his backpack and passed it above the ground. The readoff showed scant radioactivity. Much of what there was, was probably induced by solar wind in the past decade, before the atmosphere thickened. (Not that its insignificant ozone layer was a lot of protection at present.) No matter, men and the friends of men would make their own atoms here. Falkayn hammered in a neutron-analysis spike and continued on his way.

That looked like an interesting



outcrop. He struck loose a sample.

The sun lifted into view. His self-darkening faceplate went almost black. Gusts moaned down off the mountains, and vapors began to swirl above the glacial masses.

Falkayn chose a place for a sonic probe and began to assemble the needful tripod. "Better not dawdle," said Chee's distorted tone. "The radiation background's getting foul."

"I know, I know," the Hermetian said. "But we want some idea about the underlying strata, don't we?" The combination of glare and protection against it handicapped his eyes, making delicate adjustments difficult. He swore picturesquely, laid tongue on lip, and slogged ahead with the job. When at last he had the probe in action, transmitting data back to the ship, his safety margin was ragged.

He started his return. The vessel looked unexpectedly small, standing beneath those peaks that also enclosed him on the right. Beta Crucis hurled wave upon wave of heat at his back, to batter past reflecting paint and refrigerating unit. Sweat made his undergarments soggy and stank in his nostrils. Simultaneously, cold stole up into his boots, until toenails hurt. He braced himself, beneath the weight of armor and gear, and jog-trotted.

A yell snatched his gaze around. He saw the explosion on the cliff-top, like a white fountain. A moment later, the bawl of it echoed in his helmet and the earth shock threw him to his knees. He staggered erect and tried to run. The torrent—part liquid flood, part solid avalanche—roared and leaped in pursuit. It caught him halfway to the ship.

XIII

Reflex cast him down and rolled him into a ball an instant before the slide arrived. Then he was in darkness and bass noise, tumbled about, another object among the boulders and ice chunks that smashed against his armor.

Concussion struck through metal and padding. His head rocked in the helmet. Blow after blow kicked him loose from awareness.

The cataract ground to a halt. Falkayn realized dazedly that he was buried in it. His knees remained next to his belly, his arms across the faceplate. He mumbled at the pain that throbbed through him, and tried to stir. It was impossible. Terror smote. He yelled and strained. No use. Sheer surrounding bulk locked him into his embryonic crouch.

The freezing began. Radiation is not an efficient process. Conduction is, especially when the stuff around drinks every calorie that a far higher temperature will supply. Falkayn's heating coils drained their powerpack before he had recovered consciousness. He could not thresh about to keep warm by effort. He tried to call on his radio, but it

seemed to be knocked out; silence filled his skull, darkness his vision, cold his body.

The thought trickled: *I'm helpless. There is not one thing in the continuum I can do to save myself. It's an awful feeling.*

Defiance: *At least my mind is my own. I can go out thinking, reliving memories, like a free man.* But nothing came to mind save blackness, stillness, and cold.

He clamped his jaws together against the clatter of teeth and hung bulldog-wise onto the resolution that he would not panic again.

He was lying thus, no more than a spark left in his brain, when the glacial mass steamed away from him. He sprawled stupid in fog and evaporating liquid. Beta Crucis burned off the mists and beat on his armor. Elsewhere the avalanche was boiling more gradually off the valley floor. But *Muddlin' Through* cruised overhead, slowly, fanning a low-level energy beam across the snows. When her scanners detected Falkayn, a tractor beam extended. He was snatched up, hauled through a cargo port, and dumped on deck for Chee Lan's profane ministrations.

A couple of hours later he sat in his bunk, nursing a bowl of soup, and regarded her with clear eyes. "Sure, I'm fine now," he said. "Give me a nightwatch's sleep and I'll be my old self."

"Is that desirable?" the Cynthian snorted. "If *I* were so tubeheaded as to go out on dangerous terrain without a gravbelt to flit me aloft, I'd trade myself in on a newer model."

Falkayn laughed. "You never suggested it either," he said. "It'd have meant I could carry less gear. What did happen?"

"*Ying-ng-ng* . . . the way Muddlehead and I reconstruct it, that glacier wasn't water. It was mostly dry ice—solid carbon dioxide—with some other gases mixed in. Local temperature has finally gotten to the sublimation point, or a touch higher. But the heat of vaporization must be fed in. And this area chills off fast after dark; and daylight lasts just a few hours; and, too, I suspect the more volatile components were stealing heat from the main frozen mass. The result was an unstable equilibrium. It happened to collapse precisely when you were outside. How very like the fates! A major part of the ice pack sublimed, explosively, and dislodged the rest from the escarpment. If only we'd thought to take reflection spectra and thermocouple readings—"

"But we didn't," Falkayn said, "and I for one don't feel too guilty. We can't think of everything. Nobody can. We're bound to do most of our learning by trial and error."

"Preferably with someone standing by to retrieve us when it really hits the fan."

"Uh-huh. We ought to be part of

a regular exploratory fleet. But under present circumstances, we aren't, that's all." Falkayn chuckled. "At least I've had my opinion strengthened as to what this planet should be named. Satan."

"Which means?"

"The enemy of the divine, the source of evil, in one of our terrestrial religions."

"But any reasonable being can see that the divine itself is—Oh, well, never mind. I thought you humans had run out of mythological names for planets. Surely you've already christened one Satan."

"I don't remember. There's Lucifer, of course, and Ahriman, and Loki, and—Anyhow, the traditional Satan operates an underworld of fire, except where it's icy, and amuses himself thinking up woes for wicked souls. Appropriate, no?"

"If he's like some other anti-gods I've met," Chee said, "he can make you rich, but you always find in the end that it was not a good idea to bargain with him."

Falkayn shrugged. "We'll see. Where are we at the moment?"

"Cruising over the night side, taking readings and pictures. I don't see any point in lingering. Every indication we've gotten, every extrapolation we can make, indicates that the course of events will gladden van Rijn to the clinkered cockles of his greedy heart. That is, the whole cryosphere will fluidify, and in a decade or so conditions will be suitable for industry. Meanwhile, however, things are getting more dangerous by the hour."

As if to underline Chee's words, the ship lurched and her wind-smitten hull plates belled. She was through the storm in a minute or two. But Falkayn reflected what that storm must be like, thus to affect a thermonuclear-powered, gravity-controlling, force-screened, sensor-guided and computer-piloted vessel capable of crossing interstellar space and fighting a naval engagement.

"I agree," he said. "Let's collect as much more data as we safely can in . . . oh, the next twenty-four hours . . . and then line out for home. Let somebody else make detailed studies later. We'll need a combat group here anyway, I suppose, to mount guard on this claim."

"The sooner Old Nick learns it's worth his while to send that group, the better." Chee switched her tail. "If enemy pickets are posted when it arrives, we've all got troubles."

"Don't worry," Falkayn said. "Our distinguished opponents must live quite a ways off, seeing they haven't even a scout here yet."

"Are you certain their advance expedition did not come and go while we were en route?" Chee asked slowly.

"It'd still be around. We spent a couple of weeks in transit and a bit longer at work. We're quitting early because two beings in one ship can only do so much—not because

we've learned everything we'd like to know—and because we've a sense of urgency. The others, having no reason to suspect we're on to their game, should logically have planned on a more leisurely and thorough survey." Falkayn scratched his chin. The stubble reminded him that he was overdue for a dose of antibeard enzyme. "Of course," he said, "their surveyors may have been around, detected us approaching, and run to fetch Daddy. Who might be on his way as of now, carrying a rather large stick." He raised his voice, jocularly: "You don't spot any star ships, do you, Muddlehead?"

"No," said the computer.

