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SWORD AND SCEPTER / Jerry Pournelle

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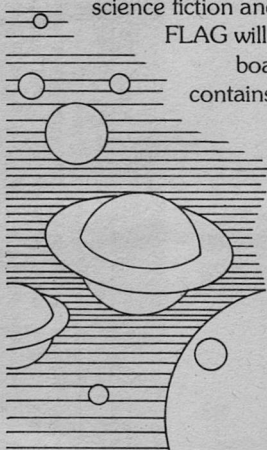


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EDITORIAL

who's in charge here?

The last of the Citizen Presidents died during the final week of 1972.

Harry S. Truman kept a sign on his desk: "The buck stops here." He made tough decisions: Hiroshima, aid to Greece and Turkey to prevent Russian takeovers, the Marshall Plan to rehabilitate Western Europe (and Eastern Europe, too; the Russian-dominated governments there refused our offer). He's best remembered in this country as the little guy who stunned everybody by winning the 1948 election against supposedly hopeless odds. He's best remembered overseas as the President who led America to accept her global responsibilities after World War Two, rather than retreat into isolationism, as we had after World War One. (In short, the scrappy Truman succeeded where the saintly Wilson failed.)

Truman was a man of the people. No one could agree with everything he did, but whether you agreed with him or not, he was still one of us: a gutsy little guy who made up his own mind and rolled up his sleeves and battled until he won. Unlikely as it may seem, he had the stuff heroes are made of.

He was a Citizen President, an ordinary-seeming man with whom the average American could identify closely. He "gave 'em hell" from campaign platforms and publicly threatened to punch a music critic who harshly reviewed his daughter's singing abilities.

The men who've followed Truman into the White House have been God Kings. One way or another they have been distinctly extraordinary personalities, and have become more and more remote from the people. Eisenhower was a famous general and became a national father figure; he was re-elected in 1956 on the slogan of "Trust Ike," and little else. Kennedy had youth, wealth, movie star charisma, and intelligence; the envies and fears that he aroused cut him down before he got a chance to show whether or not his actual performance as President could equal his style. Johnson's ego led him to try to manipulate all the power of the Presidency with his own bare hands; he wanted to make all the decisions personally. The result was a plethora of well-intentioned domestic programs that never got a chance to work, and our deep involvement in Vietnam.

President Nixon, despite his rather ordinary origins and the bitter taste of defeat, has become so remote from the people that he falls into the camp of the God Kings rather than the Citizen Presidents.

The situation in America today has a precedent. The grandeur that was Rome started its domination of the Mediterranean world when it was a republic. The Roman Republic battled against the Greeks in southern Italy and the Etruscans and barbarians in the north. The Roman Republic won the life-and-death struggle against Carthage and expanded its power from Britain to Persia. The rulers of the Republic sometimes seized dictatorial power and sometimes were given such power by the Roman Senate. But, in theory at least, they were elected and responsible to the Senate and the people of Rome.

As Rome's power increased, so did the power of its rulers. In Shakespeare's play, "Julius Caesar," there is a scene described where Caesar is offered a golden crown—the symbol of kingship—before a stadium full of Roman citizens. As a good republican he refuses the crown, even though he covets it and the crowd's roaring urges him to accept it.

History tells us that it was Caesar's eventual successor and nephew, Octavius, who finally proclaimed himself Emperor and made himself into a god. He changed his name to Augustus, and like his uncle had a month named after himself, and even stole a day from February so that August would be no shorter than July.

The Roman people apparently didn't object to having their elected

ruler metamorphose into a God King. The Roman Senate went along with it. And, in truth, the Roman Empire lasted for nearly five centuries of relative peace. But when it finally crumbled, there was nothing to take its place, and a Dark Age descended on Europe for nearly a millennium.

It may be oversimplification to compare Rome's situation with that of America today. But the parallels are there. Responsibility for Rome's well-being passed from the people and the Senate to the sole hands of the God King. Are we allowing the responsibility for our well-being to rest in the hands of—well, if not one man, then the Administration, rather than Congress?

In short: Who's in charge here?

The crucial issue, of course, is Vietnam.

We slid into the Vietnam War slowly at first, and then very suddenly we had half a million troops fighting an elusive, stubborn and ruthless enemy on the mainland of Asia.

Hopefully, by the time you read this, the war will be over. At least, a cease-fire has been agreed to. The question, however, remains: How were the critical decisions made, the decisions that got us into Vietnam and kept us there?

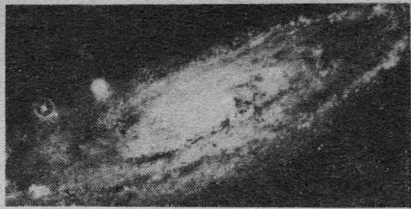
You may believe those decisions were right or wrong; that's not the point I want to raise. I'm asking: How were the decisions made? Who's in charge?

When President Truman was faced with a North Korean invasion of South Korea, he got the United Nations to condemn the invaders and organize an international force to oppose it. The international force was ninety percent American, but the United States had the backing and cooperation of most of the world when we fought in Korea. And the decisions to fight there were made largely in public, with the knowledge and approval of the Congress and the people. Even so, when it became apparent that the war there was going to be a stalemate, Truman was voted out of office and replaced by Eisenhower, who promised to end the conflict. Which he did.

We got sucked into Vietnam piecemeal. Before the Congress really knew or could do anything about it, we had several thousand "advisers" in South Vietnam (and Laos). Then came the Gulf of Tonkin incident, and the Congress waived its responsibility to hold the President accountable. Within a year we were in South Vietnam to the tune of half a million troops and a cost of something like ten billion dollars per year (half the cost of the entire eight-year-long Apollo program).

To this day, after more than thirty thousand Americans and millions of Asians killed, most Americans still aren't sure of our goals in this struggle. What *are* we trying to

continued on page 177



New Astronomy quiz: Are you tuned in on today's wavelengths?

1. A tank of cleaning fluid deep in a gold mine is being used to study A. the sun B. gravity C. quasars
2. The strongest radio signals from space (other than solar flares) come from A. Jupiter B. quasars C. The Crab Nebula
3. The moon played an important part in the discovery of A. quasars B. gravity waves C. the solar wind

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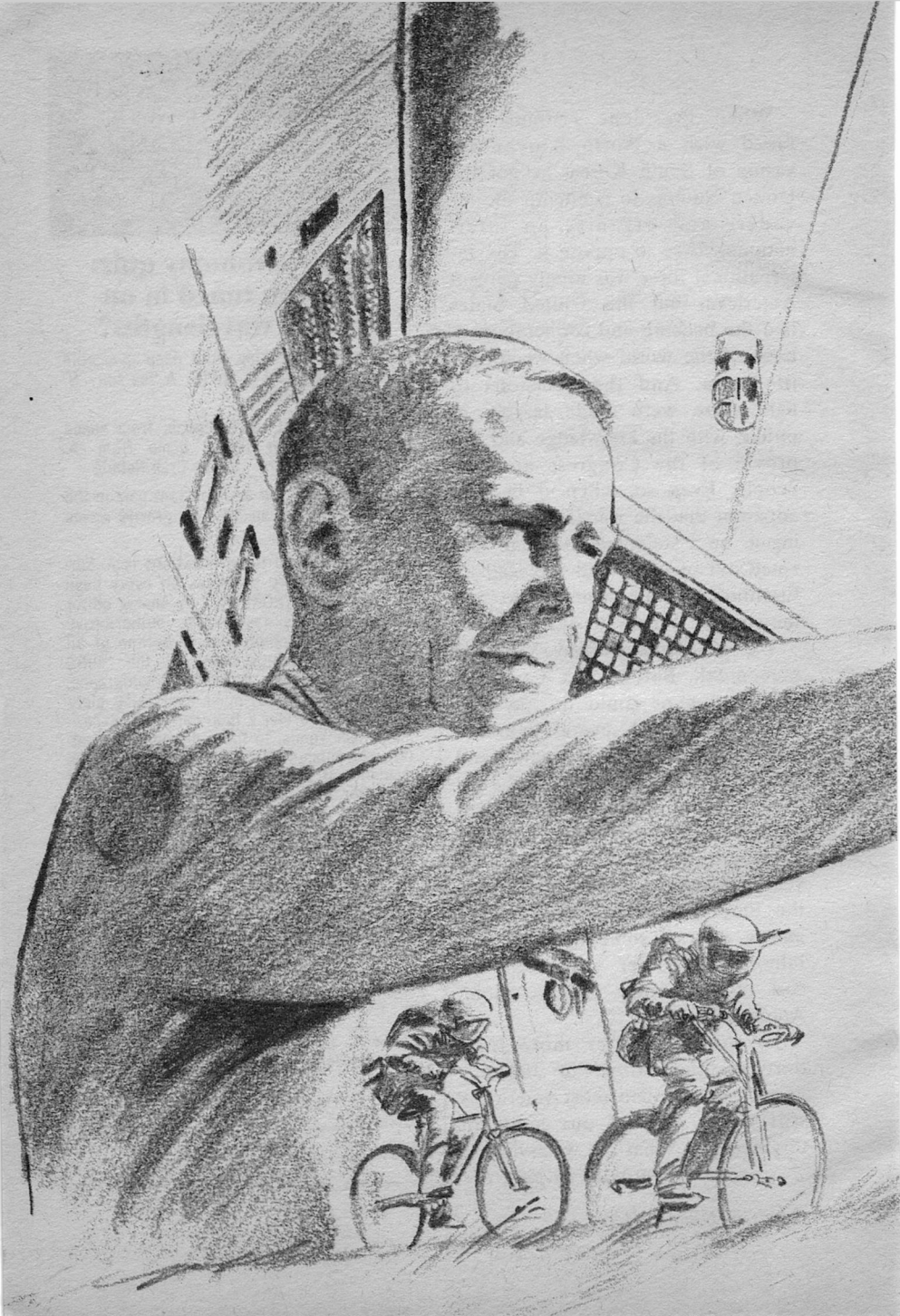
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SWORD AND SCEPTER

Part One of Two Parts. When the rule of law begins to break down, the rule of might takes over. A mercenary army might be detested by the people who need it, but that doesn't prevent them from hiring the mercenaries.



JACK GAUGHAN

Despite its miserable climate, Tanith was an important world. It was first a convenient dumping ground for Earth's disinherited: the rebels, criminals, malcontents, victims of administrative mistakes, and the balance of the wretched refuse of a civilization that could no longer afford misfits; and it was the main source of borloi, which the World Pharmaceutical Society called "the perfect intoxicating drug."

Few men knew that Tanith was also important because many of the borloi plantations were owned by the CoDominium Space Navy, and profits from the drug trade were important in keeping the Fleet in being after the Grand Senate began wholesale cuts in the Navy's budget.

Heat beat down on sodden fields. Two hours before the noon of Tanith's fifteen-plus hours of sunshine the day was already hot; but all Tanith's days are hot. Even in midwinter the jungle steams in late afternoon. In the swamps below the regimental camp Weem's Beasts snorted as they burrowed deeper into protective mud. In the camp itself the air hung hot and wet, heavy, with a smell of yeast and decay.

The Regiment's camp was an island of geometrical precision in the random tumble of jungles and hill-tops. Each yellow rammed-earth barrack was set in an exact rela-

tionship to every other, each company set in line from its centurion's hut at one end to the senior platoon sergeant's at the other. A wide street separated Centurions' Row from the Company Officers' Line, and beyond that was the shorter Field Officers' Line, the pyramid narrowing inevitably until at its apex stood a single building where the colonel lived. Other officers lived with their ladies, and married enlisted men's quarters formed one side of the compound; but the colonel lived alone.

The visitor stood with the colonel to watch a mustering ceremony evolved in the days of Queen Anne's England when regimental commanders were paid according to the strengths of their regiments, and the Queen's mustermasters had to determine that each man drawing pay could indeed pass muster—or even existed.

The visitor was an amateur historian and viewed the parade with wry humor. War had changed and men no longer marched in rigid lines to deliver volleys at word of command—but colonels were again paid by the forces they could bring into battle.

"Report!" The adjutant's command carried easily across the open parade field to the rigidly immobile blue and gold squares.

"First Battalion present or accounted for, sir!"

"Second Battalion present or accounted for, sir."

"Third Battalion present or accounted for, sir!"

"Fourth Battalion four men absent without leave, sir."

"How embarrassing," the visitor said *sotto voce*. The colonel tried to smile but made a bad job of it.

"Artillery present or accounted for, sir!"

"Scout Troop all present, sir!"

"Sappers all present, sir!"

"Weapons Battalion, Aviation Troop on patrol. Battalion present or accounted for, sir!"

"Headquarters Company present or on guard, sir!"

The adjutant returned each salute, then wheeled crisply to salute the colonel. "Regiment four men absent without leave, sir."

Colonel Falkenberg returned the salute. "Take your post."

Captain Fast pivoted and marched to his place. "Pass in review!"

"Sound off!"

The band played a military march that must have been old in the Twentieth Century as the Regiment formed column to march around the field. As each company reached the reviewing stand the men snapped their heads in unison, guidons and banners lowered in salute, and officers and centurions whirled sabers with flourishes.

The visitor nodded to himself. No longer very appropriate. In the Eighteenth Century demonstrations of the men's ability to march in ranks, and of the noncoms and of-

ficers to use a sword with skill, were relevant to battle capabilities. Not now. Still, it made an impressive ceremony.

"Attention to orders!" The sergeant major read from his clipboard. Promotions, duty schedules, the daily activities of the Regiment, while the visitor sweated.

"Very impressive, Colonel," he said. "Our Washingtonians couldn't look that sharp on their best day."

John Christian Falkenberg, III nodded coldly. "Implying that they mightn't be as good in the field, Mr. Secretary? Would you like another kind of demonstration?"

Howard Bannister shrugged. "What would it prove, Colonel? You need employment before your regiment goes to hell. I can't imagine chasing escapees on the CoDominium prison planet has much attraction for good soldiers."

"It doesn't. When we first came things weren't that simple."

"I know that too. The Forty-second was one of the best outfits of the CD Marine Corps. I've never understood why it was disbanded instead of one of the others. I'm speaking of your present situation with your troops stuck here without transport—surely you're not intending to make Tanith your lifetime headquarters?"

Sergeant Major Calvin finished the orders of the day and waited patiently for instructions. Colonel Falkenberg studied his bright-uniformed men as they stood rigidly

in the blazing noon of Tanith. A faint smile might have played across his face for a moment. There were few of the four thousand whose names and histories he didn't know.

Lieutenant Farquahar, a party hack forced on him when the Forty-second was hired to police Hadley, but who'd become a good officer and elected to ship out after the action . . . Private Alcazar, a brooding giant with a raging thirst, the slowest man in K company but he could lift five times his own mass and hide in any terrain . . . dozens, thousands, each with his own strengths and weaknesses, adding up to—a regiment of mercenary soldiers with no chance of going home and an unpleasant future if they didn't get off Tanith.

"Sergeant Major."

"Sir!"

"You will stay with me and time the men. Trumpeter, sound Boots and Saddles, Full Equipment, and Ready to Board Ship."

"Sir!" The trumpeter was a grizzled veteran with corporal's stripes. He lifted the gleaming instrument with its blue and gold tassels, and martial notes poured across the parade ground. Before they died away the orderly lines dissolved into masses of running men.

There was less confusion than Howard Bannister had expected. It seemed an incredibly short time before the first men fell back in. They came from their barracks in

small groups, some in each company, then more, a rush, and finally knots of stragglers. Now in place of bright colors there was the dull drab of synthetic leather bulging over Nemourlon body armor. The bright polish was gone from the weapons. Dress caps were replaced by bulging combat helmets, shining boots by softer leathers. As the Regiment formed Bannister turned to the colonel.

"Why trumpets? I'd think that rather out of date."

Falkenberg shrugged. "Would you prefer shouted orders? You must remember, Mr. Secretary, mercenaries live in garrison as well as in combat. Trumpets remind them they're soldiers."

"I suppose."

"Time, Sergeant Major," the adjutant demanded.

"Eleven minutes, eighteen seconds, sir."

"Are you trying to tell me the men are ready to ship out now?" Bannister asked. His expression showed polite disbelief.

"It would take longer to get the weapons and artillery battalion equipment together, but the infantry could board ship now."

"I find that hard to believe—of course the men know this was only a drill."

"How would they know that?"

Bannister laughed. He was a stout man, dressed in inexpensive business clothes with cigar ashes down the front. Some of the ash

floated free when he laughed. "Well, you and the sergeant major are still in parade uniform."

"Look behind you," Falkenberg said.

Bannister turned. Falkenberg's guards and trumpeter were still in their places, their blue and gold dress contrasting wildly with the grim synthileathers of the others who had formed up with them. "The headquarters squad has our gear," Falkenberg explained. "Sergeant Major."

"Sir!"

"Mr. Bannister and I will inspect the troops."

"Sir!" As Falkenberg and his visitor left the reviewing stand Calvin fell in with the duty squad behind him.

"Pick a couple at random," Falkenberg advised. "It's hot out here. Forty degrees anyway."

Bannister was thinking the same thing. "Yes. No point in being too hard on the men. It must be unbearable in their armor."

"I wasn't thinking of the men," Falkenberg said.

The Secretary of War chose L Company of Third Battalion. The men looked all alike except for size. He looked for something to stand out, straps not buckled, anything to indicate an individual difference, but he found none. Veteran or recruit? Veteran. Bannister approached a scarred private who looked forty years old. With regen-

eration therapy he might have been half that again. "This one."

"Fall out, Wiszorik!" Calvin ordered. "Lay out your kit."

"Sir!" Private Wiszorik might have smiled thinly, but if he did Bannister missed it. He swung the packframe easily off his shoulders and stood it on the ground. The headquarters squad helped him lay out his nylon shelter cloth and Wiszorik emptied the pack, placing each item just so.

Rifle: a New Aberdeen seven-millimeter semiautomatic, with ten-shot clip and fifty-round box magazine, both full and spotlessly clean like the rifle. A bandolier of cartridges. Five grenades. Nylon belt with bayonet, canteen, spoon, and stainless cup that served as a private's entire mess kit. Greatcloak and poncho, string net underwear, layers of clothing—

"You'll note he's equipped for any climate," Falkenberg commented. "He'd expect to be issued special gear for a non-Terran environment, but he can live on any inhabitable world with his gear."

"Yes." Bannister watched interestedly. The pack hadn't seemed heavy, but Wiszorik kept withdrawing gear from it. First-aid kit, chemical warfare protection drugs and equipment, concentrated field rations, soup and beverage powders, a tiny gasoline-burning field stove . . . "What's that?" Bannister asked. "Do all the men carry them?"

"One to each maniple, sir," Wiszorik answered.

"His share of five men's community equipment," Falkenberg explained. "A monitor, three privates, and a recruit make up the basic combat unit of this outfit, and we try to keep the maniples self-sufficient."

More gear came from the pack. Much of it was light alloys or plastic, but Bannister wondered about the total weight. Trowel, tent pegs, nylon cordage, a miniature cutting torch—more group equipment for field repairs to both machinery and the woven Nemourlon armor. Night sights for the rifle, a small plastic tube half a meter long and eight centimeters in diameter . . .

"And that?" Bannister asked.

"Antiaircraft rocket," Falkenberg told him. "Not effective against fast jets but it'll knock out a chopper ninety-five percent of the time. Has some capability against tanks, too. We don't like the men too dependent on heavy weapons units."

"I see. Your men seem well-equipped, Colonel," Bannister commented. "It must weigh them down badly."

"Twenty-one kilograms in a standard G field," Falkenberg answered. "More here, less by a lot on Washington. Every man carries a week's rations, ammunition for a short engagement, and enough equipment to live in the field."

"What's the little pouch on his belt?" Bannister asked interestedly.

Falkenberg shrugged. "Personal possessions. Probably everything he owns. You'll have to ask Wiszorik's permission if you want to examine that."

"Never mind. Thank you, Private Wiszorik." Howard Bannister produced a brightly colored bandanna from an inner pocket and mopped his brow. "All right, Colonel. You're convincing—or your men are. Let's go to your office and talk about money."

As they left, Wiszorik and Sergeant Major Calvin exchanged knowing winks, while Monitor Hartzinger breathed a sigh of relief. Just suppose that visiting pandrum had picked Recruit Latterby! Hell, the kid couldn't find his rear without looking for ten minutes.

II

Falkenberg's office was hot. It was a large room, and a ceiling fan tried without success to stir up a breeze. Everything was damp from Tanith's wet jungle air. Bannister thought he saw fungus growing in the narrow space between a file cabinet and the wall.

In contrast to the room itself, the furniture was elaborate. It had been hand carved and was the product of hundreds of hours' labor by soldiers who had little else but time to give their commanding officer. They'd taken Sergeant Major Calvin into a conspiracy, getting

him to induce Falkenberg to go on an inspection tour while they scrapped his functional old field gear and replaced it with equipment as light and useful, but hand carved with battle scenes.

The desk was quite large, and entirely bare. To one side a table in easy reach was covered with papers. On the other side a two-meter star cube portrayed the ninety stars with inhabited planets. Communication equipment was built into a spindly-legged sideboard which also held whiskey. Falkenberg offered his visitor a drink.

"Could we have something with ice?"

"Certainly." Falkenberg turned toward his sideboard and raised his voice, speaking with a distinct change in tone. "Orderly, two gin and tonics, much ice, if you please. Will that be satisfactory, Mr. Secretary?"

"Yes, thank you." Bannister wasn't accustomed to electronics being so common. "Look, we needn't spar about. I need soldiers and you need off this planet. It's as simple as that."

"Hardly. You've yet to mention money."

Howard shrugged. "I haven't much. Washington has damned few exports. Franklin's dried those up with the blockade. Paying for your transport and salaries will use up what we've got. You know this, I suppose—I'm told you have access to Fleet intelligence sources."

Falkenberg shrugged. "I have my ways. You're prepared to put our return fare on deposit with Dayan, of course."

"Yes." Bannister was startled. "Dayan? You do have sources. I thought our negotiations with New Jerusalem were secret. All right, we have arrangements with Dayan to furnish transportation. It took all our cash, so everything else is contingency money. We can offer you something you need, though. Land, good land, and a permanent base that's a lot more pleasant than Tanith. We also offer—well, the chance to be part of a free and independent nation, though I'm not expecting that to mean much to you."

Falkenberg nodded. "That's why you—excuse me." He paused as the orderly brought in a tray with tinkling glasses. The trooper wore battle dress and his rifle was slung across his shoulder.

"Will you be wanting the men to perform again?" Falkenberg asked.

Bannister hesitated. "I think not."

"Orderly, ask Sergeant Major to sound recall. Dismissed." He turned back to Bannister. "Now. You chose us because you've nothing to offer. The New Democrats on Friedland are happy enough with their base, as are the Scots on Covenant. Xanadu wants hard cash before they throw troops into action. You could find some scrapings on Earth, but we're the only first-

class outfit down on its luck at the moment. What makes you think we're *that* hard up, Mr. Secretary? Your cause on Washington is lost, isn't it?"

"Not for us." Howard Bannister sighed. Despite his bulk he seemed deflated. "All right. Franklin's mercenaries have defeated the last organized field army we had. The resistance is all guerrilla operations and we both know that won't win. We need an organized force to rally around, and we haven't got one." *Dear God, we haven't got one.* Bannister remembered rugged hills and forests, weathered mountains with snow on their tops, and in the valleys were ranches where the air was crisp and cool. He remembered plains golden with mutated wheat and the swaying tassels of Washington's native corn-like plant rippling in the wind. The Patriot army marched again to the final battle.

They'd marched with songs in their hearts. The cause was just and they faced only mercenaries after defeating Franklin's regular army. Free men against hirelings in one last campaign.

The Patriots entered the plains outside the capital city, confident that the mercenaries could never stand against them—and the enemy didn't run. The humorless Covenant Scots regiments chewed through their infantry, while Friedland armored squadrons cut across the flank and far into the rear, de-

stroying their supply lines and capturing the headquarters. Washington's army had not so much been defeated as dissolved, turned into isolated groups of men whose enthusiasm was no match for the iron discipline of the mercenaries. In three weeks they'd lost everything gained in two years of war.

But yet—the planet was only thinly settled. The Franklin Confederacy had few soldiers and couldn't afford to keep large groups of mercenaries on occupation duty. Out in the mountains and across the plains the settlements were ready to revolt again, and it would only take a spark to arouse them . . .

"We've a chance, Colonel. I wouldn't waste our money and risk my people's lives if I didn't think so. Let me show you—I've a map in my gear."

"Show me on this one." Falkenberg opened a desk drawer to reveal a small input panel. He touched keys and the translucent gray of his desk top dissolved into colors. A polar projection of Washington formed.

There was only one continent, an irregular mass squatting at the top of the planet. From twenty-five degrees North to the South Pole there was nothing but water. The land above that was cut by huge bays and nearly landlocked seas. Towns showed as a network of red dots across a narrow band of land jut-

ting down to the thirty- to fifty-degree level.

"You sure don't have much to live on," Falkenberg observed. "A strip a thousand kilometers wide by four thousand long—why Washington, anyway?"

"Original settlers had ancestors in Washington State. The climate's similar too. Franklin's the companion planet. It's got more industry than we do, but less agricultural land. Settled mostly by Southern United States people—they call themselves the Confederacy. Washington's a secondary colony from Franklin."

Falkenberg chuckled. "Dissidents from a dissident colony—you must be damned independent cusses."

"Independent enough that we're not going to let Franklin run our lives for us! They treat us like a wholly-owned subsidiary, and we will not take that!"

"You'll take it if you can't get somebody to fight for you," Falkenberg reminded him brutally. "Now. You offer us transport out, a deposit against our return, minimum troop pay, and land to settle."

"Yes. You can use the return deposit to transport your noncombatants later. Or cash it in. But it's all the money we can offer, Colonel." *And be damned to you. You don't care at all, but I have to deal with you. For now.*

"Yeah." Falkenberg regarded the map sourly. "Are we facing nukes?"

"No. They've got some, but so do we. We concealed ours in Franklin's capital to make it a standoff."

"Uh-huh." The situation wasn't that unusual. The CD Fleet still tried to enforce the ban though. "They still got those Covenant Highlanders that whipped you?"

Bannister winced at the reminder. "God damn it, good men were killed in that fight and you've got no—"

"Do they still have the Covenanters, Mr. Secretary?"

"Yes. Plus a brigade of Friedland armor, and another ten thousand Earth mercenaries on garrison duty." Falkenberg snorted. No one thought much of Earth's cannon fodder. The best Earth recruits joined the growing national armies. Bannister nodded agreement. "Then there are about eight thousand Confederate troops, native Franklin soldiers who'd be no match for our Washingtonians on home ground . . ."

"You hope. Don't play Franklin down. They're putting together the nucleus of a good fighting force, Mr. Bannister—as you know. It is my understanding that they have plans for further conquests once they've consolidated their hold on New Washington."

Bannister nodded carefully. "That's the main reason we're so desperate, Colonel. We won't buy peace by giving in to the Con-

federacy because they're set to defy the CoDominium when they can build a fleet. I don't understand why the CD Navy hasn't put a stop to Franklin's little scheme, but it's obvious Earth isn't going to do anything. In a few years the Confederates will have their fleet, and be as strong as Xanadu or Danube, strong enough to give the CD a *real* fight."

"You're too damn isolated," Falkenberg replied. "The Grand Senate won't even keep the Fleet up to enough strength to protect what the CD's already got—let alone find the money to interfere in your sector. The shortsighted bastards run around putting out fires, and the few senators who look ten years ahead don't have any influence." He shook his head suddenly. "Not our problem. O.K., what about landing security? I don't have any assault boats, and I doubt you've the money to hire *those* from Dayan."

"It's tough," Bannister admitted. "But blockade runners can get through. Tides on New Washington are enormous, but we *know* our coasts. The Dayan captain can put you down at night here, or along there . . ." The rebel War Secretary indicated a number of deep bays and fiords on the jagged coast. "You'll have about two hours of slack water. That's all the time you'd have anyway before the Confederate spy satellites detect the ship."

Roger Hastings drew his pretty brunette wife close to him and leaned against the barbecue pit. It made a nice pose and the photographers took several shots. They begged for more, but Hastings shook his head. "Enough, boys, enough! I've only been sworn in as mayor of Allansport—you'd think I was governor general of the whole planet!"

"But give us a statement," the reporters begged. "Will you support the Confederacy's rearmament plans? I understand the Smelter is tooling up to produce naval armament alloys—"

"I said *enough*," Roger commanded. "Go have a drink." The reporters reluctantly scattered. "Eager chaps," Hastings told his wife. "Pity there's only the one little paper."

Juanita laughed. "You'd make the capital city *Times* if there was a way to get the pictures there. But—it was a fair question, Roger. What are you going to do about Franklin's war policies? What will happen to Harley when they start expanding the Confederacy?" The amusement died from her face as she thought of their son in the army.

"There isn't much I can do. The mayor of Allansport isn't consulted on matters of high policy. Damn it, sweetheart, don't you start in on me, too. It's too nice a day."

Hastings' quarried stone house stood high on a hill above Nainimo Bay. The city of Allansport sprawled across the hills below them, stretching almost to the high-water mark running irregularly along the sandy beaches washed by endless surf. At night they could hear the waves crashing.

They held hands and watched the sea beyond the island which formed Allansport Harbor. "Here it comes!" Roger said. He pointed to a wall of rushing water two meters high. The tide bore swept around the end of Waada Island, then curled back toward the city.

"Pity the poor sailors," Juanita said.

Roger shrugged. "The packet ship's anchored well enough." They watched the hundred-and-fifty-meter-long cargo vessel tossed about by the tidal force. The bore caught it nearly abeam and she rolled her guts out before swinging on her chains to head into the flowing tidewater. It seemed nothing could hold her, but those chains had been made in Roger's foundries, and he knew their strength.

"It has been a nice day," Juanita sighed. Their house backed onto one of the large common greenswards running up the hill from Allansport, and the celebrations had spilled out of his yard, across the greens, and into the neighbors' yards as well. Portable bars manned by Roger's campaign workers dispensed an endless sup-

ply of local wines and brandies.

To the west, New Washington's twin companion Franklin hung in its eternal place. When sunset brought New Washington's twenty hours of daylight to an end it passed from a glowing ball in the bright day sky to a gibbous sliver in the darkness, then rapidly widened. Reddish shadows danced on its cloudy face. Roger and Juanita stood in silent appreciation. Allansport was a frontier town on an unimportant planet, but they loved it.

The inauguration party had been exhaustingly successful. Roger gratefully went to the drawing room while Juanita climbed the stairs to see to the children. As manager of the Smelter and Foundry, Roger had one of the finest homes on the Ranier Peninsula, a big stone Georgian mansion with wide entry hall and paneled rooms. His favorite was the small conversation-sized drawing room, where he was joined by Martine Ardway.

"Congratulations again," Colonel Ardway boomed. "We'll all be behind you." The words were more than the usual inauguration-day patter. Although Ardway's son Johann was married to Roger's daughter, the colonel had opposed Hastings' election, and Ardway had a large following among the hard-line Loyalists in Allansport. He was also commander of the local militia, while Johann held a captain's commission. Roger's own boy Har-

ley was only a lieutenant, but in the regulars.

"Told Harley about your win?" Ardway asked.

"Can't. Communications to Vancouver are out. Matter of fact, all our communications are out right now."

Ardway nodded phlegmatically. Allansport was the only town on a peninsula well over a thousand kilometers from the nearest settlements. New Washington was so close to its red dwarf sun that communications loss was standard through much of Washington's fifty-two-standard-day year. They'd been planning an undersea cable to Preston Bay when the rebellion broke out, and now that it was over they could start again.

"I mean it about being with you," Ardway repeated. "I still think you're wrong, but there can't be more than one policy about this. I just hope it works."

Roger stretched and yawned. "Excuse me. Been a hard day, and it's a while since I was a rock miner—was a time I could dig all day and drink all night! Look, Martine, we can't go on treating the rebels like traitors. We need 'em too much. There aren't many rebels here, but if I enforce the confiscation laws it'll cause resentment in the East. We've had enough bloody war."