"Good." Falkayn eased back on his pillows. This craft was equipped to register the quasi-instantaneous "wake" of troubled space that surrounded an operating hyperdrive, out almost to the theoretical limit of about one light-year. "I hardly expected—"

"My detectors are turned off," Muddlehead explained.

Falkayn jerked upright. The soup spilled from his bowl, across Chee Lan, who went into the air with a screech. *"What?"* the man cried.

"Immediately before our run to take orbit, you instructed me to keep every facility alert for local dangers," Muddlehead reminded him. "It followed that computer capability should not be tied up by monitoring instruments directed at interstellar space."

"Judas in a reactor," Falkayn groaned. "I thought you'd acquired more initiative than that. What'd those cookbook engineers on Luna do when they overhauled you?"

Chee shook herself, dog fashion, spraying soup across him. *"Ya-t'in-chai-ourh,"* she snarled, which will not bear translation. "Get cracking on those detectors!"

For a moment, silence hummed, under the shriek outside. The possessions that crowded Falkayn's cabin—pictures, books, taper and spools and viewer, a half-open closet jamful of elegant garments, a few souvenirs and favorite weapons, a desk piled with unanswered letters—became small and fragile and dear. Human and Cynthian huddled together, not noticing that they did so, her fangs shining within the crook of his right arm.

The machine words fell: "Twenty-three distinct sources of pulsation are observable in the direction of Circinus."

Falkayn sat rigid. It leaped through him: *Nobody we know lives out that way. They must be headed here. We won't be sure of their course or distance unless we run off a base line and triangulate, or wait and see how they behave. But who can doubt they are the enemy?*

As if across an abyss he heard Chee Lan whisper: "Twenty . . . mortal . . . three of them. That's a task force! Unless—Can you make any estimates?"

"Signal-to-noise ratio suggests they are within one half light-year," the computer said, with no more tone in its voice than ever before. "Its time rate of change indicates a higher pseudo-speed than a Technic shipmaster would consider wise in approaching a star like Beta Crucis that is surrounded by an unusual density of gas and solid material. The ratio of the separate signal amplitudes would appear to fit the hypothesis of a fleet organized around one quite large vessel, approximately equivalent to a League battleship, three light cruisers or similar units, and nineteen smaller, faster craft. But of course these conclusions are tentative, predicated on assumptions such as that it is indeed an armed force and is actually bound our way. Even under that class of hypotheses, the probable error of the data is too large at present to allow reliable evaluations."

"If we wait for those," Chee growled, deep in her throat, "we'll be reliably dead. I'll believe it's *not* a war fleet sent by our self-appointed enemies, with orders to swat anybody it finds, when the commander invites us to tea." She moved away from Falkayn. "Now what's our next move?"

The man drew a breath. He felt the damp cold leave his palms, the heartbeat within him drop back to a steady slugging, a military officer take command of his soul. "We can't stay on Satan, or nearby," he declared. "They'd pick up our engines on neutrino detectors, if nothing else, and blast us. We could run away on ordinary gravitics, take an orbit closer to the sun, hope its emission would screen us till they go away. But that doesn't look any good either. They'll hardly leave before we'd've taken a lethal cumulative radiation dose . . . if they intend to leave at all. We might, alternatively, assume a very large orbit around Beta. Our minimal emission would be detectable against the low background; but we could pray that no one happens to point an instrument in our direction. I don't like that notion either. We'd be stuck for some time, with no way to get a message home."

"We'd send a report in a capsule, wouldn't we? There's a full stock of four aboard." Chee pondered. "No, effectively two, because we'd have to rob the others of their capacitors if those two are going to have the energy to reach Sol—or any place from which the word could go on to Sol, I'm afraid. Still, we do have a pair."

Falkayn shook his head. "Too slow. They'd be observed—"

"They don't emit much. It's not as if they had nuclear generators."

"A naval-type detector can nevertheless spot a capsule under hyperdrive at farther range than we've got available, Chee. And the thing's nothing more than a tube, for Judas' sake, with an elementary sort of engine, a robopilot barely able to steer

where it's programmed for and holler, 'Here I am, come get me,' on its radio at journey's end. No, any pursuer can zero in, match phase, and either blow the capsule up or take it aboard."

The Cynthian eased her thews somewhat. Having assimilated the fact of crisis, she was becoming as coldly rational as the Hermetian. "I gather you think we should run for home ourselves," she said. "Not a bad idea, if none of those units can outpace us."

"We're pretty fast," he said.

"Some combat ships are faster. They fill space with power plant and oscillators that we keep for cargo."

"I know. It's uncertain what the result of a race would be. Look, though." Falkayn leaned forward, fists clenched on knees. "Whether we have longer legs than they, or vice versa, a half light-year head start will scarcely make any difference across two hundred. We don't much increase the risk by going out to meet them. And we just might learn something, or be able to do something, or . . . I don't know. It's a hand we'll have to play as she is dealt. Mainly, however, think of this. If we go hyper with a powerful surge of 'wake,' we'll blanket the takeoff of a tiny message capsule. It'll be out of detection range before anybody can separate its emission from ours . . . especially if we're headed toward him. So whatever happens to us, we'll've got our information home. We'll've done the enemy that much damage."

Chee regarded him for a while that grew quite silent, until she murmured: "I suspect your emotions are speaking. But they make sense."

"Start preparing for action," Falkayn rapped. He swung his feet to the deck and stood up. A wave of giddiness went through him. He rested against the bulkhead until it passed. Exhaustion was a luxury he couldn't afford. He'd take a stim pill and pay the metabolic price later, if he survived.

Chee's words lingered at the back of his mind. *No doubt she's right. I'm being fueled by anger at what they did to me. I want revenge on them.* A jag went along his nerves. He gasped. *Or is it fear . . . that they might do it to me again?*

I'll die before that happens. And I'll take some of them with me to . . . to Satan!

TO BE CONTINUED

THE ANALYTICAL LABORATORY / MARCH 1968

PLACE	TITLE	AUTHOR	POINTS
1. . . .	The Horse Barbarians (Pt. 2)	*Harry Harrison*	2.30
2. . . .	The Alien Rulers	*Piers Anthony*	2.91
3. . . .	Practice!	*Verge Foray*	3.02
4. . . .	Uplift the Savage	*Christopher Anvil*	3.69
5. . . .	Birth of a Salesman	*James Tiptree, Jr.*	4.20

THE REFERENCE LIBRARY

P. Schuyler Miller

DEADPAN

Two short books that came out late in 1967 illustrate the use of good science-fiction techniques by non-SF writers, for quite different purposes. They are "The Snouters," by "Harald Stümpke" (Natural History Press, New York; 92 pp.; $3.95) and "Report from Iron Mountain on the Possibility and Desirability of Peace" (Dial Press, New York; 109 pp.; $5.00). Both, in quite different ways, have been stirring up a good deal of discussion.

"The Snouters," subtitled "Form and Life of the Rhinogrades," is an English translation of a deadpan zoological pastiche by Professor Gerold Steiner of the University of Heidelberg, whose delightful drawings of the amazing little "nose walkers" from the Heieiei Archipelago have had a lot to do with the popularity of excerpts published in *Natural History* (and, I think, *American Scientist*). The rhinogrades are mammals that stand, walk, burrow, fish and perform a host of other functions with their noses. They are every bit as fantastic and a great deal more believable than most of the monsters that inhabit this and other science-fiction magazines. They should be—Professor Steiner/Stümpke is a professional zoologist and has reproduced the jargon of his specialty perfectly and outrageously. I think, though, that his book has been overtranslated—the place-names read better in the original form than in the overphoneticized English "translation."

I suppose anyone who is not a zoologist will miss most of the fun. And I am afaid some small libraries are going to catalog the book in their science collection.