Ardway shrugged. Like Hastings he had once been a miner, but unlike the mayor he hadn't kept in

shape. He wasn't fat, but he had become a large, balding, round man with a paunch that spilled over his wide garrison belt. It spoiled his looks when he wore military uniform, which he did whenever possible. "You're in charge, Roger. I won't get in your way. Maybe you can even get the old rebel families on your side against this stupid imperialistic venture Franklin's pushing. God knows we've enough problems at home without looking for more. I think—what in hell's going on out there?"

There was a disturbance in the town below. Someone was yelling.

"Good God, did I hear shots?" Roger said. "We better find out." Reluctantly he pushed himself up from the leather easy chair. "Hello—hello— what's this? The phone is out, Martine. Dead."

"Those *were* shots," Colonel Ardway said. "I don't like this . . . rebels? The packet came in this afternoon; you don't suppose there were rebels aboard her? We better get down and see to this. You sure the phone's dead?"

"Very dead," Hastings said quietly. "Lord, I hope it's not a new rebellion . . . Get your troops called out, though."

"Right." Ardway took a pocket communicator from his belt pouch. He spoke into it with increasing agitation. "Roger, there is something wrong! I'm getting nothing but static, somebody's jamming the

whole communications band . . .”

“Nonsense. We’re near periastron. The sunspots are causing it.” Hastings sounded confident, but he prayed silently. Not more war. It wouldn’t be a threat to Allansport and the Peninsula—there weren’t more than a handful of rebels out here—but they’d be called on for troops to go east and fight rebel areas like Ford Heights and the Columbia Valley. It was so damn rotten! He remembered burning ranches and plantations during the last flareup. “God damn it, don’t those people know they lose more in the wars than Franklin’s merchants are costing them?”

He was already speaking to an empty room. Colonel Ardway had dashed outside and was calling to the neighbors to fall out with military equipment.

Roger followed his friend outside. To the west Franklin flooded the night with ten thousand times Luna’s best efforts on Earth. There were soldiers coming up the broad street from the main section of town.

“Who in hell—those aren’t rebels,” Hastings shouted. They were men in synthileather battle dress, and they moved too deliberately. Those were regulars.

There was a roar of motors. A wave of helicopters passed overhead. Roger heard ground effects cars on the greensward, and at least two hundred soldiers were running

purposefully up the street toward his house. At each house below a knot of five men fell out of the open formation.

“Turn out! Militia turn out! Rebels!” Colonel Ardway was shouting. He had a dozen men, none in armor, and their best weapons were rifles.

“Take cover! Fire at will!” Ardway screamed. His voice carried determination but it had an edge of fear. “Roger, get the hell inside, you damn fool!”

“But—” The advancing troops were no more than a hundred meters away. One of Ardway’s militia fired an automatic rifle from the house next door. The leatherclad troops scattered and someone shouted orders.

Fire lashed out to rake the house. Roger stood in his front yard, dazed, unbelieving, as under Franklin’s bright reddish light the nightmare went on. The troops advanced steadily again and there was no more resistance from the militia.

It happened so quickly. Even as Roger thought that, the leather lines reached him. An officer raised a megaphone.

“I CALL ON YOU TO SURRENDER IN THE NAME OF THE FREE STATES OF WASHINGTON. STAY IN YOUR HOMES AND DO NOT TRY TO RESIST. ARMED MEN WILL BE SHOT WITHOUT WARNING.”

A five-man detachment ran past Roger Hastings and through the

front door of his home. It brought him from his daze. "Juanita!" He ran toward the house.

"HALT! HALT OR WE FIRE! YOU MAN, HALT!"

Roger ran on heedlessly.

"SQUAD FIRE."

"BELAY THAT ORDER!"

As Roger reached the door he was grabbed by one of the soldiers and flung against the wall. "Hold it right there," the trooper said grimly. "Monitor, I have a prisoner."

Another soldier came into the broad entryway. He held a clipboard and looked up at the address of the house, checking it against his papers. "Mr. Roger Hastings?"

Roger nodded dazedly. Then he thought better of it. "No. I'm—"

"Won't do," the soldier said. "I've got your picture, Mr. Mayor." Roger nodded again. Who was this man? There had been many accents, and the officer with the clipboard had yet another. "Who are you?" he demanded.

"Lieutenant Jaimie Farquahar of Falkenberg's Mercenary Legion, acting under authority of the Free States of Washington. You're under military detention, Mr. Mayor."

There was more firing outside. Roger's house hadn't been touched. Everything looked so absolutely ordinary . . . somehow that added to the horror.

A voice called from upstairs. "The wife and kids are up here, Lieutenant."

"Thank you, Monitor. Ask the lady to come down, please. Mr. Mayor, please don't be concerned for your family. We make no war on civilians." There were more shots from the street.

A thousand questions boiled in Roger's mind. He stood dazedly trying to sort them into some order. "Have you shot Colonel Ardway? Who's fighting out there?"

"If you mean the fat man in uniform, he's safe enough. We've got him in custody. Unfortunately, some of your militia have ignored the order to surrender, and it's going to be hard on them."

As if in emphasis there was the muffled blast of a grenade, then a burst from a machine pistol answered by the slow deliberate fire of an automatic rifle. The battle noises swept away across the brow of the hill, but sounds of firing and shouted orders carried over the pounding surf.

Farquahar studied his clipboard. "Mayor Hastings and Colonel Ardway. Thank you for identifying him: I've orders to take you both to the command post. Monitor!"

"Sir!"

"Your maniple will remain here on guard. You will allow no one to enter this house. Be polite to Mrs. Hastings, but keep her and the children here. If there is any attempt at looting you will prevent it. This street is under the protection of the Regiment. Understood?"

"Sir!"

The slim officer nodded in satisfaction. "If you'll come with me, Mr. Mayor, there's a car on the greensward." As Roger followed numbly he saw the hall clock. He had been sworn in as mayor less than eleven hours ago.

The Regimental Command Post was in the city council meeting chambers, with Falkenberg's office in a small connecting room. The council room itself was filled with electronic gear and bustled with runners, while Major Savage and Captain Fast controlled the military conquest of Allansport. Falkenberg watched the situation develop in the maps displayed on his desk top.

"It was so fast!" Howard Bannister said. The pudgy Secretary of War shook his head in disbelief. "I never thought you could do it."

Falkenberg shrugged. "Light infantry can *move*, Mr. Secretary. But it cost us. We had to leave the artillery train in orbit with most of our vehicles. I can equip with captured stuff, but we're a bit short on transport." He watched lights flash confusedly for a second on the display before the steady march of red lights blinking to green resumed.

"But now you're without artillery," Bannister said. "And the Patriot army's got none."

"Can't have it both ways. We had less than an hour to off-load and get the Dayan boats off-planet before the spy satellites came over.

Now we've got the town and nobody knows we've landed. If this goes right the first the Confederates'll know about us is when their spy snooper stops working."

"We had some luck," Bannister said. "Boat in harbor, communications out to the mainland—"

"Don't confuse luck with decision factors," Falkenberg answered. "Why would I take an isolated hole full of Loyalists if there weren't some advantages?" Privately he knew better. The telephone exchange taken by infiltrating scouts, the power plant almost unguarded and falling to three minutes' brief combat—it was all luck you could count on with good men, but it was luck. "Excuse me." He touched a stud in response to a low humming note. "Yes?"

"Train coming in from the mines, John Christian," Major Savage reported. "We have the station secured, shall we let it go past the block outside town?"

"Sure, stick with the plan, Jerry. Thanks." The miners coming home after a week's work on the sides of Ranier Crater were due for a surprise.

They waited until all the lights changed to green. Every objective was taken. Power plants, communications, homes of leading citizens, public buildings, railway station and airport, police station . . . Allansport and its eleven thousand citizens were under control. A

timer display ticked off the minutes until the spy satellite would be overhead.

Falkenberg spoke to the intercom. "Sergeant Major, we've twenty-nine minutes to get this place looking normal for this time of night. See to it."

"Sir!" Calvin's unemotional voice was reassuring.

"I can't think the Confederates spend much time examining pictures of the boondocks anyway," Falkenberg told Bannister. "Best to take no chances, though." Motors roared as ground cars and choppers were put under cover. Another helicopter flew overhead looking for telltales.

"As soon as that thing's past get the troops on the packet ship," Falkenberg ordered. "And send in Captain Svoboda, Mayor Hastings, and the local militia colonel—Ardway wasn't it?"

"Yes, sir," Calvin answered. "Colonel Martine Ardway. I'll see if he's up to it, Colonel."

"Up to it, Sergeant Major? Was he hurt?"

"He had a pistol, Colonel. Twelve-millimeter thing, big slug, slow bullet, couldn't penetrate armor but he bruised hell out of two troopers. Monitor Badnikov laid him out with a rifle butt. Surgeon says he'll be all right."

"Good enough. If he's able I want him here."

"Sir."

Falkenberg turned back to the desk and used the computer to pro-

duce a planetary map. "Where would the supply ship go from here, Mr. Bannister?"

The Secretary traced a course. "It would—and will—stay inside this island chain. Nobody but a suicide takes ships into open water on this planet. With no land to interrupt them the seas go sixty meters in storms." He indicated a route from Allansport to Cape Titan, then through an island chain in the Sea of Mariners. "Most ships stop at Preston Bay to deliver metalshop goods for the ranches up on Ford Heights Plateau. The whole area's Patriot territory and you could liberate it with one stroke."

Falkenberg studied the map, then said, "No. So most ships stop there . . . Do some go directly to Astoria?" He pointed to a city eighteen hundred kilometers east of Preston Bay.

"Yes, sometimes. But the Confederates keep a big garrison in Astoria, Colonel. Much larger than the one in Preston Bay. Why go twenty-five hundred kilometers to fight a larger enemy force when there's good Patriot country at half the distance?"

"For the same reason the Confederates don't put much strength at Preston Bay. It's isolated. The Ford Heights ranches are scattered . . . Look, Mr. Secretary, if we take Astoria we have the key to the whole Columbia River Valley. The Confederates won't know if we're going north to Doak's Ferry, east

to Grand Forks and on into the capital plains, or west to Ford Heights. If I take Preston Bay first they'll know what I intend because there's only one thing a sane man could do from there."

"But the Columbia Valley people aren't reliable! You won't get good recruits—"

They were interrupted by a knock. Sergeant Major Calvin ushered in Roger Hastings and Martine Ardway. The militiaman had a lump over his left eye and his cheek was bandaged.

Falkenberg stood to be introduced and offered his hand, which Roger Hastings ignored. Ardway stood rigid for a second, then extended his own. "I won't say I'm pleased to meet you, Colonel Falkenberg, but my compliments on an operation well conducted."

"Thank you, Colonel. Gentlemen, please be seated. You have met Captain Svoboda, my provost?" Falkenberg indicated a lanky officer in battle dress who'd come in with them. "Captain Svoboda will be in command of this town when the Forty-second moves out."

Ardway's eyes narrowed with interest.

Falkenberg smiled. "You will see it soon enough, Colonel. Now. The rules of occupation. As mercenaries we are subject to the CoDominium's Laws of War. Public property is seized in the name of

the Free States. Private holdings are secure and any property requisitioned will be paid for. Any property used to aid resistance whether directly or as a place to make conspiracy will be instantly confiscated."

Ardway and Hastings shrugged. They'd heard this before. At one time the CD tried to suppress mercenaries. When that failed the Fleet rigidly enforced the Grand Senate's Laws of War, but now the Fleet was weakened by budget cuts and a new outbreak of U.S.-Soviet hatred. New Washington was isolated and it might be years before CD Marines appeared to enforce rules the Grand Senate no longer cared about.

"I have a problem, gentlemen," Falkenberg said. "This city is Loyalist and I must withdraw my regiment. There aren't any Patriot soldiers yet. I'm leaving enough force to complete the conquest of this peninsula, but Captain Svoboda will have few troops in Allansport itself. Since we cannot occupy the city it can legitimately be destroyed to prevent it from becoming a base against me."

"You can't—" Hastings protested, jumping to his feet. An upset ashtray shattered. "I thought all that about preserving private property was a lot of crap!" He turned to Bannister. "Howard, I told you last time all you'd succeed in doing was burning down the whole goddam planet! Now you import soldiers to

Sgt. Major Calvin



do it for you! What in God's name can you expect to gain from this war?"

"Freedom," Bannister said proudly. "Allansport is a nest of traitors anyway."

"Hold it," Falkenberg said gently.

"Traitors!" Bannister repeated. "You'll get what you deserve, you—"

"Ten-SHUT!" Sergeant Major Calvin's command startled them. "The colonel said you was to hold it."

"Thank you." The silence was louder than the shouts had been. "I said I could burn the city, not that I intend to. However, since I won't, I must have hostages." He handed Roger Hastings a computer typescript. "Troops are quartered in homes of these persons. You will note that you and Colonel Ardway are at the top of my list. All will be detained and anyone who escapes will be replaced by members of his family. Your property and ultimately your lives are dependent on your cooperation with Captain Svoboda until I send a regular garrison here. Is this understood?"

Colonel Ardway nodded grimly. "Yes, sir. I agree to it."

"Thank you," Falkenberg said. "And you, Mr. Mayor?"

"I understand."

"And?" Falkenberg prompted.

"And what? You want me to like it? What kind of sadist are you?"

"I don't care if you like it, Mr.

Mayor. I am waiting for you to agree."

"He doesn't understand, Colonel," Martine Ardway said. "Roger, he's asking if you agree to serve as a hostage for the city. The others will be asked as well. If he doesn't get enough to agree he'll burn the city to the ground."

"Oh." Roger felt a cold knife of fear. *What a hell of a choice.*

"The question is," Falkenberg said, "will you accept the responsibilities of the office you hold and keep your damn people from making trouble?"

Roger swallowed hard. *I wanted to be mayor so I could erase the hatreds of the rebellion.* "Yes. I agree."

"Excellent. Captain Svoboda."

"Sir."

"Take Mayor Hastings and Colonel Ardway to your office and interview the others. Notify me when you have enough hostages to ensure security."

"Yes, sir. Gentlemen?" It was hard to read his expression as he showed them to the door. The visor of his helmet was up, but Svoboda's angular face remained in shadow. As he escorted them from the room the intercom buzzed.

"The satellite's overhead," Major Savage reported. "All correct, John Christian. And we've secured the passengers off that train."

The office door closed. Roger Hastings moved like a robot across the bustling city council chamber

room, only dimly aware of the bustle of headquarters activities around him. The damn war, the fools, the bloody damned fools—couldn't they ever leave things alone?

IV

A dozen men in camouflage battle dress led a slim, pretty girl across hard-packed sands to the water's edge. They were glad to get away from the softer sands above the high-water mark nearly a kilometer from the pounding surf. Walking in that had been hell, with shifting powder sands infested with small burrowing carnivores too stupid not to attack a booted man.

The squad climbed wordlessly into the waiting boat while their leader tried to assist the girl. She needed no help. Glenda Ruth wore tan nylon coveralls and an equipment belt, and she knew this planet and its dangers better than the soldiers. Glenda Ruth Horton had been taking care of herself for twenty-four of her twenty-six years.

White sandy beaches dotted with marine life exposed by the low tide stretched in both directions as far as they could see. Only the boat and its crew showed that the planet had human life. When the coxswain started the boat's water jet the whirr sent clouds of tiny seabirds into frantic activity.

The fast packet *Maribell* lay twelve kilometers offshore, well be-

yond the horizon. When the boat arrived deck cranes dipped to seize her and haul the flat-bottomed craft to her davits. Captain Ian Frazer escorted Glenda Ruth to the chart room.

Falkenberg's battle staff waited there impatiently, some sipping whiskey, others staring at charts whose information they had long since absorbed. Many showed signs of seasickness: the eighty-hour voyage from Allansport had been rough and it hadn't helped that the ship pushed along at thirty-three kilometers an hour, plowing into big swells among the islands.

Ian saluted, then took a glass from the steward and offered it to Glenda Ruth. "Colonel Falkenberg, Miss Horton. Glenda Ruth is the Patriot leader in the Columbia Valley. Glenda Ruth, you'll know Secretary Bannister."

She nodded coldly as if she did not care for the rebel minister, but she put out her hand to Falkenberg and shook his in a thoroughly masculine way. She had other masculine gestures, but even with her brown hair tucked neatly under a visored cap no one would mistake her for a man. She had a heart-shaped face and large green eyes, and her weathered tan might have been envied by the great ladies of the CoDominium.

"My pleasure, Miss Horton," Falkenberg said perfunctorily. "Were you seen?"

Ian Frazer looked pained. "No,

we met the rebel group and it seemed safe enough, so Centurion Michaels and I borrowed some clothing from the ranchers and let Glenda Ruth take us to town for our own look." Ian moved to the chart table.

"The fort's up here on the heights." Frazer pointed to the coastal chart. "Typical wall and trench system. Mostly they depend on the Friedlander artillery to control the city and the river mouth."

"What's in there, Ian?" Major Savage asked.

"Worst thing is artillery," the Scout Troop commander answered. "Two batteries of 105's and a battery of 155's, all self-propelled. As near as we can figure, it's a standard Friedland detached battalion."

"About six hundred Friedlanders, then," Captain Rottermill said thoughtfully. "And we're told there's a regiment of Earth mercenaries. Anything else?"

Ian glanced at Glenda Ruth. "They moved in a squadron of Confederate Regular Cavalry last week," she said. "Light armored cars. We think they're due to move on, 'cause there's nothing for them to do here, but nobody knows where they're going."

"Odd," Rottermill said. "There's not a proper petrol supply for them here—where might they go?"

Glenda Ruth regarded him thoughtfully. She had little use for mercenaries. Freedom was some-



Glenda
Ruth

thing to be won, not bought and paid for. But they needed these men, and at least this one had done his homework. "Probably to the Snake Valley. They've got wells and refineries there." She indicated the flatlands where the Snake and Columbia merged at Doak's Ferry six hundred kilometers to the north. "That's Patriot country and cavalry could be useful to supplement the big fortress at the Ferry."

"Damn bad luck all the same, Colonel," Rottermill said. "Nearly three thousand men in that damned fortress and we've not a lot more. How's the security, Ian?"

Frazer shrugged. "Not tight. The Earth goons patrol the city some, doing MP duty, checking papers. No trouble avoiding them."

"The Earthies make up most of the guard details too," Glenda Ruth added. "They've got a whole rifle regiment of them."

"We'll not take that place by storm, John Christian," Major Savage said carefully. "Not without losing half the Regiment."

"And just what are your soldiers for?" Glenda Ruth demanded. "Do they fight sometimes?"

"Sometimes." Falkenberg studied the sketch his scout commander was making. "Do they have sentries posted, Captain?"

"Yes, sir. Pairs in towers and walking guards. There are radar dishes every hundred meters and I expect there are body capacitance wires strung outside as well."

"I told you," Secretary Bannister said smugly. There was triumph in his voice, in contrast to the grim concern of Falkenberg and his officers. "You'll have to raise an army to take that place. Ford Heights is our only chance, Colonel. Astoria's too strong for you."

"No!" Glenda Ruth's strong low-pitched voice commanded attention. "We've risked everything to gather the Columbia Valley Patriots. If you don't take Astoria now, they'll go back to their ranches. I was opposed to starting a new revolution, Howard Bannister. I don't think we can stand another long war like the last one. But I've organized my father's friends, and in two days I'll command a fighting force—if we scatter now I'll never get them to fight again."

"Where is your army—and how large is it?" Falkenberg asked.

"The assembly area is two hundred kilometers north of here. I have six hundred riflemen now and another five thousand coming. A force that size can't hide!" She regarded Falkenberg without enthusiasm. They needed a strong organized nucleus to win, but she was trusting her friends' lives to a man she'd never met. "Colonel, my ranchers can't face Confederate Regulars or Friedland armor without support, but if you take Astoria we'll have a base we can hold."

"Yes." Falkenberg studied the maps as he thought about the girl. She had a more realistic apprecia-

tion of irregular forces than Bannister—but how reliable was she? "Mr. Bannister, we can't take Astoria without artillery even with your Ford Heights ranchers. I need Astoria's guns, and the city's the key to the whole campaign anyway. With it in hand there's a chance to win this war quickly."

"But it can't be done!" Bannister insisted.

"Yet it must be done," Falkenberg reminded him. "And we do have surprise. No Confederate knows we're on this planet, and won't for—" he glanced at his pocket computer—"twenty-seven hours, when Weapons Detachment knocks down the snoopers. Miss Horton, have you made trouble for Astoria lately?"

"Not for months," she said. Was this mercenary different? "I only came this far south to meet you."

Captain Frazer's sketch of the fort lay on the table like a death warrant. Falkenberg watched in silence as the scout drew in machine-gun emplacements along the walls.

"I forbid you to risk the revolution on some mad scheme!" Bannister shouted. "Astoria's far too strong. You said so yourself."

Glenda Ruth's rising hopes died again. Bannister was giving the mercenaries a perfect out.

Falkenberg straightened and took a brimming glass from the steward. "Who's junior man here?" He looked around the steel-riveted chart room until he saw an officer

near the bulkhead. "Excellent. Lieutenant Fuller was a prisoner on Tanith, Mr. Bannister. Until we caught him—Mark, give us a toast."

"A toast, Colonel?"

"Montrose's toast, Lieutenant. Montrose's toast."

Fear clutched Bannister's guts into a hard ball. Montrose! And Glenda Ruth stared uncomprehendingly, but there was reborn hope in her eyes . . .

"Aye, aye, Colonel." Fuller raised his glass. "He either fears his fate too much, or his desserts are small, who dares not put it to the touch, to win or lose it all . . ."

Bannister's hands shook as the officers drank. Falkenberg's wry smile, Glenda Ruth's answering look of comprehension and admiration—they were insane! The lives of all the Patriots were at stake, and the man and the girl, both of them, they were insane!

Maribell swung to her anchors three kilometers offshore from Astoria. The fast-moving waters of the Columbia swept around her toward the ocean some nine kilometers downstream, where waves crashed in a line of breakers five meters high. Getting across the harbor bar was a tricky business, and even in the harbor itself the tides were too fierce for the ship to dock.

Maribell's cranes hummed as they swung cargo lighters off her decks. The air-cushion vehicles

moved gracelessly across the water and over the sandy beaches to the corrugated aluminum warehouses, where they left cargo containers and picked up empties.

In the fortress above Astoria the officer of the guard dutifully logged the ship's arrival into his journal. It was the most exciting event in two weeks. Since the rebellion had ended there was little for his men to do.

He turned from the tower to look around the encampment. *Blasted waste of good armor*, he thought. No point in having self-propelled guns as harbor guards. The armor wasn't used, since the guns were in concrete revetments. The lieutenant had been trained in mobile war, and though he could appreciate the need for control over the mouth of New Washington's largest river, he didn't like this duty. There was no glory in manning an impregnable fortress.

Retreat sounded and all over the fort men stopped to face the flags. The Franklin Confederacy colors fluttered down the staff to the salutes of the garrison. Although as guard officer he wasn't supposed to, the lieutenant saluted as the trumpets sang.

Over by the guns men stood at attention but *they* didn't salute. Friedland mercenaries, they owed the Confederacy no loyalty that hadn't been bought and paid for. The lieutenant admired them as soldiers, but they were not likable.

It was worth knowing them, though, since nobody else could handle armor like they could. He had managed to make friends with a few. Some day, when the Confederacy was stronger, they would dispense with mercenaries, and until then he wanted to learn all he could. There were rich planets in this sector of space, planets that Franklin could add to the Confederacy now that the rebellion was over. With the CD Fleet weaker every year, opportunities at the edges of inhabited space grew, but only for those ready for them.

When retreat ended he turned back to the harbor. An ugly cargo lighter was coming up the broad roadway to the fort. He frowned, puzzled, and climbed down from the tower.

When he reached the gate the lighter had halted there. Its engine roared, and it was very difficult to understand the driver, a broad-shouldered seaman-stevedore who was insisting on something.

"I got no orders," the Earth mercenary guardsman was protesting. He turned to the lieutenant in relief. "Sir, they say they got a shipment for us on that thing."

"What is it?" the lieutenant shouted. He had to say it again to be heard over the roar of the motors. "What is the cargo?"

"Damned if I know," the driver said cheerfully. "Says on the manifest 'Astoria Fortress, attention

Supply Officer.' Look, Lieutenant, we got to be moving. If the captain don't catch the tide he can't cross the harbor bar tonight and he'll skin me for squawk bait! Where's the supply officer?"

The lieutenant looked at his watch. After retreat the men dispersed rapidly and supply officers kept short hours. "There's nobody to off-load," he shouted.

"Got a crane and crew here," the driver said. "Look, just show me where to put this stuff. We got to sail at slack water."

"Put it out here," the lieutenant said.

"Right. You'll have a hell of a job moving it though." He turned to his companion in the cab. "O.K., Charlie, dump it!"

The lieutenant thought of what the supply officer would say when he found he'd have to move the ten-meter-by-five containers. He climbed into the bed of the cargo lighter. In the manifest pocket of each container was a ticket reading 'Commissary Supplies.'

"Wait," he ordered. "Private, open the gates. Driver, take this over there." He indicated a warehouse near the center of the camp. "Off-load at the big doors."

"Right. Hold it, Charlie," Sergeant Major Calvin said cheerfully. "The lieutenant wants the stuff inside." He gave his full attention to driving the ungainly cargo lighter.

The lighter crew worked the crane efficiently, stacking the cargo

containers by the warehouse doors. "Sign here," the driver said.

"I—perhaps I better get someone to inventory the cargo."

"Aw, for Christ's sake," the driver protested. "Look, you can see the seals ain't broke—here, I'll write it in. 'Seals intact, but cargo not inspected by recip—' How you spell *recipient*, Lieutenant?"

"Here, I'll write it for you." He did, and signed with his name and rank. "Have a good voyage?"

"Naw. Rough out there, and getting worse. We got to scoot, more cargo to off-load."

"Not for us!"

"Naw, for the town. Thanks, Lieutenant." The cargo lighter pivoted and roared away as the guard lieutenant shook his head. *What a mess.* He climbed into the tower to write the incident up in the day book. As he wrote he sighed. One hour to dark, and three until he was off duty. It had been a long, dull day.

Three hours before dawn the cargo containers silently opened, and Captain Ian Frazer led his scouts onto the darkened parade ground. Wordlessly they moved toward the revetted guns. One squad formed ranks and marched toward the gates, rifles at slope arms.

The sentries turned. "What the hell?" one said. "It's not time for our relief, who's there?"

"Can it," the corporal of the

squad said. "We got orders to go out on some goddam perimeter patrol. Didn't you get the word?"

"Nobody tells me anythin'—uh." The sentry grunted as the corporal struck him with a leather bag of shot. His companion turned quickly, but too late. The squad had already reached him.

Two men stood erect in the starlight at the posts abandoned by the sentries. Astoria was far over the horizon from Franklin, and only a faint red glow to the west indicated the companion planet.

The rest of the squad entered the guardhouse. They moved efficiently among the sleeping relief men, and when they finished the corporal took a communicator from his belt. "Laertes."

On the other side of the parade ground, Captain Frazer led a group of picked men to the radar control center. There was a silent flurry of bayonets and rifle butts. When the brief struggle ended Ian spoke into his communicator. "Hamlet."

There was no answer, but he hadn't expected one.

Down in the city other cargo containers opened in darkened warehouses. Armed men formed into platoons and marched through the dockside streets. The few civilians who saw them scurried for cover; no one had much use for the Earthling mercenaries the Confederates employed.

A full company marched up the hill to the fort. On the other side,

away from the city, the rest of the Regiment crawled across plowed fields, heedless of radar alarms but careful of the sentries on the walls above. They passed the first line of capacitance wires and Major Savage held his breath. Ten seconds, twenty. He sighed in relief and motioned the troops to advance.

The marching company reached the gate. Sentries challenged them while others in guard towers watched in curiosity. When the gates swung open the tower guards relaxed. The officer of the watch must have had special orders . . .

The company moved into the armored car park. Across the parade ground a sentry peered into the night. Something out there? "Halt! Who's there?" There was only silence.

"See something, Jack?" his companion asked.

"Dunno—look out there. By the bushes—and—my God, Harry, the field's full of men! CORPORAL OF THE GUARD! Turn out the Guard!" He hesitated before taking the final step, but he was sure enough to risk his sergeant's scathing displeasure. A stabbing finger hit the red alarm button and lights blazed around the camp perimeter. The sirens hooted, and he had time to see a thousand men in the field near the camp; then a burst of fire caught him and he fell.

The camp erupted into confusion. The Friedland gunners

woke first. They wasted less than a minute before their officers realized the alarm was real. Then the gunners boiled out of the barracks to save their precious armor, but from each revetment bursts of machine-gun fire cut into them. Gunners fell in heaps as the rest scurried for cover. Many had not brought personal weapons in their haste to serve the guns, and they lost time going back for them.

Major Savage's men reached the walls and clambered over. Alternate sections kept the walls under a ripple of fire, and despite their heavy battle armor the men climbed easily in Washington's lower gravity. Officers sent them to the parade ground where they added their fire to that of the men in the revetments. Hastily-set machine guns isolated the artillery emplacements with a curtain of fire.

That artillery was the fort's main defense. Once he was certain it was secure, Major Savage sent his invaders by waves into the camp barracks. They burst in with grenades and rifles ready, taking whole companies before their officers could arrive with the keys to their weapons racks. Savage took the Confederate Regulars that way, and only the Friedlanders had come out fighting; but their efforts were directed toward their guns, and there they had no chance.

Meanwhile the Earth mercenaries, never very steady troops at



At the fortress headquarters building the alarms woke Commandant Albert Morris. He listened in disbelief to the sounds of battle, and although he rushed out half dressed, he was too late. His command was engulfed by nearly four thousand screaming men. Morris stood a moment in indecision, torn by the desire to run to the nearest barracks and rally what forces he could, but he decided his duty was in the communications room. The capital must be told. Desperately he ran there.

Everything seemed normal inside and he shouted orders to the duty sergeant before he realized he had never seen the man before. He turned to face a squad of leveled rifles. A bright light stabbed from a darker corner of the room, nearly blinding him.

"Good morning, sir," an even voice said.

Commandant Morris blinked, then carefully raised his hands in surrender. "I've no sidearms. Who the hell are you, anyway?"

"Colonel John Christian Falkenberg, at your service. Will you surrender this base and save your men?"

Morris nodded grimly. He'd seen enough outside to know the battle was hopeless. His career was finished too, no matter what he did, and there was no point in letting the Friedlanders be slaughtered. "Surrender to whom?"

The light flicked off and Morris

best, called for quarter; many had not fired a shot. The camp defenders fought as disorganized groups against a disciplined force whose communications worked perfectly.

saw Falkenberg. There was a grim smile on the colonel's lips. "Why, to the Great Jehovah and the Free States of Washington, Commandant . . ."

Albert Morris, who was no historian, did not understand the reference. He took the public address mike the grim troopers handed him. Fortress Astoria had fallen.

Twenty-three hundred kilometers to the west at Allansport, Sergeant Sherman White slapped the keys to launch three small solid rockets. They weren't very powerful birds, but they could be set up quickly, and they had the ability to loft a hundred kilos of tiny steel cubes to a hundred and forty kilometers. White had very good information on the Confederate satellite's ephemeris; he'd observed it for its past twenty orbits.

The target was invisible over the horizon when Sergeant White launched his interceptors. As it came overhead the small rockets had climbed to meet it. Their radar fuses sought the precise moment, then they exploded in a cloud of shot that rose as it spread. It continued to climb, halted, and began to fall back toward the ground. The satellite detected the attack and beeped alarms to its masters. Then it passed through the cloud at fourteen hundred meters per second relative to the shot.

Four of the steel cubes were in its path.

Falkenberg studied the manuals on the equipment in the Confederate command car as it raced northward along the Columbia Valley Road toward Doak's Ferry. Captain Frazer's scouts were somewhere ahead with the captured cavalry equipment, and behind Falkenberg the Regiment was strung out piecemeal. There were men on motorcycles, in private trucks, horse-drawn wagons, and on foot.

There'd be more walking soon. The captured cavalry gear was a lucky break, but the Columbia Valley wasn't technologically developed. Most local transport was by animal power, and the farmers relied on the river to ship produce to the deep-water port at Astoria. The riverboats and motor fuel were the key to the operation. There wasn't enough of either.

Glenda Ruth Horton had surprised Falkenberg by not arguing about the need for haste, and her ranchers were converging on all the river ports, taking heavy casualties in order to seize boats and fuel before the scattered Confederate occupation forces could destroy them. Meanwhile Falkenberg had recklessly flung the Forty-second northward.

"Fire fight ahead," his driver said. "Another of them one-battery posts."

"Right." Falkenberg fiddled with the unfamiliar controls until the

map came into sharper focus, then activated the comm circuit.

"Sir," Captain Frazer answered. "They've got a battery of 105's and an MG company in there. More than I can handle."

"Right. Pass it by. Let Miss Horton's ranchers keep it under siege. Found any more fuel?"

Frazer laughed unpleasantly. "Colonel, you can adjust the carburetors in these things to handle a lot, but Christ, they bloody well won't run on parafin. There's not even farm machinery out here! We're running on fumes now, and damned low-grade fumes at that."

"Yeah." The Confederates were getting smarter. For the first hundred kilometers they took fueling stations intact, but now unless the Patriots were already in control the fuel was torched before Frazer's fast-moving scouts arrived. "Keep going as best you can, Captain."

"Sir. Out."

"We got some reserve fuel with the guns," Sergeant Major Calvin reminded him. The big RSM sat in the turret of the command caravan, and at frequent intervals fondled the thirty-millimeter cannon there. It wasn't much of a weapon, but it had been a long time since the RSM was gunner in an armored vehicle. He was hoping to get in some fighting.

"No. Those guns have to move east to the passes. They're sure to send a reaction force from the capital, Top Soldier."



But would they? Falkenberg wondered. Instead of moving northwest from the capital to reinforce the fortress at Doak's Ferry, they might send troops by sea to retake Astoria. It would be a stupid move, and Falkenberg counted on the Confederates acting intelligently. As far as anyone knew, the Astoria Fortress guns dominated the river mouth.

A detachment of Weapons Battalion remained there with antiaircraft rockets to keep reconnaissance at a distance, but otherwise Astoria was held only by a hastily-raised Patriot force stiffened with a handful of mercenaries. The Friedlander guns had been taken out at night.

If Falkenberg's plan worked, by the time the Confederates knew what they faced, Astoria would be strongly held by valley Patriot armies, and other Patriot forces

would have crossed the water to hold Allansport. It was a risky battle plan, but it had one merit: it was the only one that could succeed.

Leading elements of the Regiment covered half the six hundred kilometers north to Doak's Ferry in ten hours. Behind Falkenberg's racing lead groups the main body of the Regiment moved more ponderously, pausing to blast out pockets of resistance where that could be quickly done, otherwise bypassing them for the Patriot irregulars to starve into submission. The whole valley was rising, and the further north Falkenberg went the greater the number of Patriots he encountered. When they reached the four-hundred-kilometer point, he sent Glenda Ruth Horton eastward toward the passes to join Major Savage and the Friedland artillery. Like the Regiment, the ranchers moved by a variety of means: helicopters, trucks, mules, and on foot.

"Real boot straps," Hiram Black said. Black was a short wind-browed rancher commissioned a colonel by the Free States Council and sent with Falkenberg to aid in controlling rebel forces. Falkenberg liked the man's dry humor and hard realism. "General Falkenberg, we got the damnedest collection in the history of warfare."

"Yes." There was nothing more to say. In addition to the confused transport situation, there was no standardization of weapons: they

had hunting pieces, weapons taken from the enemy, the Regiment's own equipment, and stockpiles of arms smuggled in by the Free States before Falkenberg's arrival. "That's what computers are for," Falkenberg said.

"Crossroad coming up," the driver warned. "Hang on." The crossing was probably registered by the guns of an untaken post eight kilometers ahead. Frazer's cavalry had blinded its hilltop observation radars before passing it by, but the battery would have had brief sights of the command car.

The driver suddenly halted. There was a sharp whistle, and an explosion rocked the caravan. Shrapnel rattled off the armored sides. The car bounded into life and accelerated.

"Ten credits you owe me, Sergeant Major," the driver said. "Told you they'd expect me to speed up."

"Think I wanted to win the bet, Carpenter?" Calvin asked.

They drove through rolling hills covered with the golden tassels of corn-like plants. Genetic engineering had made New Washington's native grain one of the most valuable food crops in space. Superficially similar to Earth maize, the "corn" had a growing cycle of two local years. Toward the end of the cycle hydrostatic pressures built up until it exploded, but if harvested in the dry period it was high-pro-

tein dehydrated food energy, palatable when cooked in water, and good fodder for animals as well.

"Ought to be getting past the opposition now," Hiram Black said. "Expect the Feddies'll be pulling back to the fort at Doak's Ferry from here on."

His estimate was confirmed a half hour later when Falkenberg's comm set squawked into action. "We're in a little town called Mad-selin, Colonel," Frazer said. "Used to be a garrison here, but they're running up the road. There's a citizens' committee to welcome us."

"To hell with the citizens' committee," Falkenberg snapped. "Pursue the enemy!"

"Colonel, I'd be very pleased to do so, but I've no petrol at all."

Falkenberg nodded grimly. "Captain Frazer, I want the scouts as far north as they can get. Isn't there *any* transport?"

There was a long silence. "Well, sir, there are bicycles . . ."

"Then use bicycles, by God! Use whatever you have to, Captain, but until you are stopped by the enemy you will continue the advance, bypassing concentrations. Snap at their heels— Ian, they're scared. They don't know what's chasing them and if you keep the pressure on they won't stop to find out. Keep going, laddie. I'll bail you out if you get in trouble."

"Aye, aye, Colonel. See you in Doak's Ferry."

"Correct. Out."

"Can you keep that promise, General?" Hiram Black asked.

Falkenberg's pale blue eyes stared through the rancher. "That depends on how reliable your Glenda Ruth Horton is, Colonel Black. Your ranchers are supposed to be gathering along the valley. With that threat to their flanks the Confederates will not dare form a defense line south of Doak's Ferry. If your Patriots don't show up—" He shrugged. Behind him the Regiment was strung out along three hundred kilometers of roads, its only flank protection its speed and the enemy's uncertainties. "It's up to her in more ways than one," Falkenberg continued. "She said the main body of Friedland armor was in the capital area."

Hiram Black sucked his teeth in a very unmilitary manner. "General, if Glenda Ruth's sure of something, you can damn well count on it."

Sergeant Major Calvin grunted. The noise spoke his thoughts better than words: it was a hell of a thing when the Forty-second had to depend for its life on a young colonial girl.

"How did she come to command the valley ranchers anyway?" Falkenberg asked.

"Inherited it," Black answered. "Her father was one hell of a man, General. Got himself killed in the last battle of the first revolution. She'd been his chief of staff, and old Josh trusted her more than he

did most of his officers. So would I, was I you, General."

"I already have." To Falkenberg the Regiment—his Regiment, formed from the Forty-second Commonwealth Marines he'd commanded before his court martial—was more than a mercenary force. It was an instrument perfectly forged, its existence and perfection its own reason for existence like any work of art. Because it was a military force it had to fight battles and take casualties, and the men who died in battle were mourned—but they weren't the Regiment, which could exist when every man now in it was dead.

The Forty-second had faced defeat before and might find it again—but this time the Regiment itself was at hazard. Falkenberg was gambling not mere lives, but the Forty-second.

He studied the battle maps as they raced northward. By keeping the enemy off balance, one regiment could do the work of five. Eventually, though, the Confederates would no longer retreat. They were falling back on their fortress at Doak's Ferry, gathering strength and concentrating for a battle that Falkenberg could never win. Therefore that battle must not be fought until the ranchers had concentrated. Meanwhile, the Regiment must bypass Doak's Ferry and turn east to the mountain passes, closing them before the Friedland armor and Covenant

Highlanders could debouch onto the western plains.

"Think you'll make it?" Hiram Black asked. He watched as Falkenberg manipulated controls to move symbols across the map tank in the command car. "Seems to me the Friedlanders reach the pass before you can."

"They will," Falkenberg said. "And if they get through, we're lost." He twirled a knob, sending a bright blip representing Major Savage with the artillery racing diagonally from Astoria to Hillyer Gap while the main force of the Regiment continued up the Columbia, then turned east to the mountains, covering two legs of a triangle. "Jerry Savage could be there first, but he won't have enough force to stop them." Another set of symbols crawled across the map. Instead of a distinctly formed body, this was a series of rivulets coming together at the pass. "Miss Horton has also promised to be there with reinforcements and supplies—enough to hold in the first battle, anyway. If they delay the Friedlanders long enough for the rest of us to get there, we'll own the entire agricultural area of New Washington. The revolution will be better than half over."

"And if she can't get there—or they can't hold the Friedlanders and Covenanters?" Hiram Black asked.

Sergeant Major Calvin grunted again.

TO BE CONCLUDED

A black and white photograph of a complex printed circuit board (PCB) with numerous integrated circuits and traces. The board is densely packed with components, including several large, dark, rectangular integrated circuits (chips) and many smaller, circular components. The traces are intricate and form a complex network across the board. The overall appearance is that of a high-density electronic assembly.

minicomputers

In one of the acknowledged classics of science fiction, "The World of Null A," several of the major characters were unforgettable; some of the most memorable of them, however, were not alive. One was the Games Machine, which was, in modern terminology, an interactive, multiterminal, voice-actuated, time-sharing computer capable of dealing with at least twenty-five thousand people simultaneously. And along with the Games Machine, there were a number of other electronic devices, much smaller, that seemed to act with intelligence and awareness. There were the "robot-planes," fully automated, voice-actuated aircraft-taxis. And there were the "lie detectors," which were designed for only one function—determining the truthfulness of statements made in their presence—yet each spoke idiomatic English. Since the lie detectors were portable, this meant that full-fledged computerlike devices had been developed of a very small size. Indeed, one of the most devastating criticisms raised (by Damon Knight) against the story was the doubt that small and economical tabletop devices duplicating the functions of a human brain could be developed—even by the Twenty-fifth Century World of Null A.

While we do not have computers that can duplicate the functions of a human brain, we do have minicomputers, which make criticism of

Null A's devices far less devastating.

For example, doctors in San Diego are presently developing a minicomputer-based system to monitor the vital functions of six patients simultaneously. Though not as sophisticated as Null A's lie detectors, monitoring the vital signs of one subject for possible untruths should not be that big a step. And while we do not yet have any operational robotplanes, we do have in progress several experimental schemes in the field of personal rapid transit (PRT) that employ minicomputers to guide individual vehicles from one point to various destinations.

In perhaps no other field has science fiction become science fact more rapidly than in minicomputer technology. And not only with regard to the Null A stories either. Take, for example:

A 1954 story entitled "John's Other Practice," by Winston Marks, which told of small computerlike devices that interviewed people concerning their medical symptoms, and as a result, printed diagnoses. A Twenty-first Century device.

Fact: At the University of Wisconsin, a computerized patient interviewing system was developed a few years ago. The computer flashes questions on a screen, and from the responses of the patient, it prepares a complete medical history interview. The minicomputer

minicomputers

The "desktop" computer is here, but it's much too versatile and rugged to keep on a desk.

STEPHEN A. KALLIS, JR.

does not make diagnoses, but it does deliver the report to a doctor, who in turn makes the diagnoses.

Fact: In Canada, a minicomputer is used by a hospital to determine whether babies are born deaf. The minicomputer monitors the baby's vital functions while randomly generating noises that he should react to. Comparison of the results to the baby's functions indicates whether he is deaf.

Or consider Isaac Asimov's 1956 short story, "Someday," in which a small computer was used to generate stories for children. (The precise size of the computer was not specified, but since it was moved by an eleven-year-old boy, we can assume that it was not too large.)

Fact: In 1970, a junior art student at Carleton College in Minnesota used a minicomputer to help plot a movie script. He programmed the computer to generate sentences that would serve as ideas, suggestions, and instructions to be incorporated into the making and the dialogue of a film.

Fact: In New York, a minicomputer is used to produce con-

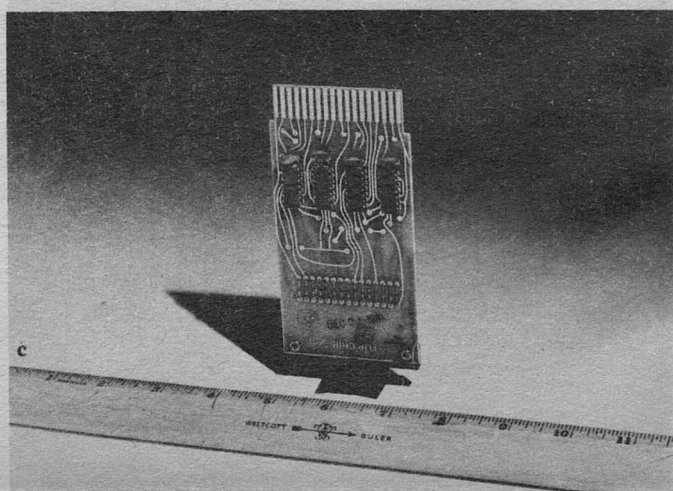
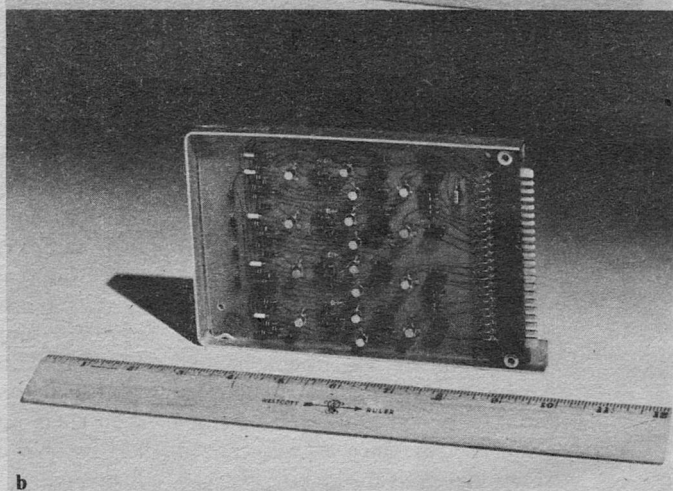
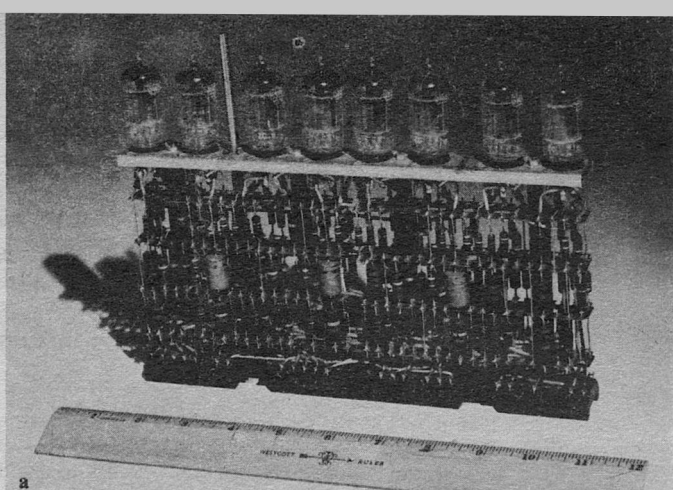
trol instructions to a special camera setup to produce animated motion pictures. Using the minicomputer has permitted the head of the production facilities to shoot a film in nine minutes that previously would have taken several hours to produce. At least three other motion picture studios in the United States and Canada are now computerizing their equipment.

Or how about another Asimov story, published in a 1957 anthology and entitled "The Fun They Had," in which a small computer is used in the year 2157 to teach children their schoolwork. Each home has its own computer, so schooling is private.

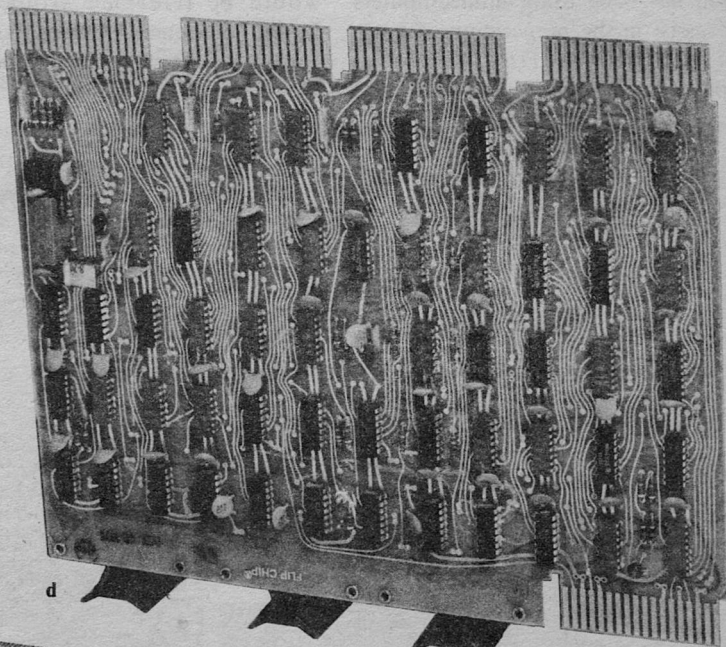
Fact: In 1973, there are literally dozens of schools using minicomputer systems for what is called "computer-aided instruction." Further, a few families have purchased their own computers, so that private instruction by computer might not be so far-fetched.

Or consider a Heinlein story, written in 1956, which was supposed to take place in 1970. "The Door into Summer" described a

**FIGURE 1.
THE SHRINKING
COMPUTER**



- a) A first-generation computer element. This tube assembly was not the earliest of the tube computers; it used the so-called "peanut" tubes. Even so, it represents only one logic element.
- b) A second-generation logic element. Transistors reduced the physical size of the computer and decreased the required power consumption, but the computers assembled from these elements are still considered bulky by present standards.
- c) A third-generation logic element. By using integrated circuits instead of individual transistors, computer sizes could be reduced to the point where a true "desktop" computer became available.
- d) Logic section from a modern minicomputer using medium scale integration. Here, the "parts density" is so great that an appreciable part of the whole computer can be placed on one "board." One of the small rectangular medium-scale-integration "chips" is equivalent to the entire first-generation logic element shown in a.



number of automated devices, among them a gadget called Drafting Dan. It was a device that might be termed an automated drafting board, producing engineering drawings (and signatures) through entries on a keyboard.

Fact: Minicomputer and slightly larger "midcomputers" have been used in drafting, mapmaking, and architectural work since the late 1960's. A medium-scale computer has been in use by the Royal College of Arts in London, England to help draw maps and navigation charts. Digital Equipment Corporation has been using minicomputers to assist in the preparation of automated engineering drawings (plotted out on a large computer

from input tapes prepared by the minicomputer). And a prominent architectural firm in Boston is using a medium-scale computer to develop architectural plans. (It presents the drawings on a screen, permits the designer to alter them, stores the final information, and when requested, plots out drawings on paper.)

Despite some wrong guesses about other aspects of automation in this story, Heinlein came close with Drafting Dan. And, just as no science-fiction writer ever predicted that the first footstep on the Moon would be televised around the Earth, no science-fiction writer (that I know of) ever predicted some of the applications to which comput-



Figure 2. The step after the "desktop" minicomputer is, logically, the computer built into the desk. Not a stunt, this unit is a commercially available system using a Digital Equipment Corporation PDP-8/M minicomputer. It runs on ordinary house current.

ers are currently being put.

Consider the following:

Fact: Today, a small computer is used aboard a Department of Interior research vessel for oceanographic and fisheries research. The system, which incorporates minicomputers, records such information as water salinity and temperature at various ocean depths.

Fact: Minicomputers in typesetting systems have revolutionized the printing industry. Type can be set with greater speed and accuracy thanks to systems employing minicomputers that not only set type, but line it up and even hyphenate words when required. Analog is typeset by a system employing a minicomputer.

Fact: Supplies of natural gas offshore from Australia are piped to shore using a system in which a minicomputer monitors the entire operation. The system permits the city of Melbourne and its surrounding industrial communities to be supplied from a single source. In addition to monitoring the operation of the system, the minicomputer produces a daily, weekly, monthly, and cumulative production report from each offshore platform, a well test report, and reports of the producing times for each well.

Fact: In New York City, the pollution level of the atmosphere is monitored by a system of sensors all tied into a minicomputer. From the inputs, an overall picture of the

city environment can be gathered rapidly.

Fact: In Canada, a minicomputer is used to analyze flight recorder records from commercial aircraft to increase flight safety and to investigate causes of crashes when these occur. Another minicomputer system is used to check out aircraft between flights to increase further the safety of air travel.

At this point, it might be good to stop and catch a breath. And to ask a question: What has happened in the last few years to make these applications possible? Obviously, the development of smaller and smaller components has made it possible to develop smaller and smaller computers. But "minicomputers" are not merely "toy computers." They are powerful devices in their own right. Along with miniaturization there has also been increased sophistication in computer applications.

Originally, computers were primarily looked upon as devices to perform the job of calculating thousands to millions of times faster than humans could. Thus, the computer was thought of as a sort of super-adding-machine, ideally suited to the business world for invoicing, billing, and so forth. And the earliest computers, being analog devices which made computations on the basis of compared magnitudes, were merely complex calculating machines. But then digital computers were introduced,

and the technology of computers advanced rapidly.

The first digital computers employed vacuum tubes. Thus they were large, required a highly controlled environment, and generated a lot of heat. It was said in the days of these early computers that to duplicate the functions of a human brain with one of them, it would be necessary to construct the computer as large as a tall New York skyscraper, power it with the entire hydroelectric output of Niagara Falls, and use the Falls themselves to cool the machine sufficiently. Hardly very practical.

After the tube, there came the transistor. And transistorized computers were significantly smaller than their tube-bearing ancestors, but even with sophisticated packaging, the computers were still rather bulky.

The next stage was to introduce integrated circuits. Since an integrated circuit acts exactly like a transistor circuit, but takes up less space, considerably more computer could be packed into less space.

Now we have Medium Scale Integration (MSI), which employs "chips" similar to integrated circuits, but which contain considerably more circuit elements than is the case of integrated circuits—in a package only a little larger than an integrated circuit piece. MSI elements permit an impressive "parts density" in a relatively small space.

It was the development of MSI

elements that made it possible to build what the industry calls "mini-computers."

Now before we can discuss mini-computers in detail, we have to define what we are talking about. If we remember that the smallest unit of information that a circuit can handle is called a "bit," and we realize that bits are handled in groupings a fixed number of bits in length—called "words"—the definition becomes easier. The first mini-computer, the PDP-5, was introduced by Digital Equipment Corporation in the mid-1960's and sold for around \$20,000. It was organized to operate with words 12 bits long, and its memory contained not less than 4096 words. Since then, prices on mini-computers have decreased steadily. From these parameters, a mini-computer is defined as a general-purpose digital computer employing words between 8 and 18 bits in length and having a memory capacity of at least 4096 words (4 K words, in computer parlance). If the device does not meet all these criteria, it is not a minicomputer.

Minicomputers have faster operating speeds than larger computers, and they are considerably more rugged. However, they also have considerably less internal memory capacity. As a consequence, they have tended to be used somewhat differently than their big brothers.

The greatest percentage of mini-computers are used in what com-

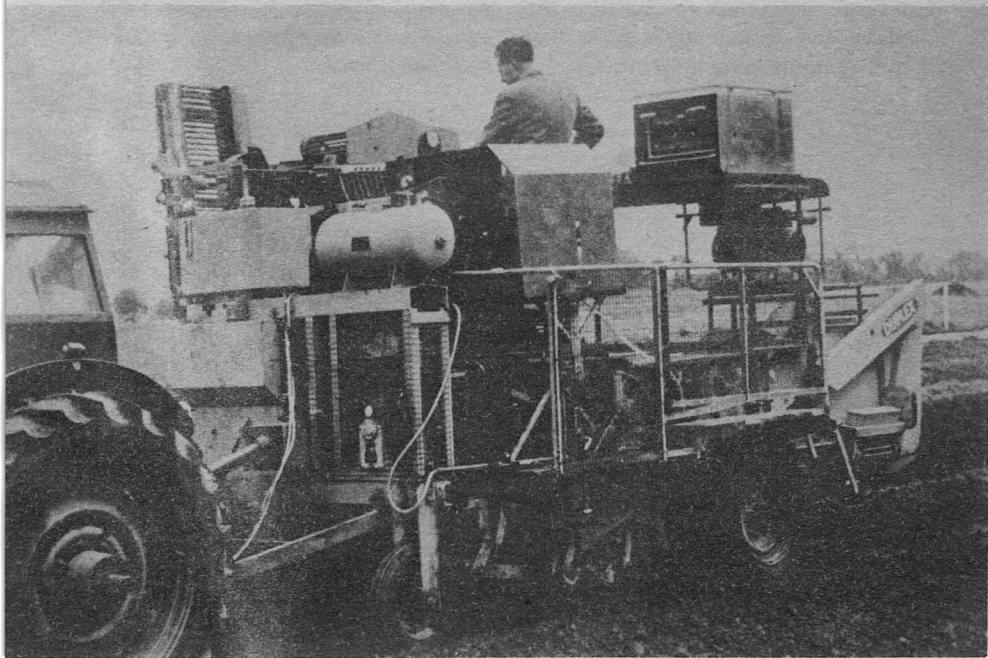
puter people call "dedicated" applications. By this it is meant that the minicomputer uses all its resources to do a single type of job. This job could be a control function, such as operating fabrication machinery in a factory, analytical work, such as evaluating measurements from laboratory instruments such as spectrometers, calculations, or inventory control. And by restricting the minicomputer to performing the dedicated application, it can be used efficiently.

Another characteristic common

Figure 3. One advantage of the minicomputer is that it can "go where the action is." This one is monitoring the performance of experimental farm machinery. For the "field work," the rugged minicomputer has been mounted in an enclosure on the tractor.

to minicomputer operations is that many of them are interactive. By this it is meant that the computer is connected to a process or terminal so that it can react to and with external stimuli at the time the action is taking place. This is in sharp variance with much of the activities of larger computers, many of which tend to perform their analyses and calculations after-the-fact.

Finally, while large computer systems have to be enclosed in a fairly rigidly controlled environment—air conditioning, dust filters, and the like—the minicomputer tends to thrive in extreme environments. Normal production model minicomputers are routinely chilled to 32°F, and heated to 130°F, while running, as part of the normal manufacturing process. They



are also vibrated, and samples are subject to 20-G shock tests. Hardly the sort of thing that one would do to the large-scale computers.

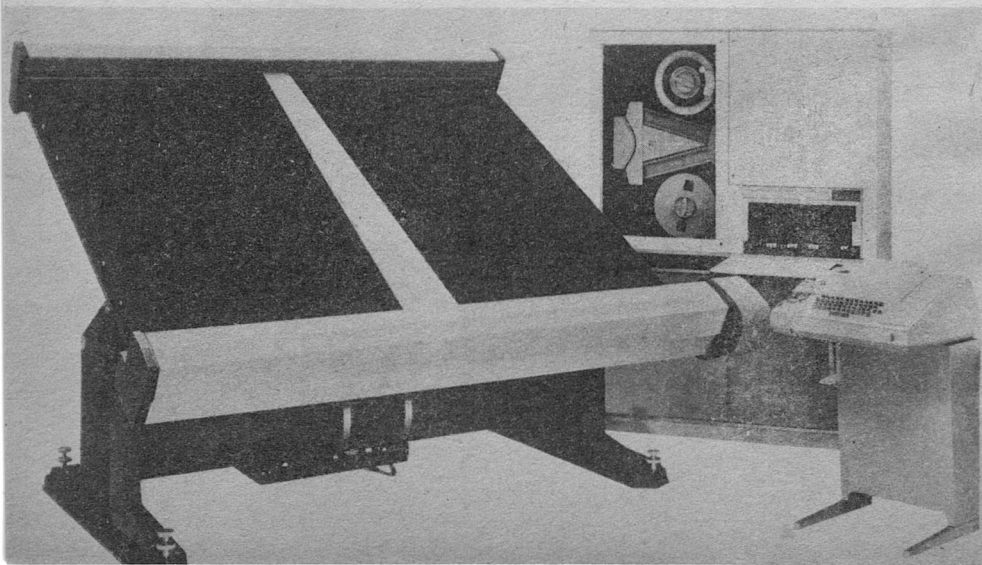
All in all, the minicomputer's characteristics make it the kind of device that can be used in a lot of places for a lot of different things. Thus, minicomputers are used not only in offices, but in steel mills, in oil fields, aboard ships, in baseball stadiums, and many other places where one would not normally think of looking for a computer. Some are even in homes and apartments.

At the present moment, there are something like 33,000 minicomputers in use. If we suppose that only one-half of one percent of them are put to "unconventional" uses, it would still take several pages just to describe the many and varied applications that minicomputers are employed in.

A better approach would be to look for classes of applications, and to discuss the impact of minicomputers in these areas.

Perhaps the most "conventional" application of a minicomputer is in the scientific laboratory. Minicomputers are connected directly to instruments to permit experimenters to receive data almost "instantly," while the experiment is still in progress. In some cases, the minicomputer may even be given control of the analytical instrument, permitting it to position the sample specimen. In any event, having the

Figure 4. Heinlein's "Drafting Dan"? Designed for applications in computer-aided design, this minicomputerized digital drafting system has been commercially available since about the time Heinlein predicted his automated drafting machine would be invented in his "The Door Into Summer."



data immediately available permits an experimenter a whole new scope to his specialty.

Previously, when experiments were run that required considerable analysis, it was necessarily done after-the-fact, frequently on a large data processing computer. Even for simple jobs, the routine had built-in delays. First, the experimental values had to be recorded. These then had to be transformed into a form acceptable to the computer—usually keypunched to punched cards. These were then fed into the computer, which would process the information rapidly, and burp out the answer on a line printer. The information would then have to be sent back to the experimenter, who would view the results. Just to make matters worse, the “comp center” with the large computer is usually located some distance away from the test, and there is the inevitable delay in physically transporting the input to the computer and the output to the experimenter.

Then, of course, it has been assumed to this point that the experiment went perfectly to begin with. Imagine the horror of someone doing diffraction work to discover that his specimen was slightly misaligned. Or, even more simply, suppose that the experimenter, while looking over his results, saw a curious or anomalous result. He might wish to investigate it, but the experiment took place some days ago,

and he would be required to set the whole thing up again so that he could look into the interesting detail.

The best thing that can be said about that type of analysis is that it is better than doing the whole job by pencil, paper, and adding machine.

The minicomputer changed all that. Because the mini could be connected directly to the experiment and give the results almost as fast as the event was taking place, the experimenter suddenly found that he had a degree of control that had been lacking before. If an interesting or anomalous situation arose during the course of an experiment, the experimenter was able to investigate the situation at that time. This has helped to make the experimental process more “creative” than heretofore; and, of course, the virtually instantaneous availability of experimental results has increased the number of investigations possible in a given time period.

A secondary result has been that the power of computer analysis has been brought to areas where it has been heretofore impossible. For instance, scientists at the University of Michigan are conducting experiments to determine aspects of how sound waves travel in ocean water. Since there is relatively little sea water in or near Michigan, such experiments require field trips. They have designed a system, employing

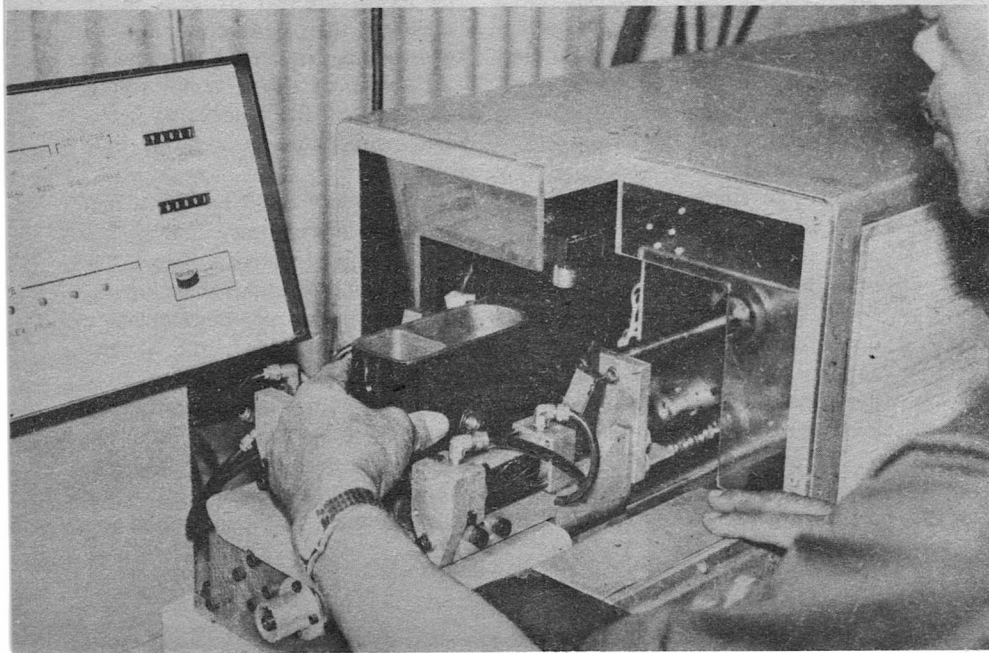
a minicomputer, that is transportable to experimental sites at seacoast locations. The nature of their experiments requires on-site computer analyses, and the minicomputer permits them to have it.