"Report from Iron Mountain" is

something else again. It uses the familiar science-fiction format of a purported government report—in this case the supposedly leaked report of a study group set up by the United States Government to determine whether our economy and our society can survive the end of the Vietnam war and a possible long period of peace. The group's finding is that war is the stabilizing "balance wheel" in most human societies: that the capacity to make war is the greatest social power a nation can exercise.

The report is couched in bureaucratic jargon, but I think it is a little too lucid and understandable to be real: it doesn't sound like authenic Washington gobbledygook. Most of the arguments raised and the alternatives suggested have been used over and over in science fiction, but I think it has added a few. There is the point, for example, that nuclear war has ended the regressive selection of face-to-face warfare—in which the strong are killed—because the destruction of whole cities is nonselective and, indeed, will wipe out a larger than usual number of the unemployable, the poor, the troublemakers and boat-rockers in urban ghettos.

Massive social welfare programs such as public housing, education, even equalization of spending power are not a satisfactory substitute for war, the Study Group contends. Among other things, they don't cost enough. Several alternatives are suggested but not really developed. The only really hopeful one is an all-out, totally wasteful program of colonization of the planets and presumably the launching of generation-ships to other stars. The Group could have done more with this suggestion if its members—or its anonymous spokesman—knew more science fiction. Terraforming Mars or Venus, for example, could match any war expenditures we have had and could provide a dumping ground for misfits and troublemakers, under strict government control.

Here, then, we have two prime and thoroughly up-to-date examples of a use to which intellectuals have put science fiction and fantasy for thousands of years. In "The Snouters," a playful zoologist is poking fun at his fellow scientists and at the same time having all kinds of fun inventing bizarre but plausible animals. In "Report from Iron Mountain," an anonymous author—and many leading columnists and commentators have been accused of being "John Doe"—is satirizing government and seriously questioning our attitude toward war. (I have argued, myself, with the Study Group, that the American public would support public gladiatorial combats in the Roman style if some municipality would take the step of providing them . . . and the legislatures and Congress would be quick to give them legal support.)

Zoologist Steiner is, unfortunate-

ly, not going on inventing delightful fauna as Stanley Weinbaum and John Campbell did thirty-odd years ago. The author of "Iron Mountain" may well go on attacking our practices and attitudes under any of a variety of pseudonyms . . . but he is unlikely to write "straight" science fiction. Too bad.

LORD OF LIGHT

By Roger Zelazny • Doubleday & Co., Garden City, N.Y. • 1967 • 257 pp. • $4.95

If—as I did—you open this book at random and decide that the author is retelling the Hindu legends in novel form—obviously not for Analog readers—you'll be making a great mistake. Luckily a chance encounter with the representative of a rival publisher and connoisseur of SF set me on the right track, a couple of months late.

As usual, Roger Zelazny has not repeated himself. He has, indeed, retold the Hindu and Buddhist legends, but in a new and extraordinary way that only gradually becomes clear. I don't think that *Fantasy & Science Fiction,* which published at least two portions of the book, ever did figure out what was happening. I am very sure that you will find something new at every rereading, and that someone who does know his Buddhist sutras and the Aspects and Attributes of the Hindu pantheon will get more out of the book than someone who doesn't. I wish I did.

It is probably totally unfair to expose the structure that Roger Zelazny reveals bit by bit, but the story—rather, the story behind the story—makes no sense otherwise. Evidently, in the future, a starship from India with a highly mixed lot of passengers and crewmen is wrecked or hijacked and landed on a hostile world. The ship is run or has been taken over by a small group of mutant scientists with extraordinary—and highly individual—psionic and technological powers. Men and mutants defeat and destroy the native races of energy creatures—"demons"—and the inner circle then sets up a society patterned on that of ancient India, with themselves as the Hindu gods and mankind reduced to barbarism. By transferring their personalities from body to body, by reinforcing their direct powers with scientific devices, they achieve literal immortality and are able to bestow the blessings of reincarnation on their loyal followers.

But one of the First—the one variously known as the Lord Siddhartha, or Tathagatha, or the Buddha, or Mahasamatman, or just Sam—decides to fight the gods and teach mankind the arts of civilization. The book is a chain of episodes describing his war, alone and with odd allies. It is a unique blend of myth and mirth, legend and jarring anachronism. It would probably take as much time and knowledge to extract all the buried allusions and inferences as it would to

check Velikovsky, but it might be more fun. And it is totally unlike any "myths were real" story you have ever seen—as *every* Zelazny story is unlike any other story you have ever read.

This may win an award, though I think it's too rare an *avis*—practically a Garuda Bird. It is certainly going to be up there in the finals.

TOO MANY MAGICIANS
By Randall Garrett • Doubleday & Co., Garden City, N.Y. • 1967 • 260 pp. • $4.95

If you were reading Analog in the last half of 1966, you must recall this story—a four-part serial—laid in Randall Garrett's happily conceived alternate present. This is the world in which Richard the Lion-Hearted outlived the infamous John, in which the Plantagenet line still rules a united France and England plus the entire New World, in which the Cold War is between Poland and the West—and in which the Laws of Magic were discovered instead of the laws of science—and a Th.D. outranks our Ph.D.

This story, specifically, is a pleasant blend of spies, magic, a locked-room murder, thaumaturgical detection, and other tasty condiments. The detection is again in the capable hands of our friend Lord Darcy, Chief Investigator for His Royal Highness Richard, Duke of Normandy, and his colleague Sean O Lochlainn, Chief Forensic Sorcerer to the Angevin court, who is almost immediately locked up in the Tower of London. For good measure we have an Aztec witch-smeller and more other sorcerers than anyone can endure, attendant at their triennial convention. We have not one, but three murders—two in London, one in Cherbourg—and some rather nasty black magic along with the good, clean, pragmatic forensic sorcery. We have the Marquis of London, a hybrid of Mycroft Holmes and Nero Wolfe—two beautiful women skilled in sorcery as well as their own rightful wiles—villains in every direction.

We have fun.

THE LAMPTON DREAMERS
By L. P. Davies • Doubleday & Co., Garden City, N.Y. • 1967 • 188 pp. • $3.95

Again, one of this Welsh author's tales of telepathy and suspense turns up under the Crime Club label instead of in the Doubleday science-fiction shelf. By this time it is clear enough that he is his own man—no pseudonymous masquerader—and if he hasn't again reached the level of his first book, "The Paper Dolls," he has kept his average high.

This time we are in the hills of Yorkshire—the country where Sherlock Holmes' ancestors drew magic from the moors. A young doctor with a new country practice finds that strange things are happening in the hamlet of Lampton.

He finds a dead tramp beside the road and sees a ghostly figure flitting across the fields. He learns that several of the villagers have been having identically the same dream at the same time, and that while they are dreaming someone is busy at malicious mischief elsewhere in the village. Gradually he comes to believe that someone in Lampton is telepathically possessing the villagers and playing with their lives. An older colleague enlists his help to find and trap the tormenter—and the game turns ugly.

THE WEREWOLF PRINCIPLE
By Clifford D. Simak • G. P. Putnam's Sons, New York • 1967 • 216 pp. • $3.95

Here is the non-"pastoral" Simak in a story that keeps you wondering just what is going on—then almost, but not wholly, involves your sympathies with the hero's plight. Mark it down as good, but not outstanding.

Since the events that have created "Andrew Blake" are explained about a third of the way through the story, I think it is fair to say that he is a kind of android, created by biologists who have built into him the "werewolf principle"—the ability to take the shape and absorb the mentality and personality of alien beings, the better to understand them. He has been marooned in space, recovered, and comes back to Earth as a composite being—his original synthetic self, plus two other creatures: one wolflike, one totally unhuman. Under stress, one or the other of these alternate personalities may take over control of his shape and actions.