From the control of experiments, it is a simple step to the control of manufacturing processes. Both may require hyperfast reaction times—the minicomputer's are measured in microseconds—and infinite patience, something that any machine has. The job may be supervising other devices on an assembly line, mixing up huge batches of cookie dough, or merely checking on the conditions in a steel foundry. In industrial applications, the minicomputer's ruggedness has made it an ideal unit to use.

Each application of mini-

computers has opened up new vistas. The control aspects of the minicomputer made it an ideal means of preparing instructions for previously automated machine tools. The machine tools had operated on

Figure 5. An automated device using the principles of electronic pattern recognition, laser technology, and computerized numerical control is about to inspect the surface of a brake cylinder for flaws. As the component enters the bore scanner, a laser beam probes the inner bore of the cylinder body. Any flaw is "recognized" and "reported" to a Digital Equipment Corporation PDP-8/L minicomputer which uses pattern recognition techniques to interpret the signals. The device was developed by the Advanced Product Division of Bendix Corporation for its Hydraulics Division.



the basis of using sensors that read the instructions from holes punched in paper tape. Originally, the process was done manually; this required a person with a considerable degree of specialized training to punch out the proper characters on a paper tape punch. And each move made by the machine tool elements would have to be punched in, in detail. By developing a special program for the minicomputer, it could be made to respond to simple commands similar to: "L 4.5 H-1/4D-1/2I," which could represent the command, "Along a line 4½ inches long, drill a series of holes ¼ inch deep at equally spaced intervals of ½ inch." The tape that the computer would generate would be identical to an equivalent tape punched out laboriously by hand, but it could be done by an entry of only 9 characters rather than having to punch out dozens to hundreds by hand. The majority of these "numerical control" tapes for machine tools are generated by minicomputer.

But this application led to others. First, other industries use similar control tapes. So, once it was realized that a minicomputer could create such tapes, it was obvious that they would find their way into these areas. Typesetting was one such area. Another such area was animated motion pictures. Here, control of a specific type was required: with the tapes, the operator of the equipment was ensured per-

fect repeatability if he needed it, and he could prepare (and execute) his operations at a much faster rate.

And while the impact of the control-tape-generation application is still spreading, the machine tool industry is already beginning to hook up minicomputers directly to their machine tools. Usually, these minicomputers work through more simple logic assemblies that actually control the machine tool; thus, the minicomputer operates as a "supervisor" and can actually be responsible for a number of simultaneously operating machine tools.

As noted previously, as technology advanced, minicomputer size has been decreasing while the power and speed has been increasing. The original minicomputer, the PDP-5, fit in an industrial rack and stood some six feet high. Its immediate successor, the PDP-8, was more compact. It even had a "desktop" model—if the user didn't want to put too much else on his desk. The most recent descendant of that first computer is the PDP-8/F. It is quite small, being only ten inches high, just over a foot-and-a-half wide, and slightly more than a foot deep. Volumetrically, it is only about twenty percent as big as the original PDP-8, but it will run all the programs that the original machine could, and some that the original machine can't. And it is about twenty percent faster than the original machine was. And it

costs less than one-fourth of what the original did!

Further, paralleling the development of improved hardware has been a great improvement in software. In the early days of minicomputers, in order to program one, it was necessary to use "machine language" or "assembly language"—programming schemes that closely paralleled the operations of the computer and required the acquisition of a specific type of programming skill. But as the art of the minicomputer increased, a number of programs developed that made it possible for minis to operate in what is termed a "high-level" programming language. Languages like FORTRAN, BASIC, and LISP were developed for use with minicomputers—languages previously available only on large-scale computers. Other high-level languages like FOCAL and DIBOL were developed to take advantage of the minicomputer's characteristics. And these have been refined by the manufacturers so that the FORTRAN run on many a minicomputer is industry-compatible with the FORTRAN run on a large computer (also true of BASIC). Thus, we see jobs previously restricted to large computers being performed by the minis.

Already, this has had an impact. In many cases, engineers and scientists who merely wished to use a larger computer's timesharing terminal for performing calculations

have discovered that they can perform the same analyses on a minicomputer. And experience has shown that the rental required for a timesharing terminal is usually enough to *purchase* a mini in six months to a year.

Certain trends are obvious. With the availability of powerful computers in ever-less-expensive units, minicomputers will continue to proliferate. In fact, a few have already begun to appear in homes (one is even owned by an amateur astronomer who keeps his in his New York City apartment); and although minicomputers in homes are not likely to be common soon, more will doubtless appear.

Of course, speculation is a dangerous business, but there are a few things about minicomputers that are fairly easy to predict, such as:

1. Still more powerful computers will be built that will take up less space than present-day computers do. This suggests minicomputers as small as a shoebox, or smaller. It also suggests that minicomputers the size of present-day ones will be considerably more powerful and will take on more of the aspects that today are exclusively the domain of the large computer systems.

2. Minicomputers will become more portable. Theoretically, existing minicomputers could be battery-operated; however, since the lightest of the present-day minicomputers (as of this writing)

weighs slightly over 30 pounds it is hardly what we would call "portable," if by that we mean "hand portable"—though at that, some of the early battery-operated "portable" tube radios had at least that much mass. Already, minicomputers can stand a widely varying environment. So, minicomputers will be found in more and more unusual places. Possibly, minicomputers may be included in self-propelled systems for data gathering. (Does this make a robot? I leave the question to the semanticists.)

3. Minicomputers will interact more with each other and with larger computers. Computers can communicate very rapidly with each other via communication lines, and the exchange of data can be enormous over a short period of time.

4. Minicomputers may someday produce other minicomputers, without human help. Already, minicomputers are used on production lines to monitor and test other minicomputers that are being produced. Other minicomputers are being used to test incoming components to determine whether they are acceptable, and yet other minicomputers are used to check memory and logic subassemblies.

But speculations aside, the new vistas opened up by the minicomputer are vast. Today, in as simple an act as taking a transatlantic flight, a passenger is con-

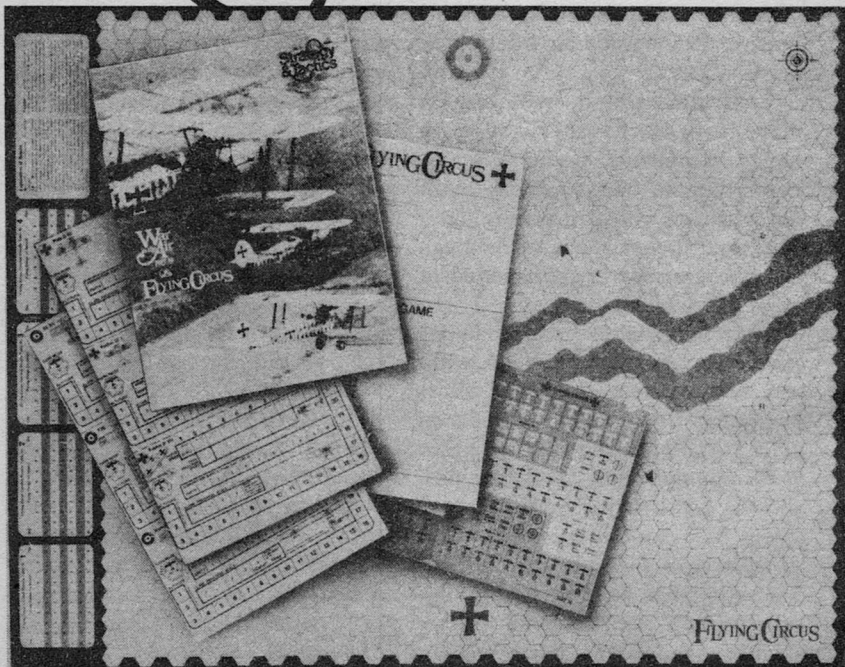
stantly under the influence of minicomputers. He can buy a ticket through a system controlled by a minicomputer. The aircraft he will board may have been checked for safety by a minicomputer. If he has a meal on the flight consisting of chicken, fruit juice, crackers, and a soft drink, each of the ingredients may have been raised, processed, or packed by a minicomputer system. His baggage might be handled by a minicomputer system, and the messages that the pilot of his aircraft receives in flight will have been switched through a minicomputer system as soon as the aircraft is in the Northeast Atlantic region.

Tomorrow, who knows? But with the rapidly spreading variety of uses for minicomputers, the next few years will be particularly interesting to watch. It may be a case of the science-fiction writers trying to keep up with the technology. ■

ABOUT THE AUTHOR

Stephen A. Kallis, Jr. works for Digital Equipment Corporation in Maynard, Massachusetts. He is co-author with Donald Murphy of "Introduction to Data Communication" and has been published in such periodicals as *Computers and Automation*, *Scientific American*, *Popular Electronics*, *American Rocket Society Journal*, and *American Cinematographer*. Mr. Kallis has his own PDP-8/E minicomputer.

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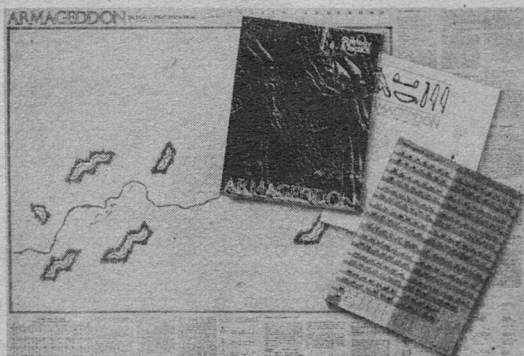
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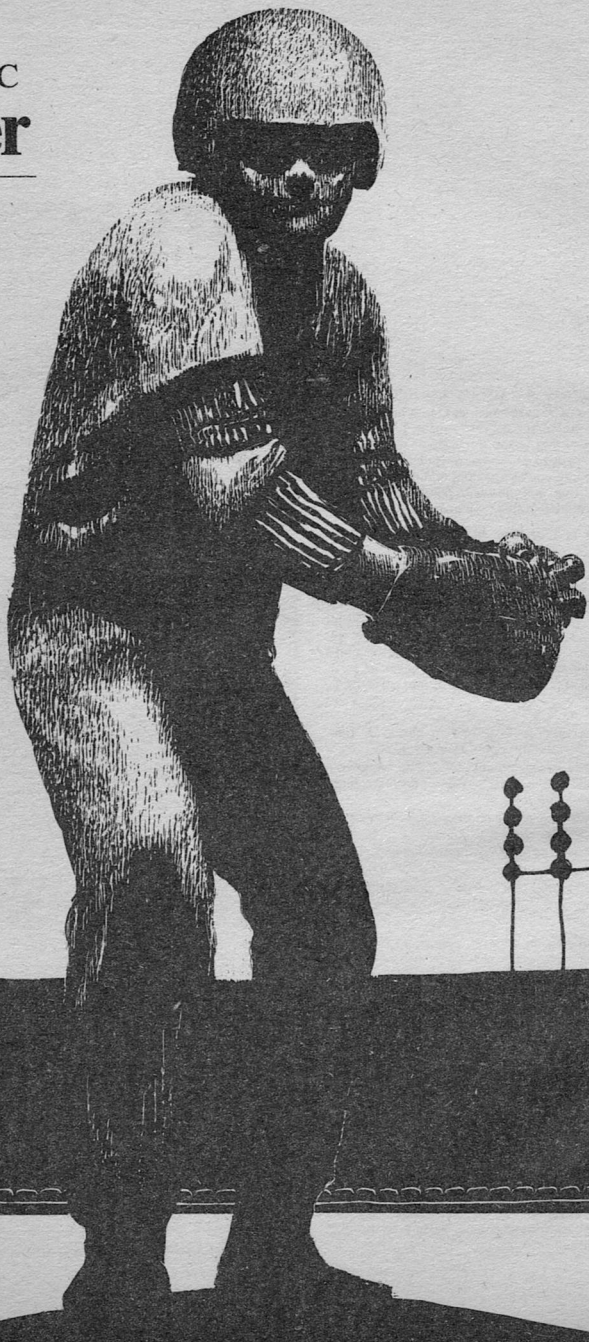
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GEORGE ALEC
Effinger



John Schoenherr

There were less than a thousand spectators in the little ball park, their chatter nearly inaudible compared to the heartening roar of the major league crowds. The fans sat uneasily, as if they had wandered into the wake of a legendary hero. No longer was baseball the national pastime. Even the big league teams, roving from franchise to franchise in search of yesterday's loyal bleacher fanatics, resorted to promotional gimmicks to stave off bankruptcy. Here, the Bears were in third place, with an unlikely shot at second. The Tigers had clinched the pennant early, now leading the second-place Kings by nine games and the Bears by an even more discouraging number. There was no real tension in this game—oh, with a bad slump the Bears might fall down among the cellar teams, but so what? For all intents and purposes, the season had ended a month ago.

There was no tension, no pennant race any longer, just an in-

expensive evening out for the South Carolina fans. The sweat on the batter's hands was the fault of his own nervous reaction; the knots in his stomach were shared by no one. He went to the on-deck circle for the pine-tar rag while he waited for the new pitcher to toss his warm-ups.

The Bear shortstop was batting eighth, reflecting his anemic .219 average. Like a great smoothed rock this fact sat in the torrent of his thinking, submerged at times but often breaking through the racing surface. With his unsteady fielding it looked as if he would be out of a job the next spring. To the players and to the spectators the game was insignificant; to him it was the first of his last few chances. With two runs in already in the eighth, one out and a man on first, he went to the plate.

He looked out toward the kid on the mound before settling himself in the batter's box. The pitcher's name was Rudy Ramirez, he was

NAKED TO THE INVISIBLE EYE

The one thing a dying institution does not need
is an overly brilliant performer.

only nineteen and from somewhere in Venezuela. That was all anybody knew about him; this was his first appearance in a professional ball game. The Bear shortstop took a deep breath and stepped in.

That kid Ramirez looked pretty fast during his warm-ups, he thought. The shortstop damned the fate that made him the focus of attention against a complete unknown. The waters surged; his thoughts shuffled and died.

The Venezuelan kid looked in for his sign. The shortstop looked down to the third-base coach, who flashed the *take* signal; that was all right with him. *I'm only batting .219, I want to see this kid throw one before . . .*

Ramirez went into his stretch, glanced at the runner on first . . .

With that kid Barger coming off the disabled list I might not be able to . . .

Ramirez' right leg kicked, his left arm flung back . . .

The shortstop's shrieking flood of thought stilled, his mind was as quiet as the surface of a pond stagnating. The umpire called the pitch a ball.

Along the coaching lines at third Sorenson was relaying the *hit-and-run* sign from the dugout. *All right, thought the shortstop, just make contact, get a good ground ball, maybe a hit, move the man into scoring position . . .*

Ramirez nodded to his catcher, stretched, checked the runner . . .

My luck, I'll get an easy double-play ball to the right side . . .

Ramirez kicked, snapped, and pitched . . .

The shortstop's mind was silent, ice-cold, dead, watching the runner vainly flying toward second, the catcher's throw beating him there by fifteen feet. Two out. One ball and one strike.

Sorenson called time. He met the shortstop halfway down the line.

"You damn brainless idiot!" said the coach. "You saw the sign, you *acknowledged* the sign, you stood there with your thumb in your ear looking at a perfect strike! You got an awful short memory?"

"Look, I don't know—"

"I'll tell you what I *do* know," said Sorenson. "I know that'll cost you twenty dollars. Maybe your spot in the lineup."

The shortstop walked to the on-deck circle, wiped his bat again with the pine-tar. His head was filled with anger and frustration. Back in the batter's box he stared toward the pitcher in desperation.

On the rubber Ramirez worked out of a full wind-up with the bases empty. His high kick hid his delivery until the last moment. The ball floated toward the plate, a fat balloon belt-high, a curve that didn't break . . .

The hitter's mind was like a desert, his mind was like an empty glass, a blank sheet of paper, his mind was totally at rest . . .

The ball nicked the outside cor-

ner for a called strike two. The Tiger catcher chuckled. "Them people in the seats have to pay to get in," he said. "They're doin' more'n you!"

"Shut up." The Bear shortstop choked up another couple of inches on the handle. *He'll feed me another curve, and then the fast ball . . .*

Ramirez took the sign and went into his motion.

Lousy kid. I'm gonna rap it one down his lousy throat . . .

The wrist flicked, the ball spun, broke . . .

The shortstop watched, unawed, very still, like a hollow thing, as the curve broke sharply, down the heart of the plate, strike three, side retired.

The Tigers managed to score an insurance run in the top half of the ninth, and Rudy Ramirez went back to the mound with a five-to-three lead to protect. The first batter that he was scheduled to face was the Bear pitcher, who was replaced in the order by pinch-hitter Frank Asterino.

A sense of determination, confidence made Asterino's mind orderly. It was a brightly-lit mind, with none of the shifting doubts of the other. Rudy felt the will, he weighed the desire, he discovered the man's dedication and respected it. He stood off the rubber, rubbing the shine from the new ball. He reached for the rosin bag, then

dropped it. He peered in at Johnston, his catcher. The sign: the fast ball.

Asterino guarded the plate closely. Johnston's mitt was targeted on the inside—start off with the high hard one, loosen the batter up. Rudy rocked back, kicked that leg high, and threw. The ball did not go for the catcher's mark, sailing out just a little. A not-overpowering pitch right down the pipe—a true gopher ball.

Rudy thought as the ball left his hand. He found that will of Asterino's, and he held it gently back. *Be still. Do not move; yes, be still.* And Asterino watched the strike intently as it passed.

Asterino watched two more, both curves that hung tantalizing but untouched. Ramirez grasped the batter's desire with his own, and blotted up all the fierce resolution there was in him. Asterino returned to the bench amid the boos of the fans, disappointed but unbewildered. He had struck out but, after all, that was not so unusual.

The top of the batting order was up, and Rudy touched their disparate minds. He hid their judgment behind the glare of his own will, and they struck out; the first batter needed five pitches and the second four. They observed balls with as much passive interest as strikes, and their bats never left their shoulders. No runs, no hits, no errors, nothing across for the

Bears in the ninth. The ball game was over; Rudy earned a save for striking out the four batters he faced in his first pro assignment.

Afterward, local reporters were met by the angry manager of the Bears. When asked for his impression of the young Tiger pitcher he said, "I didn't think he looked *that* sharp. How you supposed to win managing a damn bunch of zombies?" In the visitors' clubhouse Tiger manager Fred Marenholtz was in a more expansive mood.

"Where did Ramirez come from?" asked one reporter.

"I don't really know," he said. "Charlie Cardona checks out Detroit's prospects down there. All I know is the telegram said that he was signed, and then here he is. Charlie's dug up some good kids for us."

"Did he impress you tonight?"

Marenholtz settled his wire-rim glasses on his long nose and nodded. "He looked real cool for his first game. I'm going to start him in the series with the Reds this weekend. We'll have a better idea then, of course, but I have a feeling he won't be playing Class B ball long."

After the game with the Bears, the Tigers showered quickly and boarded their bus. They had a game the next night against the Selene Comets. It was a home game for the Tigers, and they were all glad to be returning to Cordele,

but the bus ride from the Bears' stadium would be four or five hours. They would get in just before dawn, sleep until noon, have time for a couple of unpleasant hamburgers, and get to the park in time for practice.

The Tigers won that game, and the game the next night, also. The Comets left town and were replaced by the Rockhill Reds, in for a Saturday afternoon game and a Sunday doubleheader. This late in the summer the pitching staffs were nearly exhausted. Manager Marenholtz of the Tigers kept his promise to the newspapermen; after the Saturday loss to the Reds he went to Chico Guerra, his first-string catcher, and told him to get Rudy Ramirez ready for the second game the next day.

Ramirez was eager, of course, and confident. Marenholtz was sitting in his office when Rudy came into the locker room before the Sunday doubleheader, a full half hour before practice began. Marenholtz smiled, remembering his own first game. He had been an outfielder; in the seventh inning he had run into the left field wall chasing a long fly. He dropped the ball, cracked his head, and spent the next three weeks on the disabled list. Marenholtz wished Ramirez better luck.'

The Tigers' second-string catcher, Maurie Johnston, played the first game, and Guerra sat next to Ramirez in the dugout, pointing

out the strengths and weaknesses of the opposing batters. Ramirez said little, just nodding and smiling. Marenholtz walked by them near the end of the first game. "Chico," he said, "ask him if he's nervous."

The catcher translated the question into Spanish. Ramirez grinned and answered. "He say no," said Guerra. "He jus' wan' show you what he can do."

The manager grunted a reply and went back to his seat, thinking about cocky rookies. The Tigers lost the first game, making two in a row dropped to the last-place Reds. The fans didn't seem to mind; there were only twenty games left until the end of the season, and there was no way possible for the Tigers to fall from first place short of losing all of them. It was obvious that Marenholtz was trying out new kids, resting his regulars for the Hanson Cup playoffs. The fans would let him get away with a lot, as long as he won the cup.

Between games there was a high school band marching in the outfield, and the local Kiwanis Club presented a plaque to the Tigers' center fielder, who was leading the league with forty-two home runs. Ramirez loosened up his arm during all this; he stood along the right field foul-line and tossed some easy pitches to Guerra. After a while the managers brought out their lineup cards to the umpires and the grounds crew finished grooming the infield. Ramirez and

Guerra took their positions on the field, and the rest of the team joined them, to the cheers of the Tigers' fans.

Skip Stackpole, the Reds' shortstop and leadoff batter, was settling himself in the batter's box. Rudy bent over and stared toward Guerra for the sign. An inside curve. Rudy nodded.

As he started into his windup he explored Stackpole's mind. It was a relaxed mind, concentrating only because Stackpole enjoyed playing baseball; for him, and for the last-place Reds, the game was meaningless. Rudy would have little difficulty.

Wait, thought Rudy wordlessly, forcing his will directly into Stackpole's intellect. *Not this one. Wait.* And Stackpole waited. The ball broke sharply, over the heart of the plate, for the first strike. There was a ripple of applause from the Tiger fans.

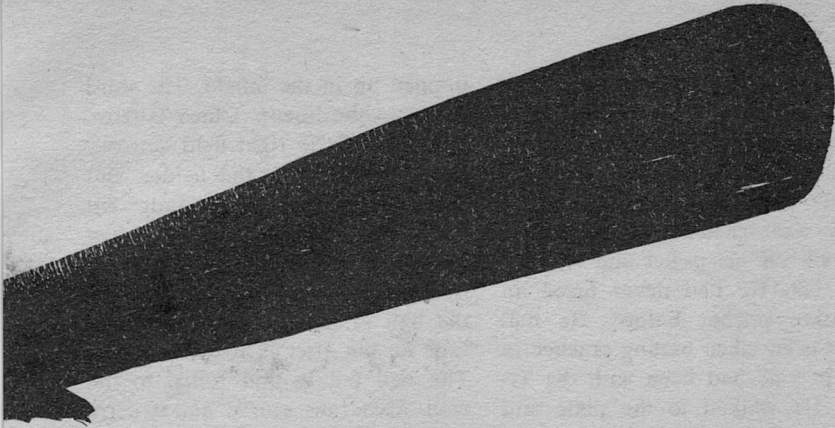
Guerra wanted a fast ball. Rudy nodded, kicked high, and threw. *Quiet*, he thought, *do not move.* Right down the pipe, strike two.

This much ahead of the hitter, Guerra should have called for a couple of pitches on the outside, to tease the batter into swinging at a bad pitch. But the catcher thought that Stackpole was off balance. The Reds had never seen Ramirez pitch before. Guerra called for another fast ball. Rudy nodded and went into his windup. He kept Stackpole from swinging. The Reds' first hit-



ter was called out on strikes; the Tiger fans cheered loudly as Guerra stood and threw the ball down to third base. Ramirez could hear his infielders chattering and encouraging him in a language that he didn't understand. He got the ball back and looked at the Reds' second man.

The new batter would be more of a challenge. He was hitting .312, battling with two others for the last place in the league's top ten. He was more determined than anyone Ramirez had yet faced. When Rudy pitched the ball, he needed more mental effort to keep the man from swinging at it. The pitch was too high. Ramirez leaned forward; Guerra wanted a low curve. The pitch broke just above the bat-



ter's knees, over the outside corner of the plate. One ball, one strike. The next pitch was a fast ball, high and inside. Ball two. Another fast ball, over the plate. *Wait*, thought Rudy, *wait*. The batter waited, and the count was two and two. Rudy tried another curve, and forced the batter to watch it helplessly. Strike three, two out.

Ramirez felt good, now. The stadium full of noisy people didn't make him nervous. The experienced athletes on the other team posed no threat at all. Rudy knew that he could win today; he knew that there wasn't a batter in the world that could beat him. The third hitter was no problem for Rudy's unusual talent. He struck out on four pitches. Rudy received

a loud cheer from the fans as he walked back to the dugout. He smiled and waved, and took a seat next to the water cooler with Guerra.

The Tigers scored no runs in their part of the first inning, and Rudy went back to the mound and threw his allotment of warmups. He stood rubbing up the ball while the Reds' cleanup hitter settled himself at the plate. Rudy disposed of the Reds' best power hitter with three pitches, insolently tossing three fast balls straight down the heart of the plate. Rudy got the other two outs just as quickly. The fans gave him another cheer as he walked from the mound.

The Tigers got a hit but no runs in the second, and Ramirez struck

out the side again in the top of the third. In the bottom of the third Doug Davies, the Tiger second baseman, led off with a sharp single down the left-field line. Rudy was scheduled to bat next; he took off his jacket and chose a light bat. He had never faced an opposing pitcher before. He had never even taken batting practice in the time he had been with the Tigers. He walked to the plate and took his place awkwardly.

He swung at two and watched two before he connected. He hit the ball weakly, on the handle of the bat, and it dribbled slowly down the first-base line. He passed it on his way to first base, and he saw the Reds' pitcher running over to field it. Rudy knew that he'd be an easy out. *Wait*, he thought at the pitcher, *stop. Don't throw it.* The pitcher held the ball, staring ahead dazedly. It looked to the fans as if the pitcher couldn't decide whether to throw to first, or try for the lead runner going into second. Both runners were safe before Rudy released him.

Rudy took a short lead toward second base. He watched the coaches for signs. On the next pitch Davies broke for third. Rudy ran for second base. The Reds' catcher got the ball and jumped up. *Quiet*, thought Rudy. *Be still.* The catcher watched both Davies and Rudy slide in safely.

Eventually, the Tigers' lead-off man struck out. The next batter

popped up in the infield. The third batter in the lineup, Chico Guerra, hit a long fly to right field, an easy enough chance for the fielder. But Rudy found the man's judgment and blocked it with his will. *Not yet*, he thought, *wait.* The outfielder hesitated, seeming as if he had lost the ball in the setting sun. By the time he ran after it, it was too late. The ball fell in and rolled to the wall. Two runs scored and Guerra lumbered into third base.

"Now we win!" yelled Rudy in Spanish. Guerra grinned and yelled back.

The inning ended with the Tigers ahead, three to nothing. Rudy was joking with Guerra as he walked back on the field. His manner was easy and supremely confident. He directed loud comments to the umpire and the opposing batters, but his Spanish went uninterpreted by his catcher. The top of the Reds' batting order was up again in the fourth inning, and Rudy treated them with total disregard, shaking off all of Guerra's signs except for the fast ball, straight down the middle. Stackpole, the leadoff batter, struck out again on four pitches. The second batter needed only three, and the third hitter used four. No one yet had swung at a pitch. Perhaps the fans were beginning to notice, because the cheer was more subdued as the Tigers came back to the bench. The Reds' manager was standing up in the dugout, angrily

condemning his players, who went out to their positions with perplexed expressions.

The game proceeded, with the fans growing quieter and quieter in the stands, the Reds' manager getting louder in his damnations, the Tiger players becoming increasingly uneasy about the Reds' lack of interest. Rudy didn't care; he kept pitching them in to Guerra, and the Rockhill batters kept walking back to their dugout, shrugging their shoulders and saying nothing. Not a single Rockhill Red had reached first base. The ninth inning began in total silence. Rudy faced three pinch-hitters and, of course, struck them out in order. He had not only pitched a no-hit game, not only pitched a *perfect* game, but he had struck out twenty-seven consecutive batters. Not once during the entire game did a Rockhill player even swing at one of his pitches.

A perfect game is one of the rarest of baseball phenomena. Perhaps only the unassisted triple play occurs less frequently. There should have been a massive crowd pouring out to congratulate Rudy. Players and fans should have mobbed him, carried him off the field, into the clubhouse. Beer should have been spilled over his head. Pictures should have been taken with Fred Marenholtz' arm around Rudy's neck. Instead, the infielders ran off the field as quickly as they could. They patted Rudy's back as they

passed him on the way to the dugout. The fans got up and went home, not even applauding the Tiger victory.

Marenholtz was waiting in the dugout. "Take a shower and see me in my office," he said, indicating both Guerra and Ramirez. Then the manager shook his head and went down the tunnel to the dressing room.

Marenholtz was a tall, thin man with sharp, birdlike features. He was sitting at his desk, smoking a cigar. He smoked cigars only when he was very angry, very worried, or very happy. Tonight, while he waited for Guerra and the new kid, he was very worried. Baseball, aged and crippled, didn't need this kind of notoriety.

There were half a dozen local newspapermen trying to force their way into the clubhouse. He had given orders that there would be no interviews until he had a chance to talk to Ramirez himself. He had phone calls from newscasters, scouts, fans, gamblers, politicians, and relatives. There was a stack of congratulatory telegrams. There was a very worried telegram from the team's general manager, and a very worried telegram from the front office of the Tigers' major league affiliate.

There was a soft knock on the door. "Guerra?" Marenholtz called out.

"Si."

"Come on in, but don't let anybody else come in with you except Ramirez."

Guerra opened the door and the two men entered. Behind them was a noisy, confused crowd of Tiger players. Marenholtz sighed; he would have to find out what happened, and then deal with his team. Then he had to come up with an explanation for the public.

Ramirez was grinning, evidently not sharing Marenholtz and Guerra's apprehension. He said something to Guerra. The catcher frowned and translated for Marenholtz. "He say, don' he do a good job?"

"That's what *I* want to know!" said Marenholtz. "What *did* he do? You know it looks a little strange that not one guy on that team took swing number one."

Guerra looked very uncomfortable. "Si, maybe he just *good*."

Marenholtz grunted. "Chico, did he look *that* good?"

Guerra shook his head. Ramirez was still smiling. Marenholtz stood up and paced behind his desk. "I don't *mind* him pitching a perfect game," he said. "It's a memorable achievement. But I think his effort would be better appreciated if one of those batters had tried *hitting*. At least *one*. I want you to tell me why they didn't. If you can't, I want you to ask *him*."

Guerra shrugged and turned to Ramirez. They conversed for a few seconds, and then the catcher spoke

to Marenholtz. "He say he don' want them to."