Counterpointed with this pretty violent action is the picture of a totally strange, yet strangely satisfying future Earth, with which Blake and the reader slowly become acquainted. It is a world of totally automatic flying houses that mother their tenants, of Brownies, and of many another strangeness. I wish the author had saved it for a less violent book. Maybe he'll use it again.

I HAVE NO MOUTH AND I MUST SCREAM
By Harlan Ellison • Pyramid Books, N.Y. • No. X-1611 • 175 pp. • 60¢

If Harlan Ellison were ever to pussyfoot—which is probably impossible—he would wear hobnailed boots or a glacier-walker's crampons. He lives at fever pitch; he writes at fever pitch; and he is dedicated to the goal of communicating the fever to you. The resulting stories appear in all sorts of places—these came from magazines like *Rogue* and *Knight* as well as from "respectable" science-fiction magazines, as did some in "Paingod," a collection of a couple of years ago that I failed to read.

Theodore Sturgeon, who writes what may be the only "respectable" reviews of science fiction for a se-

rious American magazine, *National Review*—that word in quotes should infuriate both Harlan and John Campbell—suggests in a brief introduction that Harlan may be writing out of the forces that are stirred up in less intense folk by LSD and its congeners. After all, as Aldous Huxley pointed out, the experiences that are currently tagged "psychedelic" have been felt for centuries and probably millennia without the use of drugs. (If you're wondering, I doubt that Harlan needs LSD or ever has.)

But so much for the indescribable: how about the book?

You'll find it unlike anything else on the SF shelf, unless "Paingod" was. If the events and visions of these stories *are* psychedelic, most of the "trips" are bad ones. You'll be looking into an ugly world, as ugly as your worst nightmares. You may find some of the stories obscene, with an obscenity that has nothing to do with sex or the eliminative end of the alimentary tract, but drags out into view the perversions of the bruised and mangled human psyche. I'm tempted to say that it's like William Burroughs, except that at its wildest it makes sense—and in my book that makes it science fiction, which (in the same book) Burroughs' literary gymnastics are not.

There are seven stories, and I have wasted a lot of space talking all around them. Harlan talks about each of them at some length, and I suggest you do not skip what he says. In the title story, a supercomputer is playing obscenely with a few men and a woman, much as men play with other men when they have the power. In "Big Sam Was My Friend" you'll feel numbly that all the good will and fine intentions in the universe can't stand up against the brute unreason of tradition and revelation. "Eyes of Dust" is a bitter little parable on the sin of being ugly, even among other ugly persons.

"World of the Myth" is the closest to conventional science fiction in the book: *Knight* published it first. The insectlike creatures of another world are a kind of psychic laser—aimed at your own head. "Lonely Ache": A pure, horrible nightmare of self-hate and self-torment lived through moment by moment—a very bad trip without need of drugs. "Delusion for a Dragon Slayer": *Knight* gave it a very literal cover which hardly suggests its ugliness and despair . . . a fantasy—*the* fantasy—about the man who can make his own Heaven and destroys it because he has no heaven in him. (Why wait till morning to hate yourself?) And finally, "Pretty Maggie Moneyeyes," a grotesque legend of Las Vegas, the story of a haunted slot machine and a haunted man.

These stories wring you out—which is what Harlan Ellison intended. Writing them wrung him out.

TO OPEN THE SKY

By Robert Silverberg • Ballantine Books, New York • U-6093 • 222 pp. • 75¢

Science fiction has made exceptionally good use of the chronicle approach. By gradually fitting together a mosaic of related short stories and novels, an author can experiment with concepts too broad for any one story—can explore his new world at the same time that he creates it. He can show it through the eyes of many different characters, and show its effects upon many others. Eventually, he may have created an imaginary world as real as the best historical novelists' reconstruction of the actual past.

This is the technique Robert Silverberg has used effectively in his newest and one of his best books. In five episodes, the first two at least previously published as short stories in *Galaxy*, he follows the unfolding of a grand plan for the reshaping of human society through a "scientific" religion, in the years from 2077 to 2164 of our near future. The same characters come and go, step out as protagonists and return into the background when their role is done. We watch the growth of the cult established by Noel Vorst, from a despised curiosity in the opening story, "Blue Fire," until Vorst's vision—tied to a misty precognition—launches mankind toward the stars.

To make Man fit for the stars, the Vorsters establish research centers where their biologists work to make men physically immortal and to breed true psionic talents. Mars has been terraformed, and the Martians stand apart from the conflict throughout. Men, on the other hand, have been adapted to live on a terribly hostile Venus, and while the Vorsters take over the political control of Earth, the rival Harmonist heresy not only establishes itself on Venus, but finds and nurtures controllable teleportation among the native-born gilled Blueskins whose ancestors were men. In the end, both forces must unite their efforts to take Man into the Galaxy.

The study the author has put into his exceptionally good series of popular books on archeology has given him a perspective on history that knits the episodes together. There should be even better books ahead.

CLASS BY ITSELF

SEEKERS OF TOMORROW

By Sam Moskowitz • Ballantine Books, New York • No. U-7083 • 450 pp. • 95¢

Here is a beautiful fat paperback of Sam's great evaluation of the writers who remade science fiction in the image or images we recognize. It's better than his account of the pioneers, "Explorers of the Infinite," because he knows many of the writers personally and has grown up with their work as part

of his own life. If World, his hardback publisher, doesn't commission still a third volume on the present-day writers, I hope Ballantine will call for an original paperback. O, yes—the pb has two extra indexes (title and publisher) that the hardback lacked.

RECENT REPRINTS

MAKE ROOM! MAKE ROOM!

By Harry Harrison • Berkley Books, New York • No. X-1416 • 208 pp. • 60¢

Paperback of Harrison's grimly realistic and completely merciless story of a girl, a cop and a kid in the jam-packed New York of 1999—with a bibliography of key books on the population explosion to show it's not all in fun.

STARMAN JONES

By Robert A. Heinlein • Dell Mayflower Books, New York • No. 8246 • 252 pp. • 60¢

Paperback editions of Heinlein's excellent juvenile science-fiction books of the 1950s are long overdue. This isn't the best, but it's good enough. It's the first SF in Dell's "Mayflower" series of juvenile pb's, and it shouldn't be the last.

THE MIND TRADERS

By J. Hunter Holly • Macfadden Books, New York • No. 60-291 • 143 pp. • 60¢

One of the better books by the outstanding talent in the Avalon stable—and that rarity, an interstellar detective story that isn't quite up to the Asimov classics, but would be outstanding if they'd never been written.

ORBIT 2

Edited by Damon Knight • Berkley Books, New York • No. S-1448 • 255 pp. • 75¢

Damon Knight's "Orbit" books are hardback anthologies of new science fiction. This paperback edition follows the hardback so quickly that the ten stories in it haven't yet been picked up by other anthologists, as a number from the 1966 collection have been. One of the "must" anthologies of the year.

11th ANNUAL EDITION: THE YEAR'S BEST S-F

Edited by Judith Merril • Dell Books, New York • No. 2241 • 384 pp. • 75¢

And here's the other annual necessity. This is the year when Judith Merril broadened her definition of "S-F" to mean "speculative fiction," which gives her about the freest hand in the game. Analog-brand S-F most of it isn't, but it's a mighty rich mixture.

THE X FACTOR

By Andre Norton • Ace Books, New York • G-646 • 158 pp. • 50¢

This was André Norton's best book of 1965, and one of the best she has done. Don't let the fact that it was nominally a teen-age book keep you from reading it—and then start reading your way down that long lovely list opposite the title page.

brass tacks

The puzzle-paradox sent in by William J. Yapp which appeared in the March 1968 Brass Tacks seems to have attracted more letters of reply than any other we've run.

A really good puzzle-paradox is one of those setups that anyone with a fundamental knowledge of the relevant field knows, at once, is wrong—that there's a catch in it somewhere—but which forces one to do some hard analytical thinking before discovering a *proof* that it is, in fact, a mistake.

In other words—in Mr. Yapp's case, any physicist knew at once, by inspection, that the conservation of momentum would not be broken. But no true scientist would be satisfied to end there, with just a "hunch," or "intuition" that there was a mistake. A good paradox forces him to think the thing through solidly. Mr. Yapp's problem was, evidently, a good one.

The letters were so numerous, that it's impossible to print even a "representative sample"—because none would, actually, be representative. One, from a graduate student at Princeton, was a magnificent fundamental mathematical analysis, taking some eight pages of mathematics of a level I observed with awe, limited comprehension, and a certainty that we couldn't possibly print that letter. Our type shop isn't set up for mathematical treatises; we aren't a journal of higher mathematics, and don't have the necessary type symbols. When the exponents have superscripts that have subscripts, we pass.

Others were simply reaffirmations that they *knew* momentum would prevail—which, of course, don't count as answers; anyone pulling that is mentally lazy or a mere cliché quoter.

I now know of at least fifteen different ways of reasoning out a proof that momentum is conserved.

The following is the simplest and clearest—though not the most general—proof of momentum conservation in the paradox. *The Editor*

Dear Mr. Campbell:

Before you take up Mr. Yapp on his article about violating the laws of conservation of momentum, consider the following:

To simplify the problem—by getting around calculations of mo-

ments of inertia, et cetera—reduce the two sticks to two dumbbells, the connecting bars being of negligible weight compared with the end-weights. If a given impulse is applied to one of the end-weights in line with the connecting bar, the result will be a certain velocity of the whole ensemble: $V = I/2M$, where I is the impulse in force seconds, and M is the mass of *one* of the dumbbells.

Starting over, apply the same impulse to one end-weight, but this time *at right angles* to the connecting bar. Obviously, in the first instant, the only thing to start moving will be the *one* weight to which the force is applied; the other weight will begin to turn, but for a few milliseconds at least it will not go anywhere. If we neglect the moment of inertia of the "stationary" weight, it is obvious that the impulse is now affecting only half the mass that was affected in the other case: one end weight instead of two. The resulting velocity of the one end-weight, therefore, will be twice as much as the velocity we got when *both* weights were subject to the same impulse. Since one end-weight is stationary and the other is moving, the center of the connecting bar moves at half the velocity of the moving end-weight—which is the *same* as the velocity attained in the first case. Ergo, the center of mass will move with the same velocity in both cases. Linear and angular momentum are conserved *separately*. The angular momentum in the second case, by the way, comes from the fact that the force is being applied out of line with the center of gravity.

As it turns out, if you *don't* neglect the moments of inertia, the answer comes out the same; it's just a little harder to see intuitively.

W. T. POWERS

1138 Whitfield Road
Northbrook, Illinois

Dear Mr. Campbell:

To answer G. Harry Stine's question, "Are you up on Feinberg's theories and tachyons?" which he posed in his article "How To Make A Star Trek" (Analog, February, 1968) no, I am not. Would you please pass on a simplified version of these theories or information as to where I could obtain one.

JOHN VARNER

133 Palliser Street
Johnstown, Penna. 15905

Well—rest easy! Most scientists aren't up on it either, and a large number seem to feel there's nothing to be up on!

Dear Mr. Campbell:

I am a science-fiction reader and am in my late teens. I am also, however, a fan of the old school of science fiction. My problem is finding any material to read. I have read a lot of "modern" science-fiction, but find it very hard to stomach. I have read many different stories by many different authors, but have never

run across a good one that is still living—with the possible exception of Fritz Leiber or Lin Carter. I have read everything worth reading of Edgar Rice Burroughs' and Otis Adelbert Kline, Eric Eddison, Talbot Mundy, Robert E. Howard, and many others, and have enjoyed them, but there is a limit to the amount of fiction written that is of this type—your own included.

Your magazine comes up with a good story of the type that I like every now and then: most recently, "Dragonrider." Where is a person who prefers the swashbuckling heroes of the old s-f going to find it today? Learning to like the Newer Stuff is an impossibility—for me at least. Possessing almost infinite knowledge, you must know some modern writers who write in the old style—excluding John Norman, a young writer with a lot of promise. Since I am sure that I am not unique, you might be interested in answering for all of the "denizens" of the old school.

I would not ordinarily write to someone as busy as you probably are, but the situation is becoming pretty desperate. Many praises go to Analog as it is the most excellent continuing publication of science fiction around.

DONALD E. PENSACK
1311 South Seventh Street
Terre Haute, Indiana

Just because an editor wants a particular kind of story doesn't mean he's going to be able to get it.

In this case, I, too, want stories of heroes and sweeping action. But the "modern" cultural slogans are all against us; today, "literature" holds the idea of the anti-hero, that only the Common Man is fit to write about. That God is Dead, which means there is no Good or Evil, and the murderous criminals are just poor, misguided boys whom Society has wronged, and therefore should be patted on the head gently and sent forth to sin on a nobler scale.

Getting authors to drop that attitude, and return to the approach that has characterized every great and enduring story of human history, is not easy.

Personally, I see no point in glorifying the incompetent, the nobody of interest to no one. I guess you and I just don't appreciate Literature.

Dear Mr. Campbell;

After many years of reading Astounding and Analog, I have finally violently disagreed with one of your editorials. In the March issue, you exulted over the official recognition of dowsing as a valid technique. Fine. I am fully as anxious as you are to see some intelligent research —however empirical—done in the psi field—research directed toward discovering, not disproving.

On the second page, however, you made a statement to the effect that there exist areas in which the scientific method is inherently not

applicable. Nonsense! Fortunately, Copernicus had no compunctions about applying this method to the "forbidden" area of astronomy or Mariner would have punched a hole in the crystal sphere!

The scientific method is, in fact, *theoretically* applicable to any subject or phenomenon you care to mention. You cited abstract emotions such as truth, beauty, and love as being immune to the probing eye of the method. They are—today. These are all functions of that incredibly complex dynamic system that makes you and I separate individuals. It will be some time before we can begin to identify even a small part of what goes on in the human brain. Remember, though, that twenty years ago anyone who was foolish enough to say anything about something as ridiculous as artificial satellites got laughed out of the room. Application of the method to psi is even farther off. It will be years before we have a limited understanding of how the normal mental functions operate, let alone those functions which many people deny exist.

The effective application of the scientific method depends upon the existence of objective data to evaluate. Evaluation of the data depends, in turn, upon accurate and repeatable measurements. The hidebound scientist scoffs at the existence of psi because he can't measure, or record, what is going on. There is a certain amount of reason behind this attitude as he is wasting his time applying his method to unrepeatable data. It is no reason, however, to refuse to collect empirical data and hold it until the time that measurements become available. Axiom: *Any physical phenomenon that has a direct, or indirect, effect on a human being may be measured and thus is open to study through the scientific method.* If it does not affect a human in any way, we will never be aware of its existence and so may safely ignore it. If it does have some effect, it does so through impinging on one of our senses. Since instruments are merely extensions of these senses, we can measure it. A punch in the nose has a direct effect. A radio wave has an indirect effect through the information it carries which will eventually be manifested as a direct effect. Psi and, consequently, dowsing are presently "outside the pale" of the scientific method as nobody has developed an effective psimeter. The EEG might or might not turn out to be the device we need depending upon the nature of psi.

So please, John; condemn the data, not the method!

NORMAN D. REESE
10100 Bunkerhill Road
Jackson, Michigan 49201

I condemn the method, not merely the data—because that method, while excellent indeed in its field, is inherently useless in areas which its own definitions exclude.