Marenholtz slammed his fist on his desk. "That's going to make a great headline in the *Sporting News*. Look, if somehow he paid off the Reds to throw the game, even *they* wouldn't be so stupid as to do it that way." He paused, catching his breath, trying to control his exasperation. "All right, I'll give him a chance. Maybe he *is* the greatest pitcher the world has ever known. Though I doubt it." He reached for his phone and dialed a number. "Hello, Thompson? Look, I need a favor from you. Have you turned off the field lights yet? O.K., leave 'em on for a while, all right? I don't care. I'll talk to Mr. Kaemmer in the morning. And hang around for another half hour, O.K.? Well, screw the union. We're having a little crisis here. Yeah, Ramirez. Understand? Thanks, Thompson." Marenholtz hung up and nodded to Guerra. "You and your battery mate here are going to get some extra practice. Tell him I want to hit some off him, right now. Don't bother getting dressed again. Just put on your mask and get out on the field." Guerra nodded unhappily and led Rudy away.

The stadium was deserted. Marenholtz walked through the dugout and onto the field. He felt strangely alone, cold and worried; the lights made odd, vague shadows that had never bothered him before. He

went to the batter's box. The white lines had been all but erased during the course of the game. He leaned on the bat that he had brought with him and waited for the two men.

Guerra came out first, wearing his chest protector and carrying his mask and mitt. Behind him walked Ramirez, silently, without his usual grin. He was dressed in street clothes, with his baseball spikes instead of dress shoes. Rudy took his place on the mound. He tossed a ball from his hand to his glove. Guerra positioned himself and Marenholtz waved to Rudy. No one had said a word.

Rudy wound up and pitched, a medium fast ball down the middle. Marenholtz swung and hit a low line drive down the right-field line that bounced once and went into the stands. Rudy threw another and Marenholtz hit it far into right center field. The next three pitches he sent to distant, shadowed parts of the ball park. Marenholtz stepped back for a moment. "He was throwing harder during the game, wasn't he?" he asked.

"I think so," said Guerra.

"Tell him to pitch me as hard as he did then. And throw some good curves, too." Guerra translated, and Ramirez nodded. He leaned back and pitched. Marenholtz swung, connected, and watched the ball sail in a huge arc, to land in the seats three hundred and fifty feet away in right field.

Rudy turned to watch the ball. He said nothing. Marenholtz tossed him another from a box on the ground. "I want a curve, now," he said.

The pitch came, breaking lazily on the outside part of the plate. Marenholtz timed it well and sent it on a clothesline into center field, not two feet over Ramirez' head. "All right," said the manager, "tell him to come here." Guerra waved, and Rudy trotted to join them. "One thing," said Marenholtz sourly. "I want him to explain why the Reds didn't hit him like that."

"I wanna know, too," said Guerra. He spoke with Ramirez, at last turning back to Marenholtz with a bewildered expression. "He say he don' wan' *them* to hit. He say you wan' hit, he *let* you hit."

"Oh, hell," said Marenholtz. "I'm not stupid."

Rudy looked confused. He said something to Guerra. "He say he don' know why you wan' hit *now*, but he do what you say."

The manager turned away in anger. He spit toward the dugout, thinking. He turned back to Guerra. "We got a couple of balls left," he said. "I want him to pitch me just like he did to the Reds, understand? I don't want him to *let* me hit. Have him try to weave his magic spell on me, too."

Rudy took a ball and went back to the mound. Marenholtz stood up to the plate, waving the bat over his shoulder in a slow circle. Rami-

rez wound up, kicked, and threw. His fastest pitch, cutting the heart of the plate.

Quiet, thought Rudy, working to restrain his manager's furious mind. *Easy, now. Don't swing. Quiet.*

Marenholtz' mind was suddenly peaceful, composed, thoughtless. The pitch cracked into Guerra's mitt. The manager hadn't swung at it.

Rudy threw ten more pitches, and Marenholtz didn't offer at any of them. Finally he raised his hand. Rudy left the mound again. Marenholtz stood waiting, shaking his head. "Why didn't I swing? Those pitches weren't any harder than the others." Marenholtz said.

"He just say he don' want you to swing. In his head he tell you. Then you don' swing. He say it's easy."

"I don't believe it," said the manager nervously. "Yeah, O.K., he can do it. He *did* do it. I don't like it." Guerra shook his head. The three stood on the empty field for several seconds in uneasy silence. "Can he do that with anybody?" asked Marenholtz.

"He say, *si*."

"Can he do it any time? *Every* time?"

"He say, *si*."

"We're in trouble, Chico." Guerra looked into Marenholtz' frightened face and nodded slowly. "I don't mean just us. I mean *baseball*. This kid can throw a perfect game, every time. What do you

think'll happen if he makes it to the majors? The game'll be dead. Poor kid. He scares me. Those people in the stands aren't going to like it any better."

"What you gonna do, Mr. Marenholtz?" asked Guerra.

"I don't know, Chico. It's going to be hard keeping a bunch of perfect games secret. Especially when none of the hitters ever takes the bat off his shoulder."

The following Thursday the Tigers had a night game at home against the Kings. Rudy came prepared to be the starting pitcher, after three days' rest. But when Marenholtz announced the starting lineup, he had the Tigers' long relief man on the mound. Rudy was disappointed, and complained to Guerra. The catcher told him that Marenholtz was probably saving him for the next night, when the Kings' ace left-hander was scheduled to pitch.

On Friday Ramirez was passed over again. He sat in the dugout, sweating in his warmup jacket, irritated at the manager. Guerra told him to have patience. Rudy couldn't understand why Marenholtz wouldn't pitch him, after the great game Ramirez had thrown in his first chance. Guerra just shrugged and told Rudy to study the hitters.

Rudy didn't play Saturday, or in either of the Sunday double-header's games. He didn't know that the newspapermen were as

mystified as he. Marenholtz made up excuses, saying that Rudy had pulled a back muscle in practice. The manager refused to make any comments about Ramirez' strange perfect game, and as the days passed the clamor died down.

The next week Rudy spent on the bench, becoming angrier and more frustrated. He confronted Marenholtz several times, with Guerra as unwilling interpreter, and each time the manager just said that he didn't feel that Ramirez was "ready." The season was coming to its close, with only six games left, and Rudy was determined to play. As the games came and went, however, it became obvious that he wasn't going to get the chance.

On the day of the last game, Marenholtz announced that Irv Tappan, his number-one right-hander, would start. Rudy stormed out of the dugout in a rage. He went back to the locker room and started to change clothes. Marenholtz signaled to Guerra, and they followed Ramirez.

"All right, Ramirez, what're you doing?" asked the manager.

"He say he goin' home," said Guerra, translating Rudy's shouted reply.

"If he leaves before the game is over, he's liable to be fined. Does he know that?"

"He say he don' care."

"Tell him he's acting like a kid," said Marenholtz, feeling relieved.

"He say you can go to hell."

Marenholtz took a deep breath. "O.K., Chico. Tell him we've enjoyed knowing him, and respect his talent, and would like to invite him to try out for the team again next spring."

"He say go to hell."

"He's going home?" asked Marenholtz.

"He say you 'mericanos jealous, and waste his time. He say he can do other things."

"Well, tell him we're sorry, and wish him luck."

"He say go to hell. He say you don' know your *ano* from a hole in the groun'."

Marenholtz smiled coldly. "Chico, I want you to do me a favor. Do yourself a favor, too; there's enough here for the two of us. You let him finish clearing out of here, and you go with him. I don't know where he's going this time of day. Probably back to the hotel where he stays. Keep with him. Talk to him. Don't let him get away, don't let him get drunk, don't let him talk to anybody else."

Guerra shrugged and nodded. Ramirez was turning to leave the clubhouse. Marenholtz grabbed Guerra's arm and pushed him toward the furious boy. "Go on," said the manager, "keep him in sight. I'll call the hotel in about three or four hours. We got a good thing here, Chico, my boy." The catcher frowned and hurried after Rudy.

Marenholtz sighed; he walked across the dressing room, stopping by his office. He opened the door and stared into the darkened room for a few seconds. He wanted desperately to sit at his desk and write the letters and make the phone calls, but he still had a game to play. The job seemed so empty to him now. He *knew* this would be the last regular game he'd see in the minor leagues. Next spring he and Ramirez would be shocking them all at the Florida training camps. Next summer he and Ramirez would own the world of major league baseball.

First, though, there was still the game with the Bears. Marenholtz closed the door to the office and locked it. Then he went up the tunnel to the field. All that he could think of was going back to the Big Time.

After the game, Fred Marenholtz hurried to his office. The other players grabbed at him, swatting at his back to congratulate him on the end of the season. The Tigers were celebrating in the clubhouse. Cans of beer were popping open, and sandwiches had been supplied by the front office. The manager ignored them all. He locked the door to the office behind him. He called Ramirez' hotel and asked for his room.

Guerra answered, and reported that Ramirez was there, taking a nap. The catcher was instructed to

tell Rudy that together they were all going to win their way to the major leagues. Guerra was doubtful, but Marenholtz wouldn't listen to the catcher's puzzled questions. The manager hung up. He pulled out a battered address book from his desk drawer, and found the telephone number of an old friend, a contract lawyer in St. Louis. He called the number, tapping a pencil nervously on the desk top while the phone rang.

"Hello, Marty?" he said when the call was finally answered.

"Yes. Who's this calling, please?"

"Hi. You won't remember me, but this is Fred Marenholtz."

"Freddie! How are you? Lord, it's been fifteen years. Are you in town?"

Marenholtz smiled. Things were going to be all right. They chatted for a few minutes, and then Marenholtz told his old friend that he was calling on business.

"Sure, Freddie," said the lawyer. "For Frantic Fred Marenholtz, anything. Is it legal?" Marenholtz laughed.

The photographs on the office wall looked painfully old to Marenholtz. They were of an era too long dead, filled with people who themselves had long since passed away. Baseball itself had withered, had lost the lifeblood of interest that had infused the millions of fans each spring. It had been too many years since Fred Marenholtz had claimed his share of glory. He

had never been treated to his part of the financial rewards of baseball, and after his brief major league career he felt it was time to make his bid.

Marenholtz instructed the lawyer in detail. Old contracts were to be broken, new ones drawn up. The lawyer wrote himself in for five percent as payment. The manager hung up the phone again. He slammed his desk drawer closed in sheer exuberance. Then he got up and left his office. He had to thank his players for their cooperation during the past season.

"Tell him he's not going to get anything but investigated if he doesn't go with us." It was late now, past midnight. Ramirez' tiny hotel room was stifling. Rudy rested on the bed. Guerra sat in a chair by the single window. Marenholtz paced around, his coat thrown on the bed, his shirt soaked with perspiration.

"He say he don' like the way you run the club. He don' think you run him better," said Guerra wearily.

"All right. Explain to him that we're not going to cost him anything. The only way *we* can make any money is by making sure *he* does O.K. We'll take a percentage of what he makes. That's his insurance."

"He wan' know why you wan' him now, you wouldn' play him before."

"Because he's a damn fool, is why! Doesn't he know what would happen if he pitched his kind of game, week after week?"

"He think he make a lot of money."

Marenholtz stopped pacing and stared. "Stupid Spanish idiot!" he said. Guerra, from a farming village in Panama, glared resentfully. "I'm sorry, Chico. Explain it to him." The catcher went to the edge of the bed and sat down. He talked with Rudy for a long while, then turned back to the manager.

"O.K., Mr. Marenholtz. He didn' think anybody noticed."

"Fine," said Marenholtz, taking Guerra's vacated chair. "Now let's talk. Chico, what were you planning to do this winter?"

Guerra looked puzzled again. "I don' know. Go home."

Marenholtz smiled briefly and shook his head. "No. You're coming with me. We're taking young Mr. Ramirez here and turn him into a pitcher. If not that, at least into an intelligent thrower. We got a job, my friend."

They had six months, and they could have used more. They worked hard, giving Rudy little time to relax. He spent weeks just throwing baseballs through a circle of wire on a stand. Guerra and Marenholtz helped him learn the most efficient way to pitch, so that he wouldn't tire after half a game; he studied films of his motions, to see where they might be improved,

to fool the hitters and conserve his own energy. Guerra coached him on all the fundamentals: fielding his position, developing a deceptive throw to first base, making certain that his windup was the same for every different pitch.

After a couple of months Ramirez' control was sharp enough to put a ball into Guerra's mitt wherever the catcher might ask. Marenholtz watched with growing excitement—they were going to bring it off. Rudy was as good as any mediocre pitcher in the majors. Marenholtz was teaching him to save his special talent for the tight situations, the emergencies where less attention would be focused on the pitcher. Rudy was made to realize that he had eight skilled teammates behind him; if he threw the ball where the catcher wanted it, the danger of long hits was minimized. A succession of pop-ups and weak grounders would look infinitely better than twenty-seven passive strikeouts.

Before the spring training session began, Rudy had developed a much better curve that he could throw with reasonable control, a passable change-up, a poor slider, and a slightly off-speed fast ball. He relied on Guerra and Marenholtz for instructions, and they schooled him in all the possible situations until he was fed up.

"Freddie Marenholtz! Damn, you look like you could still get

out there and play nine hard ones yourself. Got that phenom of yours?"

"Yeah, you want him to get dressed?" Marenholtz stood by a batting cage in the training camp of the Nashville Cats, a team welcomed into the American League during the expansion draft three years previously. The Florida sun was already fierce enough in March to make Marenholtz uncomfortable, and he shielded his eyes with one hand as he talked to Jim Billy Westfahl, the Cats' manager.

"All right," said Westfahl. "You said you brought this kid Ramirez and a catcher, right? What's his name?"

"Guerra. Only guy Ramirez ever pitched to."

"Yeah, well, you know we got two good catchers in Portobenez and Staefler. If Guerra's going to stick, he's going to have to beat them out."

Marenholtz frowned. Guerra was *not* going to beat them out of their jobs. But he had to keep the man around, both because he could soothe Ramirez' irrational temper and because Guerra presented a danger to the plan. But the aging catcher might have to get used to watching the games from the boxes. He collected three and a half percent of Rudy's income, and Marenholtz couldn't see that Guerra had reason to complain.

Rudy came out of the locker room and walked to the batting

cage. Guerra followed, looking uneasy among the major league talents. Ramirez turned to Westfahl and said something in Spanish. Guerra translated. "He say he wan' show you what he can do."

"O.K., I'm game. *Somebody's* going to have to replace McAnion. It may as well be your kid. Let's see what he looks like."

Rudy pitched to Guerra, and Westfahl made a few noncommittal remarks. Later in the day Rudy faced some of the Cats' regulars, and the B squad of rookies. He held some of them back, pitched to some of them, and looked no less sharp than any of the other regular pitchers after a winter's inactivity. In the next few weeks Marenholtz and Guerra guided Rudy well, letting him use his invisible talent sparingly, without attracting undue notice, and Ramirez seemed sure to go north with the team when the season began. Guerra didn't have the same luck. A week before spring training came to an end he was optioned to the Cats' Double A farm club. Guerra pretended to be upset, and refused to report.

By this time Marenholtz had promoted a large amount of money. The newly-appointed president of *RR Star Enterprises* had spent the spring signing contracts while his protégé worked to impress the public. Permissions and royalty fees were deposited from trading card companies, clothing manufacturers, grooming product

endorsements (Rudy was hired to look into a camera and say, "I like it. It makes my hair neat without looking greasy." He was finally coached to say, "I like it" and the rest of the line was given to a sexy female model), fruit juice advertisements, and sporting goods dealers.

The regular season began at home for the Cats. Rudy Ramirez was scheduled to pitch the third game. Rudy felt little excitement before the game; what he did feel was in no way different in kind or quantity from his nervousness before his first appearance with the Cordele Tigers. The slightly hostile major league crowd didn't awe him: he was prepared to awe the four thousand spectators who had come to watch the unknown rookie.

Fred Marenholtz had briefed Rudy thoroughly; before the game they had decided that an impressive but nonetheless credible effort would be a four- or five-hit shut-out. For an added touch of realism, Rudy might get tired in the eighth inning, and leave for a relief pitcher. Marenholtz and Guerra sat in field boxes along the first-base side, near the dugout. Ramirez could hear their shouts from the mound. He waved to them as he took his place before the National Anthem was sung.

Rudy's pitches were not particularly overpowering. His fast ball was eminently hittable; only the experience of the Cats' catcher pre-

vented it from sailing time after time over the short-left-field fence. Ramirez' weeks of practice saved him: his pitches crossed the plate just above the batter's knees, or handcuffed him close around the fists, or nicked the outside edge of the plate. Rudy's curve was just good enough to keep the hitters guessing. The first batter hit a sharp ground ball to short, fielded easily for the first out. The second batter lofted a fly to right field for the second out. Rudy threw three pitches to the third batter, and then threw his first mistake, a fast ball belt high, down the middle. Rudy knew what would happen—a healthy swing, and then a quick one-run lead for the White Sox. Urgently, desperately, he sought the batter's will and grasped it in time. The man stood stupidly, staring at the most perfect pitch he would see in a long while. It went by for a called strike three, and Rudy had his first official major league strikeout.

Marenholtz stood and applauded when Rudy trotted back to the dugout. Guerra shouted something in Spanish. Ramirez' teammates slapped his back, and he smiled and nodded and took his place on the bench. He allowed a double down the line in the second inning, set the White Sox down in order in the third and fourth, gave up a single and a walk in the fifth, a single in the sixth, no hits in the seventh, two singles in the eighth,

and two to the first two batters in the ninth. Rudy had pitched wisely, combining his inferior skill with judicious use of his mental talent. Sometimes he held back a batter for just a fraction of a second, so that the hitter would swing late. Other times he would prevent a batter from running for a moment, to insure his being thrown out at first. He caused the opposition's defense to commit errors so that the Cats could score the runs to guarantee victory.

The manager of the Cats came out to the mound to talk with Ramirez in the ninth. Carmen Velillo, the Cats' third baseman, joined the conference to translate for Rudy. Ramirez insisted that he was strong enough to finish, but the manager brought in a relief pitcher. Rudy received a loud cheer from the fans as he went off the field. He didn't watch the rest of the game, but went straight to the showers. The Cats' new man put down the rally, and Ramirez had a shutout victory. After Rudy and Velillo had answered the excited questions of the newsmen, Marenholtz and Guerra met him for a celebration.

Marenholtz held interviews with reporters from national magazines or local weeklies. Coverage of Ramirez' remarkable success grew more detailed; as the season progressed Rudy saw his picture on the front of such varied periodicals as *Sports Illustrated* and *Esquire*.

By June Rudy had won eleven games and lost none. His picture appeared on the cover of *Time*. A small article in *Playboy* announced that he was the greatest natural talent since Grover Cleveland Alexander. He appeared briefly on late-night television programs. He was hired to attend supermarket openings in the Nashville area. He loved winning ball games, and Marenholtz, too, gloried in returning a success to the major leagues that had treated him so shabbily in his youth.

The evening before Ramirez was to start his twelfth ball game, he was having dinner with Marenholtz and Guerra. The older man was talking about his own short playing career, and how baseball had deteriorated since then. Guerra nodded and said little. Ramirez stared quietly at his plate, toying with his food and not eating. Suddenly he spoke up, interrupting Marenholtz' flow of memories. He spoke in rapid Spanish; Marenholtz gaped in surprise. "What's he saying?" he asked.

Guerra coughed nervously. "He wan' know why he need us," he said. "He say he do pretty good by himself."

Marenholtz put his cigar down and stared angrily at Ramirez. "I was wondering how long it would take him to think he could cut us out. You can tell him that if it hadn't been for us he'd either be in trouble or in Venezuela. You can

tell him that if it hadn't been for us he wouldn't have that solid bank account and his poor gray mama wouldn't have the only color television south of the border. And if that doesn't work, tell him maybe he *doesn't* need us, but he signed the contracts."

Guerra said a few words, and Rudy answered. "What's he say now?" asked Marenholtz.

"Nothing," said Guerra, staring down at his own plate. "He jus' say he thank you, but he wan' do it by himself."

"Oh, hell. Tell him to forget that and pitch a good game tomorrow. *I'll* do the worrying. That's what I'm for."

"He say he do that. He say he pitch you a good game."

"Well, thank you, Tom, and good afternoon, baseball fans everywhere. In just a few moments we'll bring you live coverage of the third contest of this weekend series, a game between the Nashville Cats, leaders in the American League Midlands division, and the Denver Athletics. It looks to be a pitchers' duel today, with young Rudy Ramirez, Nashville's astonishing rookie, going against the A's veteran right-hander, Morgan Steptiz."

"Right, Chuck, and I think a lot of the spectators in the park today have come to see whether Ramirez can keep his streak alive. He's won eleven, now, and he hasn't been beaten so far in his professional ca-

reer. Each game must be more of an ordeal than the last for the youngster. The strain will be starting to take its toll."

"Nevertheless, Tom, I have to admit that it's been a very long time since I've seen anyone with the poise of that young man. He hasn't let his success make him overconfident, which for him is now the greatest danger. I'm sure that defeat, when it comes, will be a hard blow, but I'm just as certain that Rudy Ramirez will recover and go on to have a truly amazing season."

"A lot of fans have written in to ask what the record is for most consecutive games won. Well, Ramirez has quite a way to go. The major league record is nineteen, set in 1912 by Rube Marquard. But even if Ramirez doesn't go on to break that one, he's still got the start on a great season. He's leading both leagues with an Earned Run Average of 1.54, and has an excellent shot at thirty wins—"

"All right, let's go down to the field, where we'll have the singing of the National Anthem."

After the spectators cheered and settled back into their seats, after the Cats' catcher whipped the ball down to second base, and after the infielders tossed it around and, finally, back to the pitcher, Rudy looked around at the stadium. The Nashville park was new, built five

years ago in hopes of attracting a major league franchise. It was huge, well-designed, and, generally, filled with noisy fans. The sudden success of the usually hapless Cats was easily traced: Rudy Ramirez. He was to pitch again today, and his enthusiastic rooters crowded the spacious park. Bedsheet banners hung over railings, wishing him luck and proclaiming Ramirez to be the best-loved individual on the continent. Rudy, still innocent of English, did not know what they said.

He could see Marenholtz and Guerra sitting behind the dugout. They saw him glance in their direction and stood, waving their arms. Rudy touched the visor of his cap in salute. Then he turned to face the first of the Athletics' hitters.

"O.K., the first batter for the A's is the second baseman, number 12, Jerry Kleiner. Kleiner's batting .262 this season. He's a switch-hitter, and he's batting right-handed against the southpaw, Ramirez.

"Ramirez takes his sign from Staefler, winds up, and delivers. Kleiner takes the pitch for a called strike one. Ramirez has faced the A's only once before this season, shutting them out on four hits.

"Kleiner steps out to glance down at the third base coach for the signal. He steps back in. Ramirez goes into his motion. Kleiner lets it go by again. No balls and two strikes."

"Ramirez is really piping them in today, Tom."

"That's right, Chuck. I noticed during his warmups that his fast ball seemed to be moving exceptionally well. It will tend to tail in toward a right-handed batter. Here comes the pitch—strike three! Kleiner goes down looking."

"Before the game we talked with Cats' catcher Bo Staefler, who told us that Ramirez' slider is improving as the season gets older. That can only be bad news for the hitters in the American League. It may be a while before they can solve his style."

"Stepping in now is the A's right fielder, number 24, Ricky Gonzalvo. Gonzalvo's having trouble with his old knee injury this year, and his average is down to .244. He crowds the plate a little on Ramirez. The first pitch is inside, knocking Gonzalvo down. Ball one.

"Ramirez gets the ball back, leans forward for his sign. And the pitch . . . in there for a called strike. The count is even at one and one."

"He seems to have excellent control today, wouldn't you say, Tom?"

"Exactly. Manager Westfahl of the Cats suggested last week that the pinpoint accuracy of his control is sometimes enough to rattle a batter into becoming an easy out."

"There must be *some* explanation, even if it's magic."

"Ramirez deals another breaking

pitch, in there for a called strike two. I wouldn't say it's all magic, Chuck. It looked to me as though Gonzalvo was crossed up on that one, obviously expecting the fast ball again."

"Staefler gives him the sign. Ramirez nods, and throws. Fast ball, caught Gonzalvo napping. Called strike three; two away now in the top of the first.

"Batting in the number three position is the big first baseman, Howie Bass. Bass' brother, Eddie, who plays for the Orioles, has the only home run hit off Ramirez this season. Here comes Ramirez' pitch . . . Bass takes it for strike one."

"It seems to me that the batters are starting out behind Ramirez, a little overcautious. That's the effect that a winning streak like his can have. Ramirez has the benefit of a psychological edge working for him, as well as his great pitching."

"Right, Tom. That pitch while you were talking was a called strike two, a good slider that seemed to have Bass completely baffled."

"Staefler gives the sign, but Ramirez shakes his head. Ramirez shakes off another sign. Now he nods, goes into his windup, and throws. A fast ball, straight down the middle, strike three. Bass turns to argue with the umpire, but that'll do him no good. Three up and three down for the A's, no runs, no hits, nothing across."

The Cats' fans jumped to their feet, but Fred Marenholtz listened

angrily to their applause. He caught Rudy's eye just as the pitcher was about to enter the dugout. Before Marenholtz could say anything, Rudy grinned and disappeared inside. Marenholtz was worried that the sophisticated major league audience would be even less likely to accept the spectacle of batter after batter going down without swinging at Ramirez' pitches. The older man turned to Guerra. "What's he trying to do?" he asked.

Guerra shook his head. "I don't know. Maybe he wan' strike out some."

"Maybe," said Marenholtz dubiously, "but I didn't think he'd be that dumb."

The Cats got a runner to second base in their part of the first inning, but he died there when the clean-up hitter sent a line drive over the head of the A's first baseman, who leaped high to save a run. Rudy walked out to the mound confidently, and threw his warmups.

"All right," said Marenholtz, "let's see him stop that nonsense now. This game's being televised all over the country." He watched Ramirez go into his motion. The first pitch was a curve that apparently didn't break; a slow pitch coming toward the plate as fat as a basketball. The A's batter watched it for a called strike. Marenholtz swore softly.

Rudy threw two more pitches,

each of them over the plate for strikes. The hitter never moved his bat. Marenholtz' face was turning red with anger. Rudy struck out the next batter in three pitches. Guerra coughed nervously and said something in Spanish. Already the fans around them were remarking on how strange it was to see the A's being called out on strikes without making an effort to guard the plate. The A's sixth batter took his place in the batter's box, and three pitches later he, too, walked back to the bench, a bewildered expression on his face.

Marenholtz stood and hollered to Ramirez. "What the hell you doing?" he said, forgetting that the pitcher couldn't understand him. Rudy walked nonchalantly to the dugout, taking no notice of Marenholtz.

Guerra rose and edged past Marenholtz to the aisle. "You going for a couple of beers?" asked Marenholtz.

"No," said Guerra. "I think I just *goin'*."

"Well, Tom, it's the top of the third, score tied at nothing to nothing. I want to say that we're getting that pitchers' battle we promised. We're witnessing one heck of a good ball game so far. The Cats have had only one hit, and rookie Rudy Ramirez hasn't let an Athletic reach first base."

"There's an old baseball superstition about jinxing a pitcher in a

situation like this, but I might mention that Ramirez has struck out the first six men to face him. The record for consecutive strikeouts is eleven, held by Gaylord Perry of the old Cleveland Indians. If I remember correctly, that mark was set the last year the Indians played in Cleveland, before their move to New Orleans."

"This sort of game isn't a new thing for Ramirez, either, Tom. His blurb in the Cats' pressbook mentions that in his one start in the minor leagues, he threw a perfect game and set a Triangle League record for most strikeouts in a nine-inning game."

"O.K., Chuck. Ramirez has finished his warmups here in the top of the third. He'll face the bottom of the A's order. Batting in the seventh position is the catcher, number 16, Tolly Knecht. Knecht's been in a long slump, but he's always been something of a spoiler. He'd love to break out of it with a hit against Ramirez here. Here's the pitch . . . Knecht was taking all the way, a called strike one."

"Maybe the folks at home would like to see Ramirez' form here on the slow-motion replay. You can see how the extra-high kick tends to hide the ball from the batter until the very last moment. He's getting the full force of his body behind the pitch, throwing from the shoulder with a last, powerful snap of the wrist. He ends up here perfectly balanced for a sudden defen-

sive move. From the plate the white ball must be disguised by the uniform. A marvelous athlete and a terrific competitor."

"Right, Chuck. That last pitch was a good breaking ball; Knecht watched it for strike two. I think one of the reasons the hitters seem to be so confused is the excellent arsenal of pitches that Ramirez has. He throws his fast ball intelligently, saving it for the tight spots. He throws an overhand curve and a sidearm curve, each at two different speeds. His slider is showing up more and more as his confidence increases."

"Ramirez nods to Staefler, the catcher. He winds up, and throws. Strike three! That's seven, now. Knecht throws his bat away in frustration. The fans aren't too happy, either. Even the Cats' loyal crowd is beginning to boo. I don't think I've ever seen a team as completely stymied as the A's are today."

"I tell you, I almost wish I could go down there myself. Some of Ramirez' pitches look just too good. It makes me want to grab a bat and take a poke at one. His slow curves seem to hang there, inviting a good healthy cut. But, of course, from our vantage point we can't see what the batters are seeing. Ramirez must have tremendous stuff today. Not one Athletic hitter has taken a swing at his pitches."

When the eighth Athletic batter

struck out, the fans stood and jeered. Marenholtz felt his stomach tightening. His mouth was dry and his ears buzzed. After the ninth batter fanned, staring uninterestedly at a mild, belt-high pitch, the stadium was filled with boos. Marenholtz couldn't be sure that they were all directed at the unlucky hitters.

Maybe I ought to hurry after Guerra, thought Marenholtz. Maybe it's time to talk about that bowling alley deal again. This game is rotten at its roots already. It's not like when I was out there. We cared. The fans cared. Now they got guys like Grobert playing, they're nearly gangsters. Sometimes the games look like they're produced from a script. And Ramirez is going to topple it all. The kid's special, but that won't save us. Good God, I feel sorry for him. He can't see it coming. He won't see it coming. He's out there having a ball. And he's going to make the loudest boom when it all falls down. Then what's he going to do? What's he going to do?

Rudy walked jauntily off the field. The spectators around Marenholtz screamed at him. Rudy only smiled. He waved to Marenholtz, and pointed to Guerra's empty seat. Marenholtz shrugged. Ramirez ducked into the dugout, leaving Marenholtz to fret in the stands.

After the Cats were retired in the third, Rudy went out to pitch his

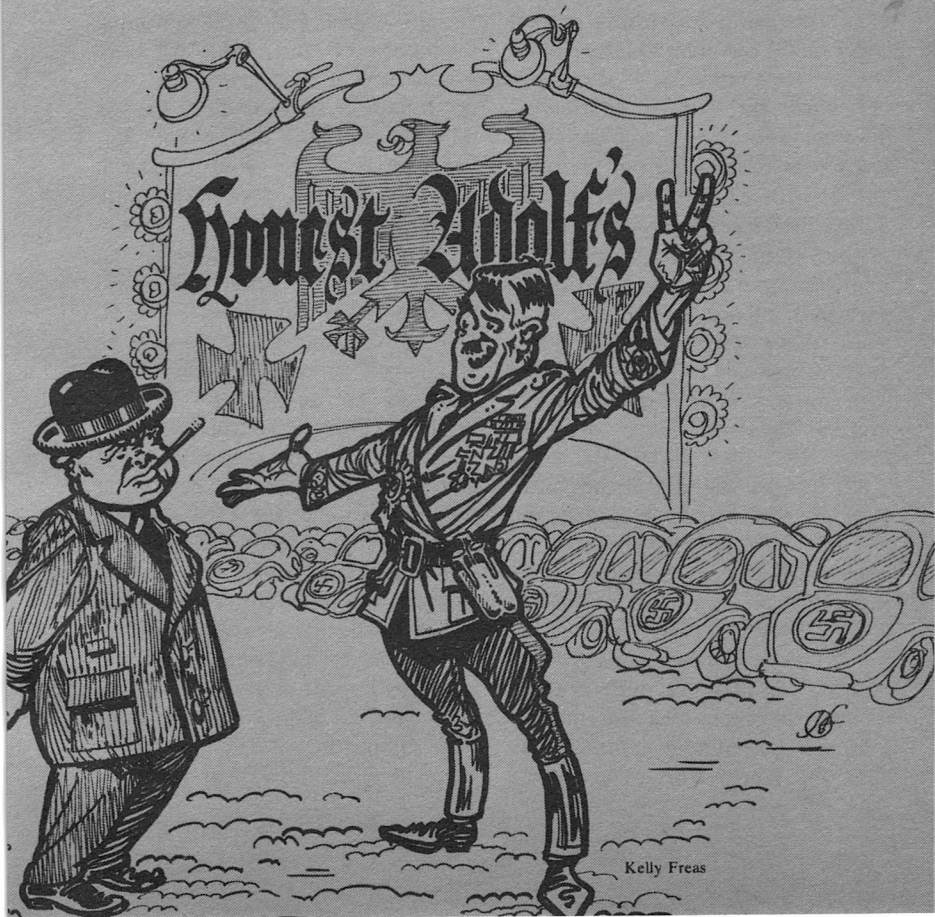
half of the fourth. A policeman called his name, and Rudy turned. The officer stood in the boxes, at the edge of the dugout, stationed to prevent overeager fans from storming the playing field. He held his hand out to Rudy and spoke to him in English. Rudy shook his head, not understanding. He took the papers from the policeman and studied them for a moment. They were contracts that he had signed with Marenholtz. They were torn in half. Ramirez grinned; he looked up toward Marenholtz' seat behind the dugout. The man had followed Guerra, had left the stadium before he could be implicated in the tarnished proceedings.

For the first time since he had come to the United States, Rudy Ramirez felt free. He handed the contracts back to the mystified police officer and walked to the mound. He took a few warmups and waited for Kleiner, the A's leadoff batter. Ramirez took his sign and pitched. Kleiner swung and hit a shot past the mound. Rudy entered Kleiner's mind and kept him motionless beside the plate for a part of a second. The Cats' shortstop went far to his left, grabbed the ball and threw on the dead run; the runner was out by a full step. There were mixed groans and cheers from the spectators, but Rudy didn't hear. He was watching Gonzalvo take his place in the batter's box. Maybe Rudy would let him get a hit. ■

Gene Wolfe

HOW I LOST THE SECOND WORLD WAR AND HELPED TURN BACK THE GERMAN INVASION

Not all wars are fought with guns and bombs.
The ultimate weapon—always—is the mind of man.



1 April, 1938

Dear Editor:

As a subscriber of some years standing—ever since taking up residence in Britain, in point of fact—I have often noted with pleasure that in addition to dealing with the details of the various *All New and Logical, Original Games* designed by your readers, you have sometimes welcomed to your columns vignettes of city and rural life, and especially those having to do with games. Thus I hope that an account of a gamesing adventure which lately befell me, and which enabled me to rub elbows (as it were) not only with Mr. W. L. S. Churchill—the man who, as you will doubtless know, was dismissed from the position of First Lord of the Admiralty during the Great War for his sponsorship of the ill-fated Dardanelles Expedition, and is thus a person of particular interest to all those of us who (like myself) are concerned with Military Boardgames—but also with no less a celebrity than the present *Reichschancellor* of Germany, Herr Adolf Hitler.

All this, as you will already have guessed, took place in connection with the great Bath Exposition; but before I begin my account of the extraordinary events there (events observed—or so I flatter myself—by few from as advantageous a position as was mine), I must explain, at least in generalities (for the details are exceedingly complex) the game of *World War*, as conceived

by my friend Lansbury and myself. Like many others we employ a large world map as our board; we have found it convenient to mount this with wallpaper paste upon a sheet of deal four feet by six, and to shellac the surface; laid flat upon a commodious table in my study this serves us admirably. The nations siding with each combatant are determined by the casting of lots; and naval, land, and air units of all sorts are represented symbolically by tacks with heads of various colors; but in determining the *nature* of these units we have introduced a new principle—one not found, or so we believe, in any other game. It is that either contestant may at any time propose a new form of ship, firearm, or other weapon; if he shall urge its probability (not necessarily its utility, please note—if it prove not useful the loss is his only) with sufficient force to convince his opponent, he is allowed to convert such of his units as he desires to the new mode, and to have the exclusive use of it for three moves, after which his opponent may convert as well if he so chooses. Thus a player of *World War*, as we conceive it, must excel not only in the strategic faculty, but in inventive and argumentative faculty as well.

Now as it happened Lansbury and I had spent most of the winter now past in setting up the game and settling the rules for the movement of units. Both of us have had

considerable experience with games of this sort, and knowing the confusion and ill feeling often bred by a rulebook treating inadequately of (what may once have appeared to be) obscure contingencies, we wrote ours with great thoroughness. On February 17th (Lansbury and I caucus weekly) we held the drawing: it allotted Germany, Italy, Austria, Bulgaria, and Japan to me; Britain, France, China, and the Low Countries to Lansbury. I confess that these alignments appear improbable—the literal-minded man might well object that Japan and Italy, having sided with Britain in the Great War, would be unlikely to change their coats in a second conflict. But a close scrutiny of history will reveal even less probable reversals (as when France, during the Sixteenth Century, sided with Turkey in what has been called the Unholy Alliance) and Lansbury and I decided to abide by the luck of the draw. On the 24th we were to make our first moves.

On the 20th, as it happened, I was pondering my strategy when, paging casually through the *Guardian*, my eye was drawn to an announcement of the opening of the Exposition; and it at once occurred to me that among the representatives of the many nations exhibiting I might find someone whose ideas would be of value to me. In any event I had nothing better to do, and so—little knowing that I was to become a witness to history—I

thrust a small memorandum book in my pocket and I was off to the fair!

I suppose I need not describe the spacious grounds to the readers of this magazine. Suffice it to say that they were, as everyone has heard, surrounded by an oval hippodrome nearly seven miles in length, and dominated by the Dirigible Tower that formed a most impressive part of the German exhibit, and by the vast silver bulk of the airship *Graf Spee*, which, having brought the chief functionary of the German *Reich* to Britain, now waited, a slave of the lamp of *Kultur* (save the Mark!) to bear him away again. This was, in fact, the very day that *Reichschancellor* Hitler—for whom the Exposition itself had opened early—was to unveil the “People’s Car” exhibit. Banners stretched from poles and even across the main entry carried such legends as:

WHICH PEOPLE SHOULD HAVE A

“PEOPLE’S CAR”?????

THE ENGLISH PEOPLE!!

and

GERMAN CRAFTSMANSHIP

BRITISH LOVE OF FINE MACHINES

and even

IN SPIRIT THEY ARE AS BRITISH

AS THE ROYAL FAMILY

Recollecting that Germany was the most powerful of the nations that had fallen to my lot in our game, I made for the German exhibit.

There the crowd grew dense;

there was a holiday atmosphere, but within it a note of sober calculation—one heard workmen discussing the mechanical merits (real and supposed) of the German machines, and their extreme cheapness and the interest-free loans available from the *Reichshauptkasse*. Vendors sold pretzels, *Lebkuchen*, and Bavarian creams in paper cups, shouting their wares in raucous Cockney voices. Around the great showroom where, within the hour, the *Reichschancellor* himself was to begin the "People's Car" invasion of Britain by demonstrating the vehicle to a chosen circle of celebrities, the crowd was now ten deep, though the building (as I learned subsequently) had long been full, and no more spectators were being admitted.

The Germans did not have the field entirely to themselves, however. Dodging through the crowd were driverless model cars only slightly smaller (or at least so it seemed) than the German "People's Cars." These "toys," if I may so style something so elaborate and yet inherently frivolous, flew the rising sun banner of the Japanese Empire from their aeries, and recited through speakers, in ceremonious hisses, the virtues of that industrious nation's products, particularly the gramophones, wirelesses, and so on employing those recently invented wonders, transistors.

Like others I spent a few minutes sightseeing—or rather, as I

should say, craning myself upon my toes in an attempt to sightsee. But my business was no more with the "People's Car" and the German *Reichschancellor* than with the Japanese marionette motorcars, and I soon turned my attention to searching for someone who might aid me in the coming struggle with Lansbury. Here I was fortunate indeed, for I had no sooner looked around than I beheld a portly man in the uniform of an officer of the *Flugzeugmeisterei* buying a handful of Germanic confections from a hawker. I crossed to him at once, bowed, and after apologizing for having ventured to address him without an introduction made bold to congratulate him upon the great airship floating above us.

"Ah!" he said. "So you like that" (it was almost "dot") "fat sailor up there? Well, he is a fine ship, and no mistake." He puffed himself up in the good-natured German way as he said this and popped a sweet into his mouth, and I could see that he was pleased. I was about to ask him if he had ever given any consideration to the military aspects of aviation when I noticed the decorations on his uniform jacket. Seeing the direction of my gaze he asked, "You know what those are?"

"I certainly do," I replied. "I was never in combat myself, but I would have given anything to have been a flier. I was about to ask you, Herr—"

"Goering."

"Herr Goering, how you feel the employment of aircraft would differ if—I realize this may sound absurd—the Great War were to take place now?"

I saw from a certain light in his eyes that I had found a kindred soul. "That is a good question," he said, and for a moment he stood staring at me, looking for all the world like a Dutch schoolmaster about to give a favorite pupil's inquiry the deep consideration it deserved. "And I will tell you this—what we had then was nothing. Kites, with guns. If war was to come again now . . ." He paused.

"It is unthinkable, of course."

"*Ja*. Today the *Vaterland*, that could not conquer Europe with bayonets in that war, conquers all the world with money and our little cars. With those things our leader has brought down the enemies of the party, and all the industry of Poland, of Austria, is ours. The people say, 'Our company, our bank,' but now the shares are in Berlin."

I knew all this, of course, as every well-informed person does; and I was about to steer the conversation back toward new military techniques, but it was unnecessary. "But you," Goering continued, his mood suddenly lightening, "and I, my friend, what do we care? That is for the financial people, *nicht wahr?* Do you know what I?" (he thumped his broad chest) "would

do when the war came? I would build *Stutzkampfbombers*."

"*Stutzkampfbombers?*"

"Each to carry one bomb! Only one, but a big one. Fast planes—" he stooped and made a diving motion with his right hand, at the last moment "pulling out" and releasing a Bavarian cream in such a way that it struck my shoe. "Fast planes. I would put my tanks—you know tanks?"

I nodded and said, "A little."

"—in columns. The *Stutzkampfbombers* ahead of the tanks, the storm troops behind. Fast tanks too—not so much armor, but fast, with big guns."

"Brilliant . . . a lightning war."

"*Ja, blitzkrieg*; but listen, my friend. I must go now and wait upon our *Führer*, but there is someone here you should meet. You like tanks—this man is their father—he was in the navy here in the war, and when the army would not do it he did it from the navy, and they told the newspapers they were making water tanks. You use that silly name still, and when you stand on the outside talk about decks on it because of him. He is in there—" He jerked a finger at the huge pavilion where the *Reichschancellor* was shortly to demonstrate the "People's Cars" to a delighted British public.

I told him I could not possibly get in there—the place was packed already, and the crowd twenty deep outside now.

"You watch. With Hermann you will get in. You come with me, and look like you might be from the newspaper."

Docilely I followed the big, blond German as he bulled his way—as much by his bulk and loud voice as by his imposing uniform—through the crowd. At the door the guard (in *lederhosen*) saluted him and made no effort to prevent my entering at all.

In a moment I found myself in an immense hall, the work of the same Germanic engineering genius that had recently stunned the world with the *Autobahn*. A vaulted metallic ceiling as bright as a mirror reflected with lustrous distortion every detail below. In it one saw the tiled floor, and the tiles, each nearly a foot on a side, formed an enormous image of the small car that had made German industry preeminent over half the world. By an artistry hardly less impressive than the wealth and power which had caused this great building to be erected on the exposition grounds in a matter of weeks, the face of the driver of this car could be seen through the windshield—not plainly, but dimly, as one might actually see the features of a driver about to run down the observer; it was, of course, the face of Herr Hitler.

At one side of this building, on a dais, sat the "customers," those carefully selected social and political notables whose good fortune it

would be to have the "People's Car" demonstrated personally to them by no less a person than the German nation's leader. To the right of this, upon a much lower dais, sat the representatives of the press, identifiable by their cameras and notepads, and their jaunty, sometimes slightly shabby, clothing. It was toward this group that Herr Goering boldly conducted me, and I soon identified (I believe I might truthfully say, "before we were halfway there") the man he had mentioned when we were outside.

He sat in the last row, and somehow seemed to sit higher than the rest; his chin was upon his hands, which in turn were folded on the handle of his stick. His remarkable face, broad and rubicund, seemed to suggest both the infant and the bulldog. One sensed here an innocence, an unspoiled delight in life, coupled with that courage to which surrender is not, in the ordinary conversational sense "unthinkable," but is actually never thought. His clothes were expensive and worn, so that I would have imagined he might be a valet save that they fit him so perfectly, and that something about him forbade his ever having been anyone's servant save, perhaps, the King's.

"Herr Churchill," said Goering, "I have brought you a friend."

His head lifted from his stick and he regarded me with keen blue eyes. "Yours," he asked, "or mine?"

"He is big enough to share," Goering answered easily. "But for now I leave him with you."

The man on Churchill's left moved to one side and I sat down.

"You are neither a journalist nor a panderer," Churchill rumbled. "Not a journalist because I know them all, and the panderers all seem to know me—or say they do. But since I have never known that man to like anyone who wasn't one of the second or be civil to anyone except one of the first, I am forced to ask how the devil you did it."

I began to describe our game, but I was interrupted after five minutes or so by the man sitting in front of me, who without looking around nudged me with his elbow and said, "Here he comes."

The *Reichschancellor* had entered the building, and, between rows of *Sturmsachbearbeiters* (as the elite sales force was known), was walking stiffly and briskly toward the center of the room; from a balcony fifty feet above our heads a band launched into *Deutschland, Deutschland uber alles* with enough verve to bring the place down, while an American announcer nearby me screamed to our compatriots on the far side of the Atlantic that Herr Hitler was *here*, that he was even now, with commendable German punctuality, nearing the place where he was supposed to be.

Unexpectedly a thin, hooting sound cut through the music—and

as it did the music halted as abruptly as though a bell jar had been dropped over the band. The hooting sounded again, and the crowd of onlookers began to part like tall grass through which an approaching animal, still unseen, was making its way. Another hoot, and the last of the crowd, the lucky persons who stood at the very edge of the cordoned-off area in which the *Reichschancellor* would make his demonstrations, parted, and we could see that the "animal" was a small, canary-yellow "People's Car"; as the *Reichschancellor* approached the appointed spot from one side, so did this car approach him from the other, its slow, straight course and bright color combining to give the impression of a personality at once docile and pert, a pleasing and fundamentally obedient insouciance.

Directly in front of the notables' dais they met and halted. The "People's Car" sounded its horn again, three measured notes, and the *Reichschancellor* leaned forward, smiled (almost a charming smile because it was so unexpected), and patted its hood; the door opened and a blond German girl in a pretty peasant costume emerged; she was quite tall, yet she had—as everyone had seen—been comfortably seated in the car a moment before. She blew a kiss to the notables, curtsied to Hitler, and withdrew; the show proper was about to begin.

I will not bore the readers of this magazine by rehearsing yet again those details they have already read so often, not only in the society pages of the *Times* and other papers but in several national magazines as well. That Lady Woolberry was cheered for her skill in backing completely around the demonstration area is a fact already, perhaps, too well known. That it was discovered that Sir Henry Braithewaite could not drive only after he had taken the wheel is a fact hardly less famous. Suffice it to say that things went well for Germany; the notables were impressed, and the press and the crowd attentive. Little did anyone present realize that only after the last of the scheduled demonstrations was History herself to wrest the pen from Tattle. It was then that Herr Hitler made one of the unexpected and indeed utterly unforeseeable intuitive decisions for which he is famous. (The order, issued from Berchtesgaden at a time when nothing of the kind was in the least expected, and, indeed, when every commentator believed that Germany would be content, at least for a time, to exploit the economic suzerainty she had already gained in Eastern Europe and elsewhere, by which every "People's Car" sold during May, June, and July would be equipped with Nordic Sidewalls at no extra cost comes at once to mind.) Having exhausted the numbers, if not the interest, of the nobility, Herr Hitler

turned toward the press dais and offered a demonstration to any journalist who would step forward.

The offer, as I have said, was made to the dais at large; but there was no doubt—there could be no doubt—for whom it was actually intended; those eyes, bright with fanatic energy and the pride natural to one who commands a mighty industrial organization, were locked upon a single placid countenance. That man rose and slowly, without speaking a word until he was face to face with the most powerful man in Europe, went to accept the challenge; I shall always remember the way in which he exhaled the smoke of his cigar as he said: "I believe this is an automobile?"

Herr Hitler nodded. "And you," he said, "I think once were of the high command of this country. You are Herr Churchill?"

Churchill nodded. "During the Great War," he said softly, "I had the honor—for a time—of filling a post in the Admiralty."

"During that time," said the German leader, "I myself was a corporal in the Kaiser's army. I would not have expected to find you working now at a newspaper."

"I was a journalist before I ever commenced being a politician," Churchill informed him calmly. "In fact, I covered the Boer War as a correspondent with a roving commission. Now I have returned to my old trade, as a politician out of office should."

"But you do not like my car?"

"I fear," Churchill said imper- turbably, "that I am hopelessly prejudiced in favor of democratically produced products—at least, for the people of the democracies. We British also manufacture a small car, you know—the Centurion."

"I have heard of it. You put water in it."

By this time the daises were empty. We were, to the last man and woman, and not only the journalists but the notables as well, clustered about the two (I say, intentionally, *two*, for greatness remains greatness even when stripped of power) giants. It was a nervous moment, and might have become more so had not the tension been broken by an unexpected interruption. Before Churchill could reply we heard the sibilant syllables of a Japanese voice, and one of the toy automobiles from Imperial Nippon came scooting across the floor, made as though to go under the yellow "People's Car" (which it was much too large to do), then veered to the left and vanished in the crowd of onlookers again. Whether it was madness that seized me at the sight of the speeding little car, or inspiration, I do not know—but I shouted, "Why not have a race?"

And Churchill, without an instant's delay, seconded me: "Yes, what's this we hear about this German machine? Don't you call it the race master?"

Hitler nodded. "*Ja*, it is very fast, for so small and economical a one. Yes, we will race with you, if you wish." It was said with what seemed to be perfect poise; but I noted, as I believe many others did, that he had nearly lapsed into German.

There was an excited murmur of comment at the *Reichschancellor's* reply, but Churchill silenced it by raising his cigar. "I have a thought," he said. "Our cars, after all, were not constructed for racing."

"You withdraw?" Hitler asked. He smiled, and at that moment I hated him.

"I was about to say," Churchill continued, "that vehicles of this size are intended as practical urban and suburban transportation. By which I mean for parking and driving in traffic—the gallant, unheralded effort by which the average Englishman earns his bread. I propose that upon the circular track which surrounds these exposition grounds we erect a course which will duplicate the actual driving conditions the British citizen faces—and that in the race the competing drivers be required to park every hundred yards or so. Half the course might duplicate central London's normal traffic snarl, while the other half simulated a residential neighborhood; I believe we might persuade the Japanese to supply us with the traffic using their driverless cars."

"Agreed!" Hitler said immediately. "But you have made all the rules. Now we Germans will make a rule. Driving is on the right."

"Here in Britain," Churchill said, "we drive on the left. Surely you know that."

"My Germans drive on the right and would be at a disadvantage driving on the left."

"Actually," Churchill said slowly, "I had given that some consideration before I spoke. Here is what I propose. One side of the course must, for verisimilitude, be lined with shops and parked lorries and charabancs. Let the other remain unencumbered for spectators. Your Germans, driving on the right, will go clockwise around the track, while the British drivers, on the left—"

"Go the other direction," Hitler exclaimed. "And in the middle—*ZERSTOREND GEWALT!*"

"Traffic jam," Churchill interpreted coolly. "You are not afraid?"

The date was soon set—precisely a fortnight from the day upon which the challenge was given and accepted. The Japanese consented to supply traffic with their drone cars, and the exposition officials to cooperate in setting up an artificial street on the course surrounding the grounds. I need not say that excitement was intense; an American firm, Movietone News, sent not less than three crews to film the race,

and there were several British newsreel companies as well. On the appointed day excitement was at a fever pitch, and it was estimated that more than three million pounds had been laid with the bookmakers, who were giving three to two on the Germans.

Since the regulations (written, largely, by Mr. Churchill) governing the race and the operation of the unmanned Japanese cars were of importance, and will, in any event, be of interest to those concerned with logical games, allow me to give them in summary before proceeding further. It was explained to the Japanese operators that their task would be to simulate actual traffic. Ten radio-controlled cars were assigned (initially) to the "suburban" half of the course (the start for the Germans, the home-stretch for the British team), while fifty were to operate in the "urban" section. Eighty parking positions were distributed at random along the track, and the operators—who could see the entire course from a vantage point on one of the observation decks of the dirigible tower—were instructed to park their cars in these for fifteen seconds, then move onto the course once more and proceed to the next unoccupied position according to the following formula: if a parking space were in the urban sector it was to be assigned a "distance value" equal to its actual distance from the operator's machine, as de-

terminated by counting the green "distance lines" with which the course was striped at five yard intervals—but if a parking position were in the suburban section of the track, its distance value was to be the counted distance plus two. Thus the "traffic" was biased—if I may use the expression—toward the urban sector. The participating German and English drivers, unlike the Japanese, were required to park in every position along the route, but could leave each as soon as they had entered it. The spaces between positions were filled with immobile vehicles loaned for the occasion by dealers and the public, and a number of London concerns had erected mock buildings similar to stage flats along the *parking* side of the course.

I am afraid I must tell you that I did not scruple to make use of my slight acquaintance with Mr. Churchill to gain admission to the paddock (as it were) on the day of the race. It was a brilliant day, one of those fine early spring days of which the west of England justly boasts, and I was feeling remarkably fit, and pleased with myself as well. The truth is that my game with Lansbury was going very satisfactorily indeed; putting into operation the suggestions I had received from Herr Goering I had overrun one of Lansbury's most powerful domains (France) in just four moves, and I felt that only stubbornness was preventing him

from conceding the match. It will be understood then that when I beheld Mr. Churchill hurrying in my direction, his cigar clamped between his teeth and his old Homberg pulled almost about his ears, I gave him my broadest smile.

He pulled up short, and said, "You're Goering's friend, aren't you—I see you've heard about our drivers."

I told him I had heard nothing.

"I brought five drivers with me—racing chaps who had volunteered. But the Huns have protested them. They said their own drivers were going to have to be *Sturmsachbearbeiters*, and it wasn't sporting to run professionals against them; the exposition committee has sided with them, and now I'm going to have to get up a scratch team to drive for England. All amateurs—I can offer them nothing but blood, toil, tears and sweat, and those blasted SS are nearly professional caliber. I've got three men but I'm still one short even if I drive myself . . ."

For a moment we looked at one another; then I said: "I have never raced, but my friends all tell me I drive too fast, and I have survived a number of accidents; I hope you don't think my acquaintance with Herr Goering would tempt me to abandon fair play if I were enlisted for Britain."

"Of course not." Churchill puffed out his cheeks. "So you drive, do you? May I ask what marquee?"

I told him I owned a Centurion, the model the British team would field; something in the way he looked at me and drew on his cigar told me that he knew I was lying—and that he approved.

I wish that my stumbling pen could do justice to the race itself, but it cannot. With four others—one of whom was Mr. Churchill—I waited with throbbing engine at the British starting line. Behind us, their backs toward us, were the five German *Sturmsachbearbeiters* in their "People's Cars." Ahead of us stretched a weirdly accurate imitation of a London street, wherein the miniature Japanese cars already dodged back and forth in increasing disorder.

The starting gun sounded and every car shot forward; as I jockeyed my little vehicle into its first park I was acutely aware that the Germans, having entered at the suburban end of the course, would be making two or three positions to our one. Fenders crumpled and tempers flared, and I—all of us—drove and parked, drove and parked, until it seemed that we had been doing it forever. Sweat had long since wilted my shirt collar, and I could feel the blisters growing on my hands; then I saw, about thirty yards in front of me, a tree in a tub—and a flat painted to resemble, not a city shop but a suburban villa. It dawned on me then—it was as though I had been

handed a glass of cold champagne—that *we had not yet met the Germans*. We had not yet met them, and the demarcation was just ahead, the halfway point. I knew then that we had won.

Of the rest of the race, what is there to say? We were two hundred yards into the suburban sector before we saw the slanted muzzle of the first "People's Car." My own car finished dead last—among the British team—but fifth in the race when the field was taken as a whole, which is only to say that the British entries ran away with everything. We were lionized (even I); and when *Reichschancellor* Hitler himself ran out onto the course to berate one of his drivers and was knocked off his feet by a Japanese toy, there was simply no hope for the German "People's Car" in the English-speaking world. Individuals who had already taken dealerships filed suits to have their money returned, and the first ships carrying "People's Cars" to reach London (Hitler had ordered them to sail well in advance of the race, hoping to exploit the success he expected with such confidence) simply never unloaded. (I understand their cargo was later sold cheaply in Morocco.)

All this, I realize, is already well known to the public; but I believe I am in a position to add a postscript which will be of special interest to those whose hobby is games.

I had, as I have mentioned, ex-

plained the game Lansbury and I had developed to Mr. Churchill while we were waiting for the demonstrations of the "People's Car" to begin, and had even promised to show him how we played if he cared to come to my rooms; and come he did, though it was several weeks after the race. I showed him our board (the map shellacked over) and regretted that I could not also show him a game in progress, explaining that we had just completed our first, which (because we counted the Great War as *one*) we called World War Two.

"I take it you were victorious," he said.

"No, I lost—but since I was Germany that won't discomfort you, and anyway I would rather have won that race against the real Germans than all the games Lansbury and I may ever play."

"Yes," he said. "Never have so many owed so much to you—at least, I suppose not."

Something in his smile raised my suspicions; I remembered having seen a similar expression on Lansbury's face (which I really only noticed afterward) when he persuaded me that he intended to make his invasion of Europe by way of Greece; and at last I blurted out: "Was that race really fair? I mean to say—we did surprisingly well."

"Even you," Churchill remarked, "beat the best of the German drivers."

"I know," I said. "That's what bothers me."

He seated himself in my most comfortable armchair and lit a fresh cigar. "The idea struck me," he said, "when that devilish Japanese machine came scooting out while I was talking to Hitler. Do you remember that?"

"Certainly. You mean the idea of using the Japanese cars as traffic?"

"Not only that. A recent invention, the transistor, makes those things possible. Are you by any chance familiar with the operating principle of the transistor?"

I said that I had read that in its simplest form it was merely a tiny chip or flake of material which was conductive in one direction only.

"Precisely so." Churchill puffed his cigar. "Which is only to say that electrons can move through the stuff more readily in one direction than in another. Doesn't that seem remarkable? Do you know how it is done?"

I admitted that I did not.

"Well, neither did I before I read an article in *Nature* about it, a week or two before I met Herr Hitler. What the sharp lads who make these things do is to take a material called germanium—or silicon will do as well, though the transistor ends up acting somewhat differently—in a very pure state, and then add some impurities to it. They are very careful about what they put in, of course. For example, if they add a little bit of

antimony the stuff they get has more electrons in it than there are places for them to go, so that some are wandering about loose all the time. Then there's other kinds of rubbish—boron is one of them—that makes the material have more spots for electrons than electrons to occupy them. The experts call the spots 'holes', but I would call them 'parking places', and the way you make your transistor is to put the two sorts of stuff up against each other."

"Do you mean that our track was . . ."

Churchill nodded. "Barring a little terminological inexactitude, yes I do. It was a large transistor—primitive if you like, but big. Take a real transistor now. What happens at the junction point where the two sorts of material come together? Well, a lot of electrons from the side that has them move over into the side that doesn't—there's so much more space there for them, you see."

"You mean that if a car—I mean an electron—tries to go the other way, from the side where there are a great many parking places—"

"It has a difficult time. Don't ask me why, I'm not an electrical engineer, but some aspects of the thing can't be missed by anyone, even a simple political journalist like myself. One is that the electron you just mentioned is swimming upstream, as it were."

"And we were driving down-

stream," I said. "That is, if you don't mind my no longer talking about electrons."

"Not at all. I pass with relief from the tossing sea of cause and theory to the firm ground of result and fact. Yes, we were driving with the current, so to speak; perhaps it has also occurred to you that our coming in at the urban end, where most of the Japanese cars were, set up a wave that went ahead of us; we were taking up the spaces, and so they were drawn toward the Germans when they tried to find some, and of course a wave of that sort travels much faster than the individuals in it. I suppose a transistor expert would say that by having like charges we repelled them."

"But eventually they would pile up between the teams—I remember that the going did get awfully thick just about when we passed through the Germans."

"Correct. And when that happened there was no further reason for them to keep running ahead of us—the Jerries were repelling them too by then, if you want to put it that way—and then the rules (my famous distance formula, if you recall) pulled them back into the urban area, where the poor Huns had to struggle with them some more while we breezed home."

We sat silent for a time; then I said, "I don't suppose it was particularly honest; but I'm glad you did it."

"Dishonesty," Churchill said easily, "consists in violating rules to which one has—at least by implication—agreed. I simply proposed rules I felt would be advantageous, which is diplomacy. Don't you do that when you set up your game?" He looked down at the world map on the table. "By the way, you've burnt your board."

"Oh, there," I said. "Some coals fell from Lansbury's pipe toward the end of the game—they cost us a pair of cities in south Japan, I'm afraid."

"You'd better be careful you don't burn up the whole board next time. But speaking of the Japanese, have you heard that they are bringing out an automobile of their own? They received so much attention in the press in connection with the race that they're giving it a name the public will associate with the toy motorcars they had here."

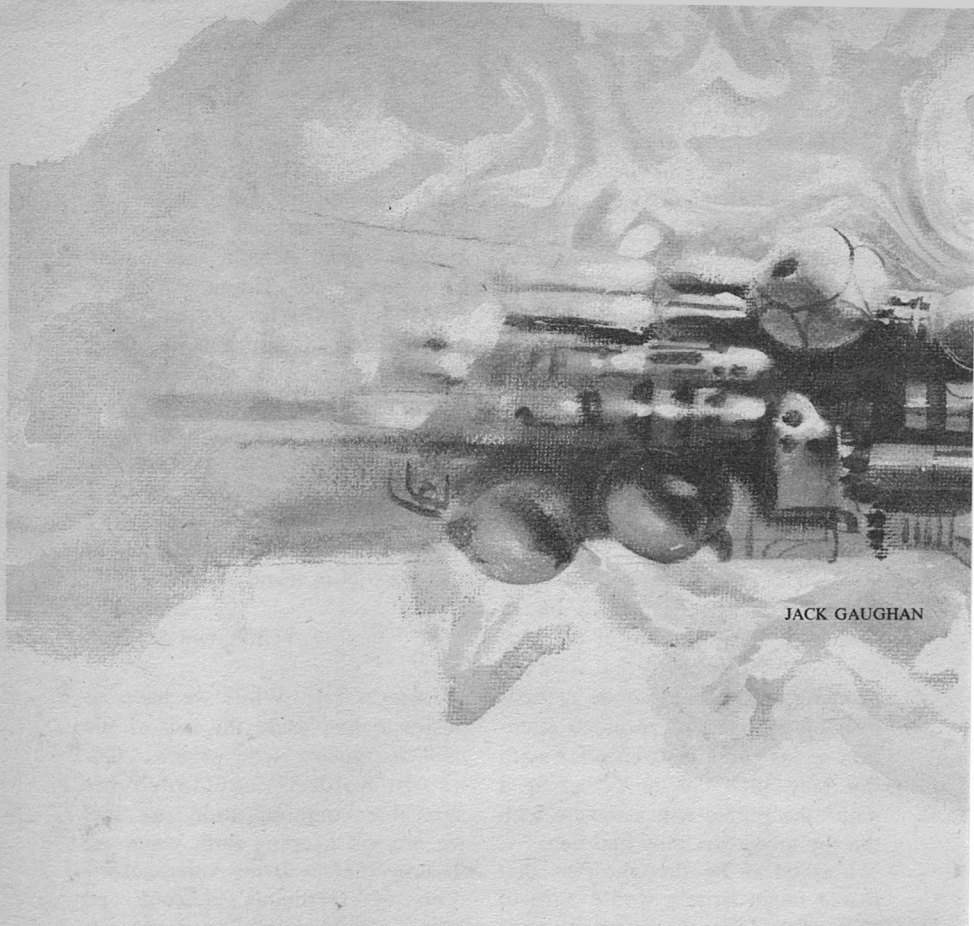
I asked if he thought that that would mean Britain would have to beat off a Japanese invasion eventually, and he said that he supposed it did, but that we Americans would have to deal with them first—he had heard that the first Japanese-made cars were already being unloaded in Pearl Harbor. He left shortly after that, and I doubt that I will ever have the pleasure of his company again, much though I should like it.