Consider what can and cannot be

done by the science of Chemistry, an enormously powerful and valuable tool of human knowledge-search. By definition, chemistry has to do with the interaction of matter; hence it is inherently incapable of analyzing a magnetic field. Now, last year, and forevermore the methods of chemistry are powerful and extremely useful—but not in the study of pure field forces. That method will never be useful in field-force analysis.

Again, modern definitions of chemistry hold it deals with the interactions of the outer electron rings of atoms. Thus the reaction $_4H^1 \rightarrow {}_2He^4$ is not a chemical reaction, but a nuclear reaction, and the methods of chemistry are not suitable to its analysis—though chemical techniques can help in identifying the products.

Chemistry cannot transmute elements; alchemists tried for centuries. Wrong level of effort—even though chemically purified graphite and chemically purified uranium placed in the proper relationship led to the first nuclear reactor.

Great as chemistry is—there are things that that method cannot do.

Equally, there are things which objective-physical science, by its own definitions, cannot handle. This does not demean the science in its proper field at all—it simply denies that one single method can cure all problems.

And that anyone who insists that "If this method doesn't do it, then the problem doesn't really exist!" is decidedly misusing the concepts of rational behavior.

Wherein do the methods of Objective Science define themselves out of the study of psi?

Simply because they define "reality" as being physically, objectively measurable. Any nonobjective phenomenon is, then, by its own definition, beyond their area of study.

But that postulate, "All reality is objectively measurable," is an Act of Faith—not a proven Truth.

While practically all forms of art —painting, music, literature, ballet, any of them—quite obviously have values that no physical-objective meter can assay. Is the mass of Michelangelo's "La Pietà" relevant to its artistic value? If it were cast in bronze, instead of being marble, would its aesthetic worth change?

And, remember that men studied optics, and developed nearly all the fundamental laws of optics, centuries or millennia before the first physical-objective light-measuring device was finally developed. It was only because human vision organs had been used to do that developmental work that sufficient understanding was gained to permit development of photoelectric devices.

Consider what would have happened if no study of optics was permitted until after photoelectric devices were available!

Do you insist we must wait until psi-force measuring instruments are developed before any useful stud-

ies of the subject will be possible?

It might be more productive to start with what we've got—even if it doesn't match your idea!—and go on from there.

Dear Mr. Campbell:

In the past two years or so, you have had several covers of which you have sold special printings, suitable for framing, without the usual cover lettering. The latest of these, the Centaur explosion, is a photograph instead of a painting. My suggestion is this: Instead of using a photographic method to make the color printing plates, why not just use a direct process, such as making positive prints of the cover painting or photograph, and sell the photographs instead of printed reproductions? It seems to me that in sufficiently large quantities such a process would be cheaper than the method now being used and would also have the advantage of giving a higher-resolution copy of the original illustration. Is this a practical and practicable suggestion?

Well, now that I have gotten that off my chest, time for some comments on the magazine. First, a word on Mack Reynolds and his quite amazing stories. In your serialization of "Computer War," some unusual procedures for conquering a technological country were presented. Now, with the progressing discussion of a national computer information center, and the continuing automation of finance and government records and information processing, it looks as if this nation might reach the stage of development at which Alphaland found itself before the war. Is it possible that such methods as the Betastani used against Alphaland might not some day be used against this country? A very frightening thought . . .

As a college economics student, I have recently been studying the causes of depression and inflation. When I read Mr. Reynolds' satirical story about some future Great Depression caused by the reluctance of one consumer to consume his proper portion, I was made to think just how possible this very thing is. Without going into esoteric economic terms like multiplier effect, contractionary fiscal policy, aggregate demand, and the like, Mr. Reynolds gave a quite good lecture in basic economics and made it enjoyable. I applaud this. Now, if I could only persuade my teachers to do the same, we might get someplace.

Thanks for bringing readers like myself stories by writers like Mack Reynolds. They really make college easier to take. We look forward to many more.

DENNIS BARR

1804 Oak Street

Rolla, Missouri 65401

The essence of it is—there's no reason serious subjects can't be fun to learn!

CHEMICAL WARFARE

continued from page 7

it still acts as a cholesterol remover, and no longer has the taste.)

So part of normal pharmaceutical research is seeking to (1) find biologically active substances, (2) whether they are beneficial or not can't be determined until they're extracted and/or synthesized and tested, and (3) in therapeutically valuable cases, to separate the therapeutic part of the molecule from the side-effect-causing parts.

And it is precisely here that the chemical warfare department becomes interested. Part 2 up there means that many extremely potent biochemically active agents will be found which are *not* beneficial to the recipient. Part 3 means that highly unpleasant side-effect-causing structures have been isolated and determined.

But that seemed to be just what the military services were looking for—that they could get 95% of the needed military chemical agent research already done and paid for by pharmaceutical research.

LSD for instance, is only one of a family of molecule structures. It happens to be the easiest to make up, so was found first, of course, but it's not the most potent known. And some of the derivatives are 100% guarantees for really rough "trips" which no one would take voluntarily. One of them, fed to a cat, makes the poor beast yowl in terror and shrink away in dread from a mouse. Some cause the victim to simply fall down and squirm, twitching and moaning; he doesn't even have to see a real mouse to be driven into terror from which—because it's internal—there is no escape.

Just a simple matter of exaggerating the side effects, by tacking on just the right wrong radicles.

Another set of substitutions, and the recipient sits down with an idiotic blankness on his face, and pays no attention to orders, duties, instructions, demands, or anything else save the inner whichness of the whyfor he's busy contemplating. A man in that state makes the world's worst soldier.

There are, of course, idiosyncratic reactions to any drug. Doctors recognize three major classes of reaction to old, reliable and immensely valuable morphine; the normal, the "cat reaction" and the "dog reaction." Morphine as a sedative and analgesic is of invaluable assistance in therapy; so far as I know, it doesn't cure anything, but no doctor would be without it. It's as reliable as any really potent and useful drug known.

Yet some individuals when given a shot show up with the "dog reaction"; instead of a sedative, analgesic effect, they become exceedingly sick—"sick as a dog"—with deep and prolonged vomiting, and a tendency to go into shock. A few oth-

ers show the "cat reaction"; far from being a sedative, this type starts climbing the walls, swinging from light fixtures, victims of a wild and uncontrollable excitation.

The psychedelic drugs are particularly given to idiosyncratic reactions—as almost any institution for the insane can now testify.

Now let us summarize a little. By 1960, the chemical warfare people of all major and any "minor" countries had developed toxic-killing agents of dire potency. (Be it noted simply as an example, that while Switzerland doesn't have the capital wealth necessary to build up a full-scale nuclear and thermonuclear bomb production—Switzerland is one of the world's leading pharmaceutical producers. You don't have to be a big nation, to have a highly developed pharmaceuticals industry.) And toxic-crippling agents. And super-psychedelic agents that can take a whole army on an involuntary "trip." And some other agents with a wide and wild spectrum of effects, derived from the more powerful side effects of pharmaceutical drugs.

And with this fine, powerful selection of potent weapons—some new thinking came on the scene.

Part of it stems from pure economics. The simple economic fact of the matter is that we don't want to kill or cripple the enemy; to do so, even if we win, puts a terrific economic burden on the world's economy, *no matter how you seek to avoid it.*

Sure—kill 'em, serves 'em right, and bury 'em and forget 'em. Yeah—sounds good, to Joe Dope. But you're also burying and forgetting a large proportion of the world's skilled and trained minds—you're producing a large gap in the productive capability of the human race.

If you win, the losing nation is faced with economic disaster. And while it's conceivable that a nation as large as Iceland might collapse in total economic disaster without causing a chain reaction of collapses, no government in its right mind wants to bet on it.

So killing and crippling agents would almost certainly lead to a Pyrrhic victory—"A few more such victories and I am destroyed." You win the battle, and lose the war—or you win the war, but lose your entire economic structure.

Current military thinking holds that killing and crippling agents are *not* the right answer.

Well, how about the mind-twisters, the super-LSD agents?

Oh, Lord, no! Not with their known tendency to idiosyncratic reactions, and modern weapons of mass destruction around! Maybe 99.99% of the people in the area are knocked into a navel-contemplating daze—but half a dozen driven into a "cat reaction" type frenzy might go rushing madly—and I do mean insanely!—around

firing off the absolutely-forbidden-by-highest-headquarters thermonuclear missiles. With a super-LSD type agent, you'd have all the sane, reasonable, judicious men in a helpless daze, and nothing but madmen left.

This, maybe, you want?

The various agents can be broadly grouped as (1) Killers. (2) Cripplers. (3) Out-of-his-mind agents. And a fourth class best designated as On-the-floor agents.

These have been developed relatively recently by exaggerating the side effects of certain therapeutic drug developments. Two of the most satisfactory appearing agents developed from a muscle-relaxant used in surgery, and a synthetic chemical used in high blood-pressure therapy.

Since I happen to be under treatment for high blood pressure I am currently in a position to describe the effects of that latter agent with some personal understanding.

My doctor explained that "You'll *feel* a lot worse before you feel better, but you'll *be* a lot better." I have a truthful doctor; he wasn't kidding.

I also learned some facts about blood pressure and circulation. For instance, if you suspend a snake by its head, within two minutes it's unconscious, and within five it's dead. Its vascular system is designed to operate in a horizontal position; there are no adequate valves in the blood vessels to keep the blood from draining to the tail, away from the brain, and the neural networks controlling heart and lung function. Presently, the blood isn't returning to the heart, so that blood-pumping is impossible, even if the heart does beat.

A dog can stand a little more vertical posture time than a snake —but not much. If compelled to remain "standing," it will pass out from lack of blood in the brain in about five minutes—but returns to consciousness unharmed if it's then allowed to lie down.

It's well known that men compelled to stand rigidly at attention will pass out due to blood pooling in the lower body. The Old Soldier on parade knows better; he keeps working his calf and thigh muscles, almost imperceptibly, inside his trouser legs, so that the contractions of the big muscles will help force blood back up to his heart and brain. But Man's adaptation to erect posture is still not complete.

I'd been running 220/145 (220 mm. of Hg pressure at the contraction-pulse, 145 mm. when the heart muscle relaxed.) I'm told this is not good for one; normal should have been something more like 145/90. The figures I was showing tend to turn into convulsions, coma and/or strokes.

The medication I was given is a new synthetic drug, *ismelin,* developed by Ciba Pharmaceutical, the Swiss company. It had several quite immediate effects.

It did indeed bring my blood pressure down. It also brought me down; in the mornings I sit down to shave, because blood pressure tends to run low in the mornings, anyway, and with that stuff in me I got dizzy standing up, had to pant for breath and was getting all sorts of frantic warnings from various internal sensing systems that things were very, very unsatisfactory.

Ambling along wasn't too bad; the muscular contractions helped get the blood back up to the heart —but my normal walking pace had the effect of a quarter-mile run. And a single normal flight of stairs involved a one-minute pause while I caught my breath.

Since my system had spent several years adapting to a slowly, steadily rising blood pressure, it had un-adapted to a normal pressure—and I've been re-adapting somewhat hastily and painfully. As the doctor promised—I feel worse, and am better.

Of course, at any time I can simply lie down flat so the blood doesn't tend to pool in the lower body and the symptoms rapidly pass away. No discomfort at all when lying down; just hang onto the bed post or the doorway when you stand up again, or you'll land on the floor!

I imagine you can see where this is leading?

The On-the-floor agent is a side-effect derivative of that highly valuable, life-saving drug. It simply drops the recipient's blood pressure to somewhat lower-than-normal levels. The effects are: (1) It scares hell out of him. Even when you're warned, and know it's a needed therapy, you can feel peculiarly lonely when that stuff has you panting and dizzy. (2) As it takes hold, he feels dizzy, and a *strong* desire to sit down and rest for a moment. (3) Then he feels a powerful urge to lie down—and the worst of the symptoms go away.

As long as he lies down, he's conscious, fairly comfortable, and perfectly capable of sane, reasonable thought.

If he sits up, he gets dizzy, starts panting heavily, feels awful, can't think properly, and violently wants to lie down again.

If he forces himself to stand up, he simply passes out completely and lies down again—whereupon the blood redistributes and he comes to, feeling reasonable and reasonably comfortable.

The reason for calling it an On-the-floor agent is obvious.

One thing the recipient is *not* going to do is fight. He is perfectly capable of carrying on a discussion about his attitudes, but is physiologically incapable of using force as a means of convincing those who disagree with him.

It might be called compulsory arbitration; the dispute is going to be discussed, because it cannot be fought over.

The other On-the-floor agent I have not experienced myself. Reportedly, the net effects are much the same, but this one's a muscle-relaxant that affects the recipient by progressively working its way up the spine. It seems to affect only the voluntary muscles; it starts by relaxing the muscles of the foot and calf—which induces the recipient to squat down. Then it reaches the thigh muscles, and he sits down. Presently the lower trunk relaxes, and he's half lying, braced on his arms—until the arms relax.

The effects of these agents vary with the exact formulation; they can act for as little as two hours, or as long as twelve. Both wear off—are metabolized away—completely, leaving no aftereffects whatever. (A man who got the blood-pressure agent might well be improved by the treatment!)

Now consider the beauty of these chemical warfare agents:

1. They do not injure the recipient in any way; they merely very temporarily render him incapable of trying to gain his ends by force instead of reason and discussion.

2. They do not in any way decrease his economic value to himself, his family, or his nation and the world.

3. They don't even cause pain.

4. The onset of effects is relatively slow, so the individual has a chance to arrange a tolerable position before the full effect hits. There's a quite small chance of injury.

5. In a matter of hours he returns to full normal activity, unhurt and uninjured—but disarmed.

Now the remarkable thing about human irrationality is that the use of these agents would bring the most horrendous howls of horror and outrage from the liberal-humanist group. Their favorite terms would, of course, be inhuman, barbarous, vicious, wicked, immoral, evil, et cetera. You can readily imagine their sincere and genuine outrage at the very idea of those wicked, barbarous *chemical* agents. They would demand, most violently, a return to the natural, long-accepted ways of convincing a forceful opponent—shoot holes in him, run spears or bayonets through him, blow him up with bombs or mines, but nothing so hideous as a *chemical* super-tranquilizer. Beat him down with clubs, bash his brains out—but don't be so cruel, evil and inhumane as to *make* him relax and talk things out.

Personally, I don't quite get the reasoning behind that. The On-the-floor agents destroy no property, don't hurt or injure men, whether soldiers or unfortunate civilians caught in the action zone, and leave the economic machinery of the area undamaged. Homes are not annihilated, families are not shattered—somehow I simply can't see what the terrible, wicked, evil, inhumane characteristics are.

Except that it forces people to abandon physical force and accept discussion as the *only* way to solve problems. Willy-nilly, like it or not, they'd *have* to resort to discussion, and negotiation.

Wouldn't that end war permanently?

No, it would not. Because the essence of war is that one group has decided they want what they want and they're going to get it no matter what anybody else thinks.

One of the uses for such On-the-floor agents would be the peaceful control of rioting mobs. It would be most violently detested—because it wouldn't permit martyrdom. Nobody would get hurt, and no property would be damaged.

When someone is in a mood to blow his stack, and cut loose with random violence because of sheer frustration of his wishes—he *wants* war, and he'll do anything he can think of to create it. The lashing out with violence, whether totally futile, completely irrelevant to his cause, or not, gives him an immense emotional satisfaction. He's *done* something; he's made the frustrators know he's mad, and pay some attention to him.