But my story is not yet finished. Readers of this magazine will be glad to learn that Lansbury and I

are about to begin another game, necessarily to be prosecuted by mail, since I will soon be leaving England. In our new struggle the United States, Britain, and China will oppose the Union of Soviet Socialist Republics, Poland, Rumania, and a number of other Eastern European states. Since Germany should have a part in any proper war, and Lansbury would not agree to my having her again, we have divided her between us. I shall try to keep Mr. Churchill's warning in mind, but my opponent and I are both heavy smokers.

Sincerely,
"Unknown Soldier"

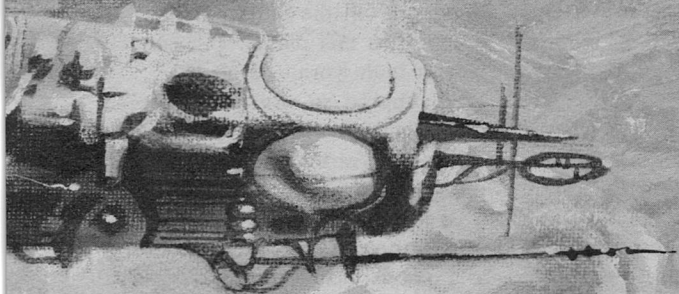
Editor's Note. While we have no desire to tear aside the veil of the *nom de guerre* with which "Unknown Soldier" concluded his agreeable communication, we feel we are yet keeping faith when we disclose that he is an American officer of Germanic descent, no longer young (quite) and yet too young to have seen action in the Great War, though we are told he came very near. At present "Unknown Soldier" is attached to the American embassy in London, but we understand that, as he feels it unlikely his country will ever again have need of military force within his lifetime, he intends to give up his commission and return to his native Kansas, where he will operate an agency for Buick motorcars. Best of luck, Dwight. ■



JACK GAUGHAN

George R. R. Martin
WITH MORNING COMES MISTFALL

Man's curiosity drives him to seek the answer to every question.
But it's the unanswered questions that are the most exciting.



I was early to breakfast that morning, the first day after landing. But Sanders was already out on the dining balcony when I got there. He was standing alone by the edge, looking out over the mountains and the mists.

I walked up behind him and muttered hello. He didn't bother to reply. "It's beautiful, isn't it?" he said, without turning.

And it was.

Only a few feet below balcony level the mists rolled, sending ghostly breakers to crash against the stones of Sanders' castle. A thick white blanket extended from horizon to horizon, cloaking every-

thing. We could see the summit of the Red Ghost, off to the north; a barbed dagger of scarlet rock jabbing into the sky. But that was all. The other mountains were still below mist level.

But we were above the mists. Sanders had built his hotel atop the tallest mountain in the chain. We were floating alone in a swirling white ocean, on a flying castle amid a sea of clouds.

Castle Cloud, in fact. That was what Sanders had named the place. It was easy to see why.

"Is it always like this?" I asked Sanders, after drinking it all in for a while.

"Every mistfall," he replied, turning toward me with a wistful smile. He was a fat man, with a jovial red face. Not the sort who should smile wistfully. But he did.

He gestured toward the east, where Wraithworld's sun rising above the mists made a crimson and orange spectacle of the dawn sky.

"The sun," he said. "As it rises, the heat drives the mists back into the valleys, forces them to surrender the mountains they've conquered during the night. The mists sink, and one by one the peaks come into view. By noon the whole range is visible for miles and miles. There's nothing like it on Earth, or anywhere else."

He smiled again, and led me over to one of the tables scattered around the balcony. "And then, at sunset, it's all reversed. You must watch mistrise tonight," he said.

We sat down, and a sleek robo-waiter came rolling out to serve us as the chairs registered our presence. Sanders ignored it. "It's war, you know," he continued. "Eternal war between the sun and the mists. And the mists have the better of it. They have the valleys, and the plains, and the seacoasts. The sun has only a few mountaintops. And them only by day."

He turned to the robowaiter and ordered coffee for both of us, to keep us occupied until the others arrived. It would be fresh-brewed, of course. Sanders didn't tolerate

instants or synthetics on his planet.

"You like it here," I said, while we waited for the coffee.

Sanders laughed. "What's not to like? Castle Cloud has everything. Good food, entertainment, gambling, and all the other comforts of home. Plus this planet. I've got the best of both worlds, don't I?"

"I suppose so. But most people don't think in those terms. Nobody comes to Wraithworld for the gambling, or the food."

Sanders nodded. "But we do get some hunters. Out after rockcats and plains devils. And once in a while someone will come to look at the ruins."

"Maybe," I said. "But those are your exceptions. Not your rule. Most of your guests are here for one reason."

"Sure," he admitted, grinning. "The wraiths."

"The wraiths," I echoed. "You've got beauty here, and hunting and fishing and mountaineering. But none of that brings the tourists here. It's the wraiths they come for."

The coffee arrived then, two big steaming mugs accompanied by a pitcher of thick cream. It was very strong, and very hot, and very good. After weeks of spaceship synthetic, it was an awakening.

Sanders sipped at his coffee with care, his eyes studying me over the mug. He set it down thoughtfully. "And it's the wraiths you've come for, too," he said.

I shrugged. "Of course. My readers aren't interested in scenery, no matter how spectacular. Dubowski and his men are here to find wraiths, and I'm here to cover the search."

Sanders was about to answer, but he never got the chance. A sharp, precise voice cut in suddenly. "If there are any wraiths to find," the voice said.

We turned to face the balcony entrance. Dr. Charles Dubowski, head of the Wraithworld Research Team, was standing in the doorway, squinting at the light. He had managed to shake the gaggle of research assistants who usually trailed him everywhere.

Dubowski paused for a second, then walked over to our table, pulled out a chair, and sat down. The robowaiter came rolling out again.

Sanders eyed the thin scientist with unconcealed distaste. "What makes you think the wraiths aren't there, Doctor?" he asked.

Dubowski shrugged, and smiled lightly. "I just don't feel there's enough evidence," he said. "But don't worry. I never let my feelings interfere with my work. I want the truth as much as anyone. So I'll run an impartial expedition. If your wraiths *are* out there, I'll find them."

"Or they'll find you," Sanders said. He looked grave. "And that might not be too pleasant."

Dubowski laughed. "Oh, come now, Sanders. Just because you live in a castle doesn't mean you have to be so melodramatic."

"Don't laugh, Doctor. The wraiths have killed people before, you know."

"No proof of that," said Dubowski. "No proof at all. Just as there's no proof of the wraiths themselves. But that's why we're here. To find proof. Or disproof. But come, I'm famished." He turned to our robowaiter, who had been standing by and humming impatiently.

Dubowski and I ordered rockcat steaks, with a basket of hot, freshly-baked biscuits. Sanders took advantage of the Earth supplies our ship had brought in last night, and got a massive slab of ham with a half-dozen eggs.

Rockcat has a flavor that Earth meat hasn't had in centuries. I loved it, although Dubowski left much of his steak uneaten. He was too busy talking to eat.

"You shouldn't dismiss the wraiths so lightly," Sanders said after the robowaiter had stalked off with our orders. "There is evidence. Plenty of it. Twenty-two deaths since this planet was discovered. And eyewitness accounts of wraiths by the dozens."

"True," Dubowski said. "But I wouldn't call that real evidence. Deaths? Yes. Most are simple disappearances, however. Probably people who fell off a mountain, or

got eaten by a rockcat, or something. It's impossible to find the bodies in the mists. More people vanish every day on Earth, and nothing is thought of it. But here, every time someone disappears, people claim the wraiths got him. No, I'm sorry. It's not enough."

"Bodies have been found, Doctor," Sanders said quietly. "Slain horribly. And not by falls or rockcats, either."

It was my turn to cut in. "Only four bodies have been recovered that I know of," I said. "And I've backgrounded myself pretty thoroughly on the wraiths."

Sanders frowned. "All right," he admitted. "But what about those four cases? Pretty convincing evidence, if you ask me."

The food showed up about then, but Sanders continued as we ate. "The first sighting, for example. That's never been explained satisfactorily. The Gregor Expedition."

I nodded. Dave Gregor had captained the ship that had discovered Wraithworld, nearly seventy-five years earlier. He had probed through the mists with his sensors, and set his ship down on the seacoast plains. Then he sent teams out to explore.

There were two men in each team, both well armed. But in one case, only a single man came back, and he was in hysteria. He and his partner had gotten separated in the mists, and suddenly he heard a

blood-curdling scream. When he found his friend, he was quite dead. And something was standing over the body.

The survivor described the killer as man-like, eight feet tall, and somehow insubstantial. He claimed that when he fired at it, the blaster bolt went right through it. Then the creature had wavered, and vanished in the mists.

Gregor sent other teams out to search for the thing. They recovered the body, but that was all. Without special instruments, it was difficult to find the same place twice in the mists. Let alone something like the creature that had been described.

So the story was never confirmed. But nonetheless, it caused a sensation when Gregor returned to Earth. Another ship was sent to conduct a more thorough search. It found nothing. But one of its search teams disappeared without a trace.

And the legend of the mist wraiths was born, and began to grow. Other ships came to Wraithworld, and a trickle of colonists came and went, and Paul Sanders landed one day and erected the Castle Cloud so the public might safely visit the mysterious planet of the wraiths.

And there were other deaths, and other disappearances, and many people claimed to catch brief glimpses of wraiths prowling through the mists. And then some-

one found the ruins. Just tumbled stone blocks, now. But once, structures of some sort. The homes of the wraiths, people said.

There was evidence, I thought. And some of it was hard to deny. But Dubowski was shaking his head vigorously.

"The Gregor affair proves nothing," he said. "You know as well as I this planet has never been explored thoroughly. Especially the plains area, where Gregor's ship put down. It was probably some sort of animal that killed that man. A rare animal of some sort native to that area."

"What about the testimony of his partner?" Sanders asked.

"Hysteria, pure and simple."

"The other sightings? There have been an awful lot of them. And the witnesses weren't always hysterical."

"Proves nothing," Dubowski said, shaking his head. "Back on Earth, plenty of people still claim to have seen ghosts and flying saucers. And here, with those damned mists, mistakes and hallucinations are naturally even easier."

He jabbed at Sanders with the knife he was using to butter a biscuit. "It's these mists that foul up everything. The wraith myth would have died long ago without the mists. Up to now, no one has had the equipment or the money to conduct a really thorough investigation. But we do. And we will. We'll get the truth once and for all."

Sanders grimaced. "If you don't get yourself killed first. The wraiths may not like being investigated."

"I don't understand you, Sanders," Dubowski said. "If you're so afraid of the wraiths and so convinced that they're down there prowling about, why have you lived here so long?"

"Castle Cloud was built with safeguards," Sanders said. "The brochure we send prospective guests describes them. No one is in danger here. For one thing, the wraiths won't come out of the mists. And we're in sunlight most of the day. But it's a different story down in the valleys."

"That's superstitious nonsense. If I had to guess, I'd say these mist wraiths of yours were nothing but transplanted Earth ghosts. Phantoms of someone's imagination. But I won't guess—I'll wait until the results are in. Then we'll see. If they are real, they won't be able to hide from us."

Sanders looked over at me. "What about you? Do you agree with him?"

"I'm a journalist," I said carefully. "I'm just here to cover what happens. The wraiths are famous, and my readers are interested. So I've got no opinions. Or none that I'd care to broadcast, anyway."

Sanders lapsed into a disgruntled silence, and attacked his ham and eggs with a renewed vigor. Dubowski took over for him, and steered the conversation over to the

details of the investigation he was planning. The rest of the meal was a montage of eager talk about wraith traps, and search plans, and roboprobes, and sensors. I listened carefully and took mental notes for a column on the subject.

Sanders listened carefully, too. But you could tell from his face that he was far from pleased by what he heard.

Nothing much else happened that day. Dubowski spent his time at the spacefield, built on a small plateau below the castle, and supervised the unloading of his equipment. I wrote a column on his plans for the expedition, and beamed it back to Earth. Sanders tended to his other guests, and did whatever else a hotel manager does, I guess.

I went out to the balcony again at sunset, to watch the mists rise.

It was war, as Sanders had said. At mistfall, I had seen the sun victorious in the first of the daily battles. But now the conflict was renewed. The mists began to creep back to the heights as the temperature fell. Wispy gray-white tendrils stole up silently from the valleys, and curled around the jagged mountain peaks like ghostly fingers. Then the fingers began to grow thicker and stronger, and after a while they pulled the mists up after them.

One by one the stark, wind-carved summits were swallowed up for another night. The Red Ghost,

the giant to the north, was the last mountain to vanish in the lapping white ocean. And then the mists began to pour in over the balcony ledge, and close around Castle Cloud itself.

I went back inside. Sanders was standing there, just inside the doors. He had been watching me.

"You were right," I said. "It was beautiful."

He nodded. "You know, I don't think Dubowski has bothered to look yet," he said.

"Busy, I guess."

Sanders sighed. "Too damn busy. C'mon. I'll buy you a drink."

The hotel bar was quiet and dark, with the kind of mood that promotes good talk and serious drinking. The more I saw of Sanders' castle, the more I liked the man. Our tastes were in remarkable accord.

We found a table in the darkest and most secluded part of the room, and ordered drinks from a stock that included liquors from a dozen worlds. And we talked.

"You don't seem very happy to have Dubowski here," I said after the drinks came. "Why not? He's filling up your hotel."

Sanders looked up from his drink, and smiled. "True. It is the slow season. But I don't like what he's trying to do."

"So you try to scare him away?"

Sanders' smile vanished. "Was I that transparent?"

I nodded.

He sighed. "Didn't think it would work," he said. He sipped thoughtfully at his drink. "But I had to try something."

"Why?"

"Because. Because he's going to destroy this world, if I let him. By the time he and his kind get through, there won't be a mystery left in the universe."

"He's just trying to find some answers. Do the wraiths exist? What about the ruins? Who built them? Didn't you ever want to know those things, Sanders?"

He drained his drink, looked around, and caught the waiter's eye to order another. No robowaiters in here. Only human help. Sanders was particular about atmosphere.

"Of course," he said when he had his drink. "Everyone's wondered about those questions. That's why people come here to Wraithworld, to the Castle Cloud. Each guy who touches down here is secretly hoping he'll have an adventure with the wraiths, and find out all the answers personally.

"So he doesn't. So he slaps on a blaster and wanders around the mist forests for a few days, or a few weeks, and finds nothing. So what? He can come back and search again. The dream is still there, and the romance, and the mystery.

"And who knows? Maybe one trip he glimpses a wraith drifting through the mists. Or something he thinks is a wraith. And then he'll

go home happy, because he's been part of a legend. He's touched a little bit of creation that hasn't had all the awe and the wonder ripped from it yet by Dubowski's sort."

He fell silent, and stared morosely into his drink. Finally, after a long pause, he continued. "Dubowski! Bah! He makes me boil. He comes here with his ship full of lackeys and his million-credit grant and all his gadgets, to hunt for wraiths. Oh, he'll get them all right. That's what frightens me. Either he'll prove they don't exist, or he'll find them, and they'll turn out to be some kind of submen or animals or something."

He emptied his glass again, savagely. "And that will ruin it. Ruin it, you hear! He'll answer all the questions with his gadgets, and there'll be nothing left for anyone else. It isn't fair."

I sat there and sipped quietly at my drink and said nothing. Sanders ordered another. A foul thought was running around in my head. Finally I had to say it aloud.

"If Dubowski answers all the questions," I said, "then there will be no reason to come here anymore. And you'll be put out of business. Are you sure that's not why you're so worried?"

Sanders glared at me, and I thought he was going to hit me for a second. But he didn't. "I thought you were different. You looked at mistfall, and understood. I thought you did, anyway. But I guess I was

wrong." He jerked his head toward the door. "Get out of here," he said.

I rose. "All right," I said. "I'm sorry, Sanders. But it's my job to ask nasty questions like that."

He ignored me, and I left the table. When I reached the door, I turned and looked back across the room. Sanders was staring into his drink again, and talking loudly to himself.

"Answers," he said. He made it sound obscene. "Answers. Always they have to have answers. But the questions are so much finer. Why can't they leave them alone?"

I left him alone then. Alone with his drinks.

The next few weeks were hectic ones, for the expedition and for me. Dubowski went about things thoroughly, you had to give him that. He had planned his assault on Wraithworld with meticulous precision.

Mapping came first. Thanks to the mists, what maps there were of Wraithworld were very crude by modern standards. So Dubowski sent out a whole fleet of robo-probes, to skim above the mists and steal their secrets with sophisticated sensory devices. From the information that came pouring in, a detailed topography of the region was pieced together.

That done, Dubowski and his assistants then used the maps to carefully plot every recorded wraith

sighting since the Gregor Expedition. Considerable data on the sightings had been compiled and analyzed long before we left Earth, of course. Heavy use of the matchless collection on wraiths in the Castle Cloud library filled in the gaps that remained. As expected, sightings were most common in the valleys around the hotel, the only permanent human habitation on the planet.

When the plotting was completed, Dubowski set out his wraith traps, scattering most of them in the areas where wraiths had been reported most frequently. He also put a few in distant, outlying regions, however, including the seacoast plain where Gregor's ship had made the initial contact.

The traps weren't really traps, of course. They were squat duralloy pillars, packed with most every type of sensing and recording equipment known to Earth science. To the traps, the mists were all but nonexistent. If some unfortunate wraith wandered into survey range, there would be no way it could avoid detection.

Meanwhile, the mapping robo-probes were pulled in to be overhauled and reprogrammed, and then sent out again. With the topography known in detail, the probes could be sent through the mists on low-level patrols without fear of banging into a concealed mountain. The sensing equipment carried by the probes was not the

equal of that in the wraith traps, of course. But the probes had a much greater range, and could cover thousands of square miles each day.

Finally, when the wraith traps were deployed and the robo-probes were in the air, Dubowski and his men took to the mist forests themselves. Each carried a heavy backpack of sensors and detection devices. The human search teams had more mobility than the wraith traps, and more sophisticated equipment than the probes. They covered a different area each day, in painstaking detail.

I went along on a few of those trips, with a backpack of my own. It made for some interesting copy, even though we never found anything. And while on search, I fell in love with the mist forests.

The tourist literature likes to call them "the ghastly mist forests of haunted Wraithworld." But they're not ghastly. Not really. There's a strange sort of beauty there, for those who can appreciate it.

The trees are thin and very tall, with white bark and pale gray leaves. But the forests are not without color. There's a parasite, a hanging moss of some sort, that's very common, and it drips from the overhanging branches in cascades of dark green and scarlet. And there are rocks, and vines, and low bushes choked with misshapen purplish fruits.

But there's no sun, of course.

The mists hide everything. They swirl and slide around you as you walk, caressing you with unseen hands, clutching at your feet.

Once in a while, the mists play games with you. Most of the time you walk through a thick fog, unable to see more than a few feet in any direction, your own shoes lost in the mist carpet below. Sometimes, though, the fog closes in suddenly. And then you can't see at all. I blundered into more than one tree when that happened.

At other times, though, the mists—for no apparent reason—will roll back suddenly, and leave you standing alone in a clear pocket within a cloud. That's when you can see the forest in all its grotesque beauty. It's a brief, breathtaking glimpse of never-never land. Moments like that are few and short-lived. But they stay with you.

They stay with you.

In those early weeks, I didn't have much time for walking in the forests, except when I joined a search team to get the feel of it. Mostly I was busy writing. I did a series on the history of the planet, highlighted by the stories of the most famous sightings. I did feature profiles on some of the more colorful members of the expedition. I did a piece on Sanders, and the problems he encountered and overcame in building Castle Cloud. I did science pieces on the little known about the planet's ecology. I did mood pieces about the forests

and the mountains. I did speculative thought pieces about the ruins. I wrote about rockcat hunting, and mountain climbing, and the huge and dangerous swamp lizards native to some offshore islands.

And, of course, I wrote about Dubowski and his search. On that I wrote reams.

Finally, however, the search began to settle down into dull routine, and I began to exhaust the myriad other topics Wraithworld offered. My output began to decline. I started to have time on my hands.

That's when I really began to enjoy Wraithworld. I began to take daily walks through the forests, ranging wider each day. I visited the ruins, and flew half a continent away to see the swamp lizards firsthand instead of by holo. I befriended a group of hunters passing through, and shot myself a rockcat. I accompanied some other hunters to the western seacoast, and nearly got myself killed by a plains devil.

And I began to talk to Sanders again.

Through all of this, Sanders had pretty well ignored me and Dubowski and everyone else connected with the wraith research. He spoke to us grudgingly if at all, greeted us curtly, and spent all his free time with his other guests.

At first, after the way he had talked in the bar that night, I worried about what he might do. I had visions of him murdering someone

out in the mists, and trying to make it look like a wraith killing. Or maybe just sabotaging the wraith traps. But I was sure he would try something to scare off Dubowski or otherwise undermine the expedition.

Comes of watching too much holo-
vision, I guess. Sanders did nothing of the sort. He merely sulked, glared at us in the castle corridors, and gave us less than full cooperation at all times.

After a while, though, he began to warm up again. Not toward Dubowski and his men. Just toward me.

I guess that was because of my walks in the forests. Dubowski never went out into the mists unless he had to. And then he went out reluctantly, and came back quickly. His men followed their chief's example. I was the only joker in the deck. But then, I wasn't really part of the same deck.

Sanders noticed, of course. He didn't miss much of what went on in his castle. And he began to speak to me again. Civilly. One day, finally, he even invited me for drinks again.

It was about two months into the expedition. Winter was coming to Wraithworld and Castle Cloud, and the air was getting cold and crisp. Dubowski and I were out on the dining balcony, lingering over coffee after another superb meal. Sanders sat at a nearby table, talking to some tourists.

I forget what Dubowski and I were discussing. Whatever it was, Dubowski interrupted me with a shiver at one point. "It's getting cold out here," he complained. "Why don't we move inside?" Dubowski never liked the dining balcony very much.

I sort of frowned. "It's not that bad," I said. "Besides, it's nearly sunset. One of the best parts of the day."

Dubowski shivered again, and stood up. "Suit yourself," he said. "But I'm going in. I don't feel like catching a cold just so you can watch another mistfall."

He started to walk off. But he hadn't taken three steps before Sanders was up out of his seat, howling like a wounded rockcat.

"Mistfall," he bellowed. "*Mistfall!*" He launched into a long, incoherent string of obscenities. I had never seen Sanders so angry, not even when he threw me out of the bar that first night. He stood there, literally trembling with rage, his face flushed, his fat fists clenching and unclenching at his sides.

I got up in a hurry, and got between them. Dubowski turned to me, looking baffled and scared. "Wha—" he started.

"Get inside," I interrupted. "Get up to your room. Get to the lounge. Get somewhere. Get anywhere. But get out of here before he kills you."

"But—but—what's wrong? What happened? I don't—"

"Mistfall is in the morning," I told him. "At night, at sunset, it's *mistrise*. Now *go*."

"That's *all*? Why should that get him so—so—"

"*GO!*"

Dubowski shook his head, as if to say he still didn't understand what was going on. But he went.

I turned to Sanders. "Calm down," I said. "Calm down."

He stopped trembling, but his eyes threw blaster bolts at Dubowski's back. "Mistfall," he muttered. "Two months that bastard has been here, and he doesn't know the difference between mistfall and *mistrise*."

"He's never bothered to watch either one," I said. "Things like that don't interest him. That's his loss, though. No reason for you to get upset about it."

He looked at me, frowning. Finally he nodded. "Yeah," he said. "Maybe you're right." He sighed. "But *mistfall!* Hell." There was a short silence, then, "I need a drink. Join me?"

I nodded.

We wound up in the same dark corner as the first night, at what must have been Sanders' favorite table. He put away three drinks before I had finished my first. Big drinks. Everything in Castle Cloud was big.

There were no arguments this time. We talked about mistfall, and

the forests, and the ruins. We talked about the wraiths, and Sanders lovingly told me the stories of the great sightings. I knew them all already, of course. But not the way Sanders told them.

At one point, I mentioned that I'd been born in Bradbury when my parents were spending a short vacation on Mars. Sanders' eyes lit up at that, and he spent the next hour or so regaling me with Earthman jokes. I'd heard them all before, too. But I was getting more than a little drunk, and somehow they all seemed hilarious.

After that night, I spent more time with Sanders than with anyone else in the hotel. I thought I knew Wraithworld pretty well by that time. But that was an empty conceit, and Sanders proved it. He showed me hidden spots in the forests that have haunted me ever since. He took me to island swamps, where the trees are of a very different sort and sway horribly without a wind. We flew to the far north, to another mountain range where the peaks are higher and sheathed in ice, and to a southern plateau where the mists pour eternally over the edge in a ghostly imitation of a waterfall.

I continued to write about Dubowski and his wraith hunt, of course. But there was little new to write about, so most of my time was spent with Sanders. I didn't worry too much about my output. My Wraithworld series had gotten

excellent play on Earth and most of the colony worlds, so I thought I had it made.

Not so.

I'd been on Wraithworld just a little over three months when my syndicate beamed me. A few systems away, a civil war had broken out on a planet called New Refuge. They wanted me to cover it. No news was coming out of Wraithworld anyway, they said, since Dubowski's expedition still had over a year to run.

Much as I liked Wraithworld, I jumped at the chance. My stories had been getting a little stale, and I was running out of ideas, and the New Refuge thing sounded like it could be very big.

So I said good-bye to Sanders and Dubowski and Castle Cloud, and took a last walk through the mist forests, and booked passage on the next ship through.

The New Refuge civil war was a firecracker. I spent less than a month on the planet, but it was a dreary month. The place had been colonized by religious fanatics, but the original cult had schismmed, and both sides accused the other of heresy. It was all very dingy. The planet itself had all the charm of a Martian suburb.

I moved on as quickly as I could, hopping from planet to planet, from story to story. In six months, I had worked myself back to Earth. Elections were coming up, so I got

slapped onto a political beat. That was fine by me. It was a lively campaign, and there was a ton of good stories to be mined.

But throughout it all, I kept myself up on the little news that came out of Wraithworld. And finally, as I'd expected, Dubowski announced a press conference. As the syndicate's resident wraith, I got myself assigned to cover, and headed out on the fastest starship I could find.

I got there a week before the conference, ahead of everyone else. I had beamed Sanders before taking ship, and he met me at the spaceport. We adjourned to the dining balcony, and had our drinks served out there.

"Well?" I asked him, after we had traded amenities. "You know what Dubowski's going to announce?"

Sanders looked very glum. "I can guess," he said. "He called in all his damn gadgets a month ago, and he's been cross-checking findings on a computer. We've had a couple of wraith sightings since you left. Dubowski moved in hours after each sighting, and went over the areas with a fine-tooth comb. Nothing. That's what he's going to announce, I think. Nothing."

I nodded. "Is that so bad, though? Gregor found nothing."

"Not the same," Sanders said. "Gregor didn't look the way Dubowski has. People will believe him, whatever he says."

I wasn't so sure of that, and was

about to say so, when Dubowski arrived. Someone must have told him I was there. He came striding out on the balcony, smiling, spied me, and came over to sit down.

Sanders glared at him, and studied his drink. Dubowski trained all of his attention on me. He seemed very pleased with himself. He asked what I'd been doing since I left, and I told him, and he said that was nice.

Finally I got to ask him about his results. "No Comment," he said. "That's what I've called the press conference for."

"C'mon," I said. "I covered you for months when everybody else was ignoring the expedition. You can give me some kind of beat. What have you got?"

He hesitated. "Well, O.K.," he said doubtfully. "But don't release it yet. You can beam it out a few hours ahead of the conference. That should be enough time for a beat."

I nodded agreement. "What do you have?"

"The wraiths," he said. "I have the wraiths, bagged neatly. They don't exist. I've got enough evidence to prove it beyond a shadow of a doubt." He smiled broadly.

"Just because you didn't find anything?" I started. "Maybe they were avoiding you. If they're sentient, they might be smart enough. Or maybe they're beyond the ability of your sensors to detect."

"Come now," Dubowski said.

"You don't believe that. Our wraith traps had every kind of sensor we could come up with. If the wraiths existed, they would have registered on something. But they didn't. We had the traps planted in the areas where three of Sanders' so-called sightings took place. Nothing. Absolutely nothing. Conclusive proof that those people were seeing things. Sightings, indeed."

"What about the deaths, the vanishings?" I asked. "What about the Gregor Expedition and the other classic cases?"

His smile spread. "Couldn't disprove all the deaths, of course. But our probes and our searches turned up four skeletons." He ticked them off on his fingers. "Two were killed by a rockslide, and one had rockcat claw marks on the bones."

"The fourth?"

"Murder," he said. "The body was buried in a shallow grave, clearly by human hands. A flood of some sort had exposed it. It was down in the records as a disappearance. I'm sure all the other bodies could be found, if we searched long enough. And we'd find that all died perfectly normal deaths."

Sanders raised his eyes from his drink. They were bitter eyes. "Gregor," he said stubbornly. "Gregor and the other classics."

Dubowski's smile became a smirk. "Ah, yes. We searched that area quite thoroughly. My theory was right. We found a tribe of apes

nearby. Big brutes. Like giant baboons, with dirty white fur. Not a very successful species, either. We found only one small tribe, and they were dying out. But clearly, that was what Gregor's man sighted. And exaggerated all out of proportion."

There was silence. Then Sanders spoke, but his voice was beaten. "Just one question," he said softly. "Why?"

That brought Dubowski up short, and his smile faded. "You never have understood, have you, Sanders?" he said. "It was for truth. To free this planet from ignorance and superstition."

"Free Wraithworld?" Sanders said. "Was it enslaved?"

"Yes," Dubowski answered. "Enslaved by foolish myth. By fear. Now this planet will be free, and open. We can find out the truth behind those ruins now, without murky legends about half-human wraiths to fog the facts. We can open this planet for colonization. People won't be afraid to come here, and live, and farm. We've conquered the fear."

"A colony world? Here?" Sanders looked amused. "Are you going to bring big fans to blow away the mists, or what? Colonists have come before. And left. The soil's all wrong. You can't farm here, with all these mountains. At least not on a commercial scale. There's no way you can make a profit growing things on Wraithworld."

"Besides, there are hundreds of colony worlds crying for people. Did you need another so badly? Must Wraithworld become yet another Earth?"

Sanders shook his head sadly, drained his drink, and continued. "You're the one who doesn't understand, Doctor. Don't kid yourself. You haven't freed Wraithworld. You've destroyed it. You've stolen its wraiths, and left an empty planet."

Dubowski shook his head. "I

think you're wrong. They'll find plenty of good, profitable ways to exploit this planet. But even if you were correct, well, it's just too bad. Knowledge is what man is all about. People like you have tried to hold back progress since the beginning of time. But they failed, and you failed. Man needs to know."

"Maybe," Sanders said. "But is that the *only* thing man needs? I don't think so. I think he also needs mystery, and poetry, and ro-

THE ANALYTICAL LABORATORY

The AnLab is your chance to tell us which stories you like best, and thereby reward your favorite authors with solid cash. It works this way: send us a card or letter with a list of the stories in each month's issue, ranked in the order in which you preferred them. We average the votes and publish the results here. The story that comes closest to having an average of 1.00 (which would mean it received a first-place vote from everyone voting) earns its author an extra one cent a word: \$100, in the case of a 10,000-word novelette. The story in second place receives a half-cent extra per word.

February 1973

PLACE	TITLE	AUTHOR	POINTS
1.	.....The People of the Wind (Pt.1).....	<i>Poul Anderson</i>	1.81
2.	.....Force Over Distance	<i>Tak Halkus</i>	2.47
3.	.....The Guy with the Eyes.....	<i>Spider Robinson</i>	3.39
4.	.....Modus Vivendi.....	<i>William Walling</i>	3.88
5.	.....Trade-Off	<i>R. A. Beaumont</i>	4.58
6.	.....Biological Peacefare.....	<i>W. Macfarlane</i>	4.67

mance. I think he needs a few unanswered questions, to make him brood and wonder."