If that frustrated and furious man is gently, harmlessly, and quite completely futilely forced to lie down peacefully on the street—he's twice as frustrated.

He wants war! He doesn't *want* peaceful discussion; peaceful discussion didn't get him what he wanted! And he does not in the slightest want to learn, or come to understand, that what he wants is impossible, or unethical, or illegal. He *wants* it, and that's not to be changed!

Just Published

How 88,648 Heavy Smokers Stopped Smoking

NEW YORK—The Anti-Tobacco Center of America has just published a booklet which explains how 88,648 heavy smokers (of whom many are physicians) have stopped smoking without straining their will power. This booklet is available free of charge to smokers. All you need to do, to obtain it, is to send your name and address to The Anti-Tobacco Center of America, Dept. A-236-X, 276 Park Avenue South, New York City, 10010. This offer is open while the supply of these booklets lasts.

And therefore, friends, we will always have war.

And peace-imposing weapons, such as the On-the-floor chemicals, will be the most emotionally hated and fulminatingly damned weapons of all; they deprive the frustrated and belligerent type of the very opportunity to express himself in violent force.

So high-sounding moralists and liberal humanists will most loudly shriek at the very suggestion of using those terrible chemical agents

that are so cruelly inhuman as to impose peaceful discussion, willy-nilly.

The anti-war demonstrators who march on Washington so vigorously demanding that fighting cease and peaceful negotiations start . . . ? Well, I observe with interest that they don't seem to be marching on Hanoi with the same demands with anything like the dedicated interest. If peace is what they really want—remember it takes two to negotiate; it's futile to appeal to the one that's already willing. Maybe what's needed is some of that On-the-floor type agent to get negotiations started in Hanoi?

But I'm sure the anti-war demonstrators would really explode in wrath at the suggestion of using chemical agents that did not injure soldiers, civilians or property, but simply compelled peaceful non-action. Or even the use of chemical agents such as are routinely used by conservation officials on wild animals—the tranquilizer darts that put the individual to sleep with no more pain than a mosquito bite, and no injury. I suppose it would be terrible, inhuman, to use those peace-compelling techniques on human beings?

Use them in controlling riot situations, too—where, if a wild shot hits an innocent party, the worst loss is a half hour of time while he peacefully snoozes off the effect of the stuff. If a child stumbles into the path of action, he might get a whole night's sleep out of it—instead of eternity.

The answer is, very simply and obviously, *men want to be able to use violence*. There's a terrific emotional revulsion at the idea of being compelled to refrain from physical force, murder and destruction.

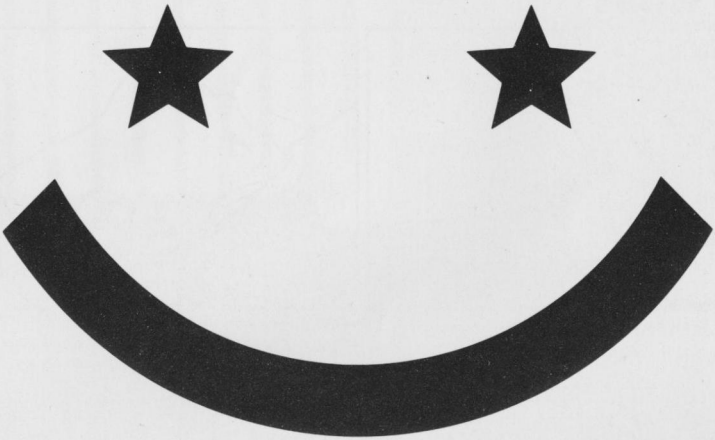
That's why police forces are allowed to have guns which throw lethal bullets—but not dart guns that shoot tranquilizer chemicals. Nightsticks that are visible and loudly condemnable because they are clearly hurtful—but not On-the floor agents that do no injury to anything but a man's boiling anger and will to violence. They frustrate violence-wishers, instead of allowing them expression in destruction and injury to others.

Could anything be more appalling to the type of man who cannot truly think, and cannot for a moment consider changing his set prejudices and bigotries, than to be faced with a situation where he is physiologically incapable of doing anything but talk and listen? A situation in which he can't even martyr himself?

No wonder peace-compelling chemical agents such as the fully-developed and available tranquilizer dart guns and the On-the-floor agents are so bitterly condemned.

Put it very simply: If you're truly in favor of peace—then vote all-out for the use of chemcial warfare only!

THE EDITOR.



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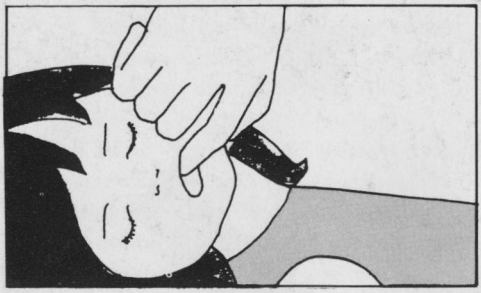
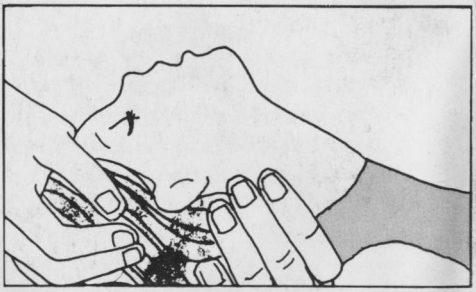
Out of the water. Not breathing. Now what?



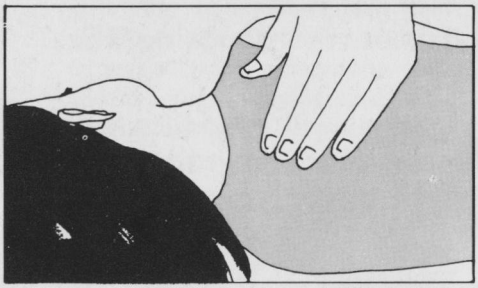
1 Clear visible foreign matter from mouth.



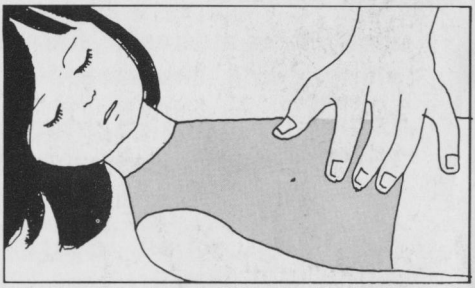
2 With one hand under neck and other on forehead, tilt head backward. This draws the tongue forward opening the air passage. For infants, do not exaggerate backward tilt of the head.

3 Seal your mouth around child's mouth and nose. (For adult pinch nose shut and seal your mouth over his.) With a child, blow gently. Repeat breathing cycle 20 to 30 times a minute. (For an adult blow in twice the amount of the victim's normal breathing 12 times a minute.)

4 On every breath, chest should rise. If chest does not rise, recheck the head position. Pull or push jaw into a jutting position and blow again.



5 If air is not exchanged, roll victim on his side, hit sharply between shoulder blades to dislodge possible obstruction. Clear mouth, tilt head, and resume blowing.



6 If stomach inflates with air, turn the head to side, exert moderate pressure with hand on stomach. If regurgitation occurs, clear mouth and begin again.

This is the most effective method of artificial respiration. Take the free Red Cross courses: 3.5 million people did last year.

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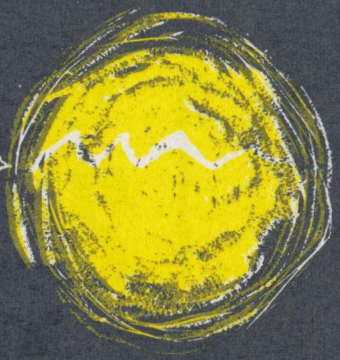

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