Dubowski stood up abruptly, and frowned. "This conversation is as pointless as your philosophy, Sanders. There's no room in my universe for unanswered questions."

"Then you live in a very drab universe, Doctor."

"And you, Sanders, live in the stink of your own ignorance. Find some new superstitions if you must. But don't try to foist them off on me with your tales and legends. I've got no time for wraiths." He looked at me. "I'll see you at the press conference," he said. Then he turned and walked briskly from the balcony.

Sanders watched him depart in silence, then swiveled in his chair to look out over the mountains. "The mists are rising," he said.

Sanders was wrong about the colony too, as it turned out. They did establish one, although it wasn't much to boast of. Some vineyards, some factories, and a few thousand people; all belonging to no more than a couple of big companies.

Commercial farming did turn out to be unprofitable, you see. With one exception—a native grape, a fat gray thing the size of a lemon. So Wraithworld has only one export, a smoky white wine with a mellow, lingering flavor.

They call it mistwine, of course.

I've grown fond of it over the years. The taste reminds me of mistfall somehow, and makes me dream. But that's probably me, not the wine. Most people don't care for it much.

Still, in a very minor way, it's a profitable item. So Wraithworld is still a regular stop on the space-lanes. For freighters, at least.

The tourists are long gone, though. Sanders was right about that. Scenery they can get closer to home, and cheaper. The wraiths were why they came.

Sanders is long gone, too. He was too stubborn and too impractical to buy in on the mistwine operations when he had the chance. So he stayed behind his ramparts at Castle Cloud until the last. I don't know what happened to him afterwards, when the hotel finally went out of business.

The castle itself is still there. I saw it a few years ago, when I stopped for a day en route to a story on New Refuge. It's already crumbling, though. Too expensive to maintain. In a few years, you won't be able to tell it from those other, older ruins.

Otherwise the planet hasn't changed much. The mists still rise at sunset, and fall at dawn. The Red Ghost is still stark and beautiful in the early morning light. The forests are still there, and the rockcats still prowl.

Only the wraiths are missing.

Only the wraiths. ■

LAURENCE M.
JANIFER

Knowledge is the ability to predict. A little knowledge is dangerous, of course. But dangerous to whom?

AN AGENT IN PLACE

It will be very interesting to find out whether I can write this one down and get it published. I'm asking a science-fiction writer to polish it for me, and it will go out under his by-line if only because a habit of anonymity is hard to break; but none of that should make any difference. Whatever else they have their eye on, and I know they're spread thin, they have their eye on me. There is no doubt of that.



LEO SUMMERS

Which sounds paranoid until you know the facts. Such as my profession, which is Special Agent, and who *they* are. They're Central Intelligence—not the CIA, though around Washington we've mostly given up trying to make the distinction; Congress can think what it likes, and our appropriation comes out of the "Miscellaneous" barrel anyhow. CIA is mostly an international net specializing in data recovery, though like everybody else they take on other jobs now and then. Central Intelligence is "specifically nonspecialist," as the Director put it once to a House Committee: we do a little of everything from spy-eye work to protective guarding, and sometimes we make a connection that somebody looking at only one area might miss. We don't get into the news much but we earn our pay. Until recently I didn't know just how thoroughly we earned our pay. But, as I said, they're spread thin. This report may have a chance of getting through. And you might like to know where our small piece of your tax dollar is going.

The Director was telling me that he had access to files "not quite as extensive as Hollywood's Central Casting, but adequate for our purposes," and I was wondering just what sort of impersonation deal I was up for, since to my knowledge I didn't look much like anybody in the news. It had to be that: why mention Central Casting otherwise?

So I slumped a little in the chair next to his desk, and took one long, sad drag on my cigarette, and said: "All right, sir. Who am I supposed to be?"

He didn't congratulate me on the deduction. He wastes very little time. "You don't like impersonation work, I take it?"

"Frankly, sir: no," I said. "You're loaded with makeup and memorization, and you have nothing to do but wait until somebody tries to pot you. It may be useful; it may even be necessary now and then; but it's depressing."

"This isn't quite the usual thing," he said. He frowned at my cigarette. He'd given me a lecture about the Surgeon General once—but only once. "There isn't much makeup, and there isn't much memory. You're going to be triggered for one phrase—we can do that under depth hypnosis, but I'll tell you what the phrase is and what your action will be; beyond that, we won't tamper with you at all."

The Director is very big on keeping things as open as he can with the rest of us. I've heard him say that we were "valued professional aides, and not chess pieces"—in that same Committee hearing. It irritates me to think about that, now.

"And nobody will try to pot me?" I said. "It *sounds* unusual."

"Well . . ." He pushed an ash-tray across the desk to me and I stubbed out the cigarette. "I

wouldn't quite go that far," he said. Which made matters clear, if not comforting.

"All right," I said. "So . . . who's in danger? Who am I supposed to be?"

"A man named Welkin—Beer Barrel Dave Welkin," he said. "And, as for who's in danger—"

He went on with quite a speech about the election year, and everybody being in danger, the spate of assassinations in this country since 1963, the job the FBI and the Treasury men were trying to do, and the fact that we were spread so thin we couldn't cover every danger-spot or even every possible target: "We have to confine ourselves to what we can see and know, which isn't much," he said, but I was trying to get Beer Barrel reduced to a nickname instead of an insult. It isn't the beer anyhow, and never has been; it's the way I'm built.

By the time he was through I was calmed down enough on Beer Barrel to realize that I had never heard of anybody named Dave Welkin, with or without the descriptive pendant.

"Welkin," I said. "All right, sir. If you say so. Who is he?"

"Oh," the Director said, "he's a bum. A Bowery bum."

I didn't ask, "Why?" because I don't like wasted time either. If he'd wanted me to know why he'd have told me; he really does like to be as open as he can with us. Of

course he has to decide how open that is.

All the same, as I was picking up what background there was on Beer Barrel Dave Welkin, letting my beard grow, allowing Cosmetics to skin-tone me an unattractive and very dirty gray, and getting used to the clothing, both for wear and for smell, I was trying to get the answer for myself.

All I had to go on was that the job wouldn't last over thirty days, and that the hypnotic trigger business was the phrase *Czechoslovakian boundary disputes*, which, when I heard it, was going to make me move rapidly toward whoever had said it. It was a good trigger; wandering around the Bowery I wasn't likely to hear it by accident.

I learned that Beer Barrel Dave Welkin would be held under hypnosis in a New York cubby-hole of ours, returnable after I reported in, and I learned that he had a great fondness for beer, had been on the Bowery "over five years" and was about my age, though he looked fifteen or twenty years older, and that his preferred method of panhandling was heading for crowds and bumping his way through them. He sounded as if he might have wanted to be a pickpocket if he'd been a little less bleary; as it was, he probably thought that crowds gave him more handout chances per square panhandling foot.

The trigger sounded as if I were in for a political impersonation job, but nothing else did; Beer Barrel Dave (after the first few days I got so I could hear the phrase without wincing, even inside) was hardly the type. And as far as I knew—and I think I'd know—there were no Czechoslovakian boundary disputes going on anywhere in the world, unless you count a perennial tendency toward revolt against Moscow as a boundary dispute.

I came up with quite an assortment of theories. The first notion was that I was being sent in as an agent in place—an inconspicuous type who does nothing at all until the word comes through, and then pops up from within an organization and starts wrecking it. But agents in place have tours of duty that tend to start at twenty years and go straight on up; and moving toward a person who spoke a single phrase didn't look much like helping to wreck anything. Not to mention the fact that nobody could call the collection of Bowery bums among whom Beer Barrel spent his time an organization, and even if it was it didn't look like one anybody was very anxious to overthrow.

The big question was: who would want to pot a Bowery bum? And for that I developed a variety of ingenious answers. Here are a few:

1. The bum had managed to drift by and hear part of a super-secret conversation, maybe in-

volving some brand-new scientific breakthrough, and couldn't be left alive to repeat it to anybody else. Objection: super-secret conversations are seldom carried on around the Bowery, and it was doubtful that, if he'd heard anything, Beer Barrel would retain much of it for any longer than ten minutes—recoverable under hypnosis, maybe, but that implies that you know exactly who and what to look for. Improbable.

2. The bum had picked up a bit of some super-secret scientific paper, and had to be rubbed out before he could pass it on. Objection: the same as 1. To begin with, there is really very little super-secrecy going on near the Bowery. And one other question hard to answer: why would Beer Barrel hang on to the paper? If he did happen to stuff it into the one pocket of his clothing that didn't have a large hole in it, what was so tough about simply getting the paper back, and letting Beer Barrel drift on down the street? Of course, if he'd read the paper, and it was known that he'd read it, the contents might be recoverable hypnotically . . . but that chain of reasoning gets even more improbable than the previous one. No.

3. The bum was really an agent in place for somebody else. That made a certain amount of superficial sense until I wondered about the thirty-day limit, and about returning Beer Barrel to the Bowery

after the job was over. The usual procedure with agents in place, if discovered, is either a) watch carefully, and try to dig up the communications link and from there the rest of the apparatus, or b) dispose of immediately. This didn't fit either procedure, and I couldn't come up with any reasons why not.

4. The bum was really a being from outer space, and . . .

Well, that will give you an idea. What I'd be doing impersonating a being from outer space who was impersonating a Bowery bum, for thirty days or less, I was completely unable to imagine.

And what any of these ideas, or any one of several others I dreamed up, had to do with my hypnotic trigger and response, I couldn't see at all. The thing was, as far as I could get into it, absolutely senseless; the only trouble was that we're not much given to senseless assignments.

Though that gave me a brand-new idea: suppose the whole thing were a loyalty test, designed to see how far I'd follow orders even if I didn't and couldn't understand the reasons for them . . .

I've been with Central Intelligence since 1947. It was a very strange time to pull a loyalty test on me, after twenty-five years.

That was my last theory. By the time I had tossed it out I was on Third Avenue near Canal Street, and I was Beer Barrel Dave Welkin.

Three weeks went by as quickly as if they'd been decades.

You have no idea how slowly time passes for a Bowery bum who doesn't drink very much. I spent all of the time I wasn't sleeping in a scratch room or an alley, or panhandling for small change in the cheap bars that straggle all the way up to Fourteenth Street, but I did a lot less beer-drinking than I seemed to be doing. I couldn't afford to be too hazy when the trigger came, or I'd miss hearing it, or be unable to move quickly, or something. And there are a lot of simple techniques for getting rid of a drink without making it obvious you're doing so—especially around the Bowery, where getting rid of a drink is just not what people are looking to see happen.

I found a lot of crowds, mostly at the uptown end of my run: the Bowery meets both N.Y.U. and the East Village up there, and Stuyvesant Town is only two blocks away from Fourteenth and Third, so I made my way through a variety of student rallies, young-politics meetings, just plain political rallies and an assortment of rush-hours, mostly evening: Beer Barrel didn't usually get up too early.

There was, of course, one candidate most of the students and youngsters favored; you know all about that. Normally, maybe he'd have left the whole area off his speech route, but he needed some big youth-appeal and student-ap-

peal footage for the evening TV shows, so he scheduled an appearance at Union Square—the uptown western edge of my daily travels—for a Friday evening.

Naturally, there was a crowd, a nice big one.

Naturally, Beer Barrel Dave was on hand.

And just as naturally, that speech went on for fifteen minutes and hit the sentence I was, by then, half-expecting:

“It is not in our interest—in the interest of the people of this country—to charge out to settle every possible disagreement in the world, from possible arguments over Japanese fishing rights to putative Czechoslovakian boundary disputes—”

And I was triggered. I started for the candidate a good deal faster than Beer Barrel Dave was used to moving.

Of course I never reached him. Somebody potted me instead.

I woke up in our New York cubby-hole, hospital section—where the original Beer Barrel had been stacked away while I worked his tour. I had a large ragged hole in one shoulder, and a variety of bruises and abrasions from hitting the pavement and being slightly trampled in the rush to collect the character who’d tried to shoot the candidate. He was collected, naturally, before he could get off another shot, and a small bag of psy-

chiatrists is still going around and around about whether or not he’s sane, or legally insane, or what. The one sure thing—and it *is* sure: our section checked it out, and we don’t report what we don’t know for certain—is that he was an individual, acting entirely on his own, with a specific grudge against this one candidate.

So I found out what my assignment had been. Bodyguard for the candidate, against an assassination attempt.

For a little while, this made no sense at all to me. You’ve probably ironed out all the wrinkles, but it took me a little longer, being under medication while the shoulder put itself back together.

Obviously, we can see into the future.

We can’t see very far, and we can’t see anything but the specific matter we try to see (or, first, there’d have been no attempt at all, and, second, there would *never* be a successful attempt—I hope; but wait around). But we can look through time and see a tiny piece of the near future.

Which is changeable.

Somebody saw that the shot was going to be fired right after that *boundary dispute*, and that it would hit the candidate unless deflected. Now, guards are one thing: people are used to guards, what with the President and his Secret Service and all. But a bulletproof shield, completely surrounding the candi-

date, is something else again. A lot of people would feel it made the candidate look like a coward, or somehow made a personal appearance no better than a TV spot, or . . . anyhow, politicians and their managers feel that way even about the breast-height combination shield-and-podium gimmick that's now being used here and there. I've heard them. A whole bulletproof shield? Ridiculous, they'd say. Lose the election right then and there.

(Which may or may not be logical, or reasonable. But politicians and political managers aren't logical or reasonable except in spots—thereby making them fair copies of the rest of us.)

No, the only acceptable deflection for a bullet is a special agent, I suppose. Somebody, maybe, took a look and saw that, in one possible future, I would be just where I was in the crowd, and I started moving toward the candidate at just the right time. Then matters were carefully gimmicked so that I was set up in the crowd (apparently just that much gave them a future which put me in the right spot inside that crowd) and started moving on cue, at speed.

Sure. Somebody juggled alternatives. Let the bullet hit its mark; let it hit me instead; bulletproof the candidate (out, unacceptable, ridiculous); get the assassin out of the way beforehand; arrest him on the spot with his weapon—and, out

of that bag and one or two more minor possibilities (maybe in one future the bullet hit some *really* innocent bystander), somebody settled for me. Beer Barrel Dave Welkin, the human target. The fat and tattered *X* marking the safest spot.

I think I know why.

Let's say that the future involved a successful assassination. If it's going to be changed, two things have to be considered, and the first of these, simply, is: what's the least possible change required? Clearly, you don't want to add in any more factors than you have to, because every new factor has new results of its own, and so forth . . . so you find a real Bowery bum, someone who would legitimately be in that crowd anyhow. And you replace him (keeping the bum in cold storage, so to speak, and putting him back on the street in a slightly damaged condition, with a hole in his memory due to a month under hypnotics—but a hole in a bum's memory is just not all that unusual, especially after he's been, theoretically, shot at and trampled some); that way the bum's life goes on with minimal interruption and no stir anywhere, and the replacement is a setup to intercept the bullet. Given a shut mouth and a career of other odd actions for the replacement type, anyhow, you get the least possible amount of change.

The second thing to be considered, I'm afraid, is that you want to

keep your time-viewing top secret. (Which is why you don't even *mention* a bulletproof wraparound to the candidate's people—not even if one of them, in a fit of political insanity, might agree.) Hauling in the assassin beforehand needs explanation—in these days of maximum courtroom civil liberty, it needs a *lot* of explanation. Grabbing him with his gun, on the spot, needs explaining, too: it's hard to say that he got careless and made it visible too soon, when he did his shooting, with that short-barreled .38, through the pocket of his jacket, and never showed the gun at all. (And maybe, in the future or futures that carried that alternative, the guy managed to get off a shot or two while being grabbed . . . and hit somebody more consequential than old Beer Barrel.)

No: being able to see the future, and wanting to keep the ability secret, is the only explanation that fits the facts.

When I got out of my hospital bed I asked the Director about it. "Our job is doing our job," he said, "not wondering about it."

Which may be true. But . . . whoever can see into the future, right now, in the United States, is also involved in changing it. For the better? That depends . . . what do you mean by *better*? In this country, it's supposed to be the people who do the deciding; but if somebody is rigging the dice by choosing his own favorites among

possible futures . . . (See what I mean? Are you sure that this Somebody would *never* allow a successful assassination?) . . . then Somebody is doing enough deciding, all by himself, to deserve that capital letter. And that is an idea I don't like at all.

The Director knows how I think about public knowledge and public decision-making: my dossier's on file, and has been for twenty-five years. And he knows I know about time-viewing, too. So, no matter how thin observers are spread, I know that whoever, or Whoever, does the viewing, in Central Intelligence or further up the line, has an eye on me.

But maybe not all the time—and not very far into the future.

And just maybe, when I come to think of it, the viewers, too, want the rest of us to know that such a thing exists and is being used—and picked me for the impersonation job at least partly because they knew I *would* do something like this. Letting the news out this way looks to me like doing it with a minimal amount of change . . .

I hope that's it, I really do; it would show that, up there in the higher echelons, there is as much faith in the people as I hope there is, and think there had better be. But we'll find out . . .

I'm writing this four months after the event. It will be very interesting, as I've said, to see if it gets through. ■



William Tuning

When the rulebook is leading you to the edge of a precipice, it's time to change the rules . . . if you can!

SURVIVABILITY

"Damn it!"

The words exploded softly from the slender man who knelt in the snow. "Another dead one," he said bitterly.

With a single gesture—half helpless, half compassionate—he reached down and closed the staring eyes of the dead Yeep.

Olie Struan finished pulling the tissue sample and got to his feet, still looking at the woolly Yeep. A small drift of snow had piled up on the windward side of the body, and was beginning to blow over the top of it, skittering in eddies along the slick ice.

After several minutes, Olie lifted his head and stared out across the glare-ice of Botany Bay. His Viking-blue eyes moved steadily over the bleak landscape, following the curve of the old shoreline.

Even though he knew where it was, the land was so desolate as to be hardly distinguishable—for practical purposes—from the iced-over bay. Green technicians at Botany Bay had to go out with an experienced hand to avoid losing their bearings when they got out of sight of the station. Even with a homing scanner—compasses didn't work on Flannigan—a new man might, and often did, stubbornly insist he was going the right direction when the scanner told him the opposite.

"Sure is a funny place," Olie said to himself.

He ran his eyes over the ice, looking carefully at the large,

bushy puffdocks, most of which drooped down tiredly onto the ice. The puffdocks, a large, lichenous algae, were dying off. They would turn a slicky, nacreous white and lay down into the snow and ice. The Yeep, with their narrow-range, starch-oriented metabolism, depended almost entirely on the puffdocks for a food supply. Their bodies couldn't draw proper nourishment from anything more complicated—not enough to stay alive—unless they stayed awake around the clock and ate constantly, which they would not do.

Now, the Yeep were still dying off, in spite of everything Olie Struan and the Terrans at the Botany Bay station could do. With the apparent onset of a shift pattern in the life forms of Flannigan, it had not been set out in the program to merely make a short-term cure of the ailment that was killing off the puffdocks. The project had been programmed to mutate the Yeep by broadening their metabolic functions so their food-chain requirements could expand. That had been simple enough, but now, minor genetic drifts had apparently diminished the Yeep's ability to cope with the extremes of climate on Flannigan.

They were dying off faster than ever.

The Botany Bay project was beginning to look like a write-off. Or, so it seemed at this moment to

Olie, who was tired and discouraged.

He looked carefully from one fallen puffdock to another, knowing he would see more dead Yeep.

Sure enough, there was another telltale drift of snow, which probably concealed another dead Yeep. The pattern was depressingly consistent. Frozen feet, followed by the freezing of ears and other extremities. Then, gangrene. Finally, death.

The Yeep were an extraordinarily stupid species.

Olie Struan took a last look at the dead Yeep lying at his feet. The drifting snow had almost buried it now. One shiny, black horn stuck up in clear view, like a crooked grave marker, glistening wetly in contrast to the white snow and ice that was all around.

The wind tore at his thoughts and seemed to throw back mocking parodies of his words whenever he spoke aloud to himself.

He felt a heavy sense of failure.

He started for the place where he expected to find the next dead Yeep. He moved at a rapid sliding shuffle—a pace that let him maintain some speed over the slick ice without danger of slipping and falling.

“Slick ice,” he said to himself. The ice on Flannigan was extremely slippery. *Probably some variant species of leptothrix*, Olie thought idly as he covered the distance between him and the next

dead Yeep. *Someday, maybe I'll have time to break it down and see. We already know that the water on Flannigan is full of an adipose bacillus. Harmless enough—doesn't interfere with our tapping local water supplies—but, when the water freezes, it leaves a residue in the ice made up of the oily parts of the bacillus. Creates very slippery, almost greasy ice. Slick ice.*

Following a route that took him in a wide loop out over Botany Bay, Olie worked his way across the surface of Flannigan, finding more and more dead Yeep from which he took tissue samples, until his course brought him back in sight of Botany Bay station.

He quickened his pace as much as he could without risking a fall on the slick ice. He was anxious to do his lab analyses on the tissue samples he had taken—anxious to confirm his own suspicions—anxious to tromp into Elsa's office and tell her that he had been right and she had been wrong.

The anachronism of Botany Bay station always made him smile. Three large structure pods surrounded by inflatable sheds made up the station. It always looked ludicrously out of place to Olie whenever he came on it suddenly. On the barren surface of Flannigan, it reminded him of nothing so much as a plum sticking out of an enormous albino pudding.

The structures themselves were incredibly sophisticated, holding as

they did a complete biostation. They would have taken years to build from scratch on the surface. Instead they had appeared almost overnight—already complete.

All of the Terran research stations were carried the same way. They were closed-cycle units, inserted piggyback into the hull of a starship. When the destination planet or space station was raised, the proper number of the proper units were simply detached from the ship and de-graved down to the surface, complete with their own power supplies and food-chain sources.

Needless to say, the abrupt appearance of a research station had a profound effect on any intelligent native life which happened to dwell on a place like Flannigan.

The establishment of Botany Bay station had done the same for the primitive natives of Flannigan, who called themselves Gratchii and were organized into simple, nomadic tribes. It had been quite easy to convince the Gratchii that the Terrans were beings with whom it would be wise to cooperate.

In the shirt-sleeve environment of the station's main pod, Rudolf Alborg clasped his hands behind his head and leaned back in his chair.

As the project's biochemist, he was obliged to chart trends, ride herd on the work of biomedgen technicians like Olie Struan, and

condense information into reports—such as the one he was dictating into the message chip at this moment.

“Conclusion-wise,” he said into the pickup, “we have effectively dilated the metabolic spectrum of the Yeep in such a way that this species, *Ovis Flanax*, will easily be able to operate on a more diversified diet. The almost exclusive dependence by the local indigenous population on the Yeep should be relieved by the successful conclusion of the project. However, while it is not within my area to draw economic conclusions, it appears at this juncture that the fact of the natives' dependence on the Yeep, or on any single animal species, for—” Alborg ticked them off on his fingers—“food supply, fiber from the animal's wool, and monetary units essential to their commercial trade among themselves, offers an indication that an evaluation would be in order toward the possible end of assigning an econ team to widen the systems of merchandise and exchange used by the Gratchii. Not only could the progress of civilization on Flannigan thus be accelerated, but such crises as the one currently being dealt with on successful levels by this project might easily be prevented from recurrence in the future.

“Bio-section expects to shortly complete tests on the mutated strain of Yeep developed here, and

we are confident of a successful conclusion of our assignment. Using adaptations of advanced techniques, we have . . .”

Olie Struan slammed the door.

Altborg slowly spun his chair to face Olie, who was still shivering from the outside cold.

“They’re still dying,” Olie said flatly.

Altborg pursed his lips. “Why?”

“Same as I said.” Olie stared at Altborg with unblinking blue eyes.

“Are you sure?” Altborg asked.

“No. But I’ve taken thirty-one tissue samples. I’m sure I’m right, but I’ll have to go down to my lab and spin down the samples.”

“So, quit guessing and spin ’em.”

“Thought you’d like to know, before you get off another report to Elsa, conning her about how well we’re doing. I’ll be able to prove I’m right.”

Altborg was silent for a moment.

“Until you prove that you’re right—”

“And prove you’re wrong,” Olie cut in.

“Until you prove you’re right,” Altborg repeated evenly, “you’re still wrong. So, get to proving. Then, we’ll re-evaluate—if we have, in point of fact, anything that needs re-evaluating.”

“Look!” snapped Olie. “They’re still dying. The extremities freeze, they get gangrene, and they die. That doesn’t take a genius to see. Hell! Even the Gratchii can see that much. And they’re not even hot-shot biochemists. The question

is, why? *Why* are the Yeep in the improved strain dying off from frozen feet, when the native strain never did?”

“That,” Altborg said grumpily, “is what I asked you to find out.”

“I’m finding it out!” Struan’s temper was rising. “I *know* what it is. All I’m asking you to do is pursue it along an independent mutation. By the time I’ve *proved* I’m right, we’ll have failed. The Gratchii will have sorted it out in their simple little minds that the Yeep are dying because of *us*.”

“Ridiculous!”

“Sure, it is. The Yeep were dying when we came. We told the Gratchii we’d save them. Now, the new strain keeps dying off.”

“That’s not it, damn it!” Altborg brought the flat of his hand down sharply on the top of the console and sprang to his feet. “It’s a minor genetic drift. You don’t have to introduce a new strain to get rid of a drift!”

“This time you do.” Struan’s blue eyes were wide now. “If the Gratchii start figuring that they are losing their Yeep because of ‘evil gods who come from the sky,’ our goose is cooked on Flannigan. It’s hard enough to keep them from stealing our breeding stock because the Yeep population has shrunk so badly. But, at least, we have their grudging cooperation. If they start casting us as the villains of the piece, we’ve got two choices. Either bring in troops to protect the sta-

tion, or pack up and go home.”

“God damn it!” barked Altborg. He abruptly turned his back on Olie. “All I ask you to do is find the answer to a simple drift, and you start beating me over the head with geopolitics.”

“I’m finding it,” Olie growled. “But, I also *know* what it is. For two weeks now, I’ve been begging you to consider it, but no. ‘Elsa insists that we cover the bases,’ you say. That’s great. I have no objection to that. But while we’re covering the bases, I could be cutting across the infield and have the answer waiting when the rest of us get to home plate.”

“You think we’re going to blow this project, don’t you?”

“Yes,” Olie replied. “Yes, I do.”

“Because you’ve got a pet theory, and can’t be bothered following project policy with it.”

“No!”

“Yes!”

“Look here, Altborg. You’re not the only guy around here with his tail in a crack. As a biochemist, you’re far enough up the ladder that you can stand a project failure once in a while without too much strain on your career. But if Botany Bay project goes down the pipe, I’m the guy that will have to take the responsibility. *I’m* the biomed-gen tech—the organic mechanic. If we fail, I won’t be called on the carpet. That’s true. But everyone will say that we failed because Olie Struan couldn’t handle a simple

mutation in a simple animal with a simple mind. That leaves me pretty well swinging as far as my reputation in my specialty goes.”

“Hogwash!” snapped Altborg.

“Not in my book. If that were true, I could just live with it. But it’s not true. The problem with the Yeep is peripheral circulatory deficiency.”

“You don’t know that yet.”

“Not on paper,” Struan said. “But that’s what it is, just the same. There’s more to it than freezing feet, too. Our new strain of Yeep is also stupider than the old strain. And nearsighted. We’re going the wrong direction. We’ve got to develop a new strain in order to cover our bets.”

“This all sounds very familiar,” Altborg said wearily. “I think I’ve heard it before, somewhere. You prove your theory, and I’ll be the first one to approve a new strain of Yeep. But without something to hang our hat on, Elsa is never going to buy it.”

“Not as long as you keep sending up sugar-coated reports to her—no.”

“Well.” Altborg smiled his nastiest smile. “Next time you’re in the sack with her, maybe you could plead your case. And while you’re at it, you can explain what a son of a bitch I am.”

They stood across the console from each other for a full minute and glared.

“All right.” Olie broke the si-

lence. "This is getting us nowhere, and we're both losing our tempers."

"I expect we are," Altborg remarked dryly.

Olie turned and started for the door. "I'll spin these down, first. I'll let you know." He left before Altborg could say anything else.

Between Altborg's office and the lab, Olie's temper began to subside, and he sifted through the reasons for his friction with Altborg. There was, he thought, certainly no reason to bring personal relationships into the picture. The fact that Elsa Spitzen was the engineer in charge of the Botany Bay project had no bearing on her personal relationship with Olie. In this kind of a closed environment where Terrans had to work together, but also had to live together in some kind of community harmony, on-duty titles couldn't be allowed to have anything to do with off-duty friendships. Altborg, Olie thought, apparently was upset that Elsa had made such an arrangement—an arrangement that omitted the person between them in the chain of command. Altborg. It was silly for Altborg to be irritated by that, Olie thought. But, it was getting plainer all the time that he was. He never missed a chance to get a dig in about it, and the friction was getting to a point that it endangered the project itself.

Olie sighed as he entered his lab. Maybe, if this hump with the ge-

netic drift in the Yeep could be gotten over, things would smooth out. After all, Altborg was getting some heavy pressure from upstairs, and it was only natural for him to get rid of it by passing it down to the next man in line. *Unfortunately*, thought Olie, *the next man in line happens to be me.*

Altborg, in his own office, was winding up his report. "And, so, while there are some minor genetic drifts that present some operational difficulties in the new strain of Yeep, we expect to have made adjustments for them before the next generation is born. These adjustments, followed by a testing period, should conclude our successful adaptive mutations of the Yeep."

He rubbed his eyes and leaned back in the chair for a moment. Then he punched an alert circuit and removed the message chip from the pickup.

He sat, staring at the console, and absently tapping the message chip against the palm of his hand.

The records specialist who shortly came into his office was a willowy redhead. "Yes, Dr. Altborg?"

He looked up. "Hi, sweetie. Say, who *was* the genius that programmed this project so that all the records specialists were female?"

She gave a sophisticated little shrug.

"Here, Jill," Altborg said. "File this and kick a copy upstairs."

As she bent to take the chip from his hand, he expertly pinched her, just hard enough to elicit a slight squeal.

The security alarm buzzed with a rasp that was unmistakable. Red lights flashed in all compartments of the station, and the monitor's voice came booming over the automatic gain speakers.

"Alert! Alert! Perimeter breach near number-ten shed! All personnel on duty to the area of number-ten shed! Gratchii have broken into perimeter. Security personnel—secure station pods. Alert! Alert!"

Olie Struan quickly switched off his bio-analyzer and sprang toward the door of his lab. Good thing, he thought, that he had not yet started spinning down his series of samples. Otherwise, he would have had to stick with the machine.

At this moment, he was the most anxious man in Botany Bay station to answer the security alarm, but not because of number-ten shed.

As soon as he cleared the station pod, he sprinted toward number-twelve shed.

The Gratchii—the hairy, bow-legged humanoid inhabitants of Flannigan—had finally figured out how to ground a portion of the stun-field barrier that had been put around Botany Bay station. They had simply built a ramp of hard-packed snow that let them walk over the barrier, which was set on straight-line force fields. Once the

outside ramp was complete, they stood on top of it and feverishly poured more snow pack over its crest into the compound. By working rapidly, they built a bridge across the stun-fence, though the force field continued to operate in the tunnel it had melted through the packed snow ramp. Perhaps a hundred of the Gratchii, quite accustomed to using the harsh winter climate of Flannigan to their advantage, had thrown up the bridge before security could detect its construction, and they were swarming over it at the rear of the station area, running at the peculiar, bobbling trot which let them move rapidly over the slick ice and snow fields.

The Terrans spread out from the three tall pods of the station to protect the inflatable sheds which housed the breeding stock of Yeep and the experimental flocks of both the new and old strains.

Olie Struan sprinted along with a group from his pod until he got close to the threatened sheds. Then he veered away and made for shed twelve.

Once inside the shed, Olie slammed the hatch and leaned against the bulkhead, sucking in great gasps of air until he began to get his wind.

The air in the shed was cold, but not nearly as icy as that outside. The shed interior was sheltered from the wind, and the body heat of the animals kept it to a more

tolerable temperature than outside.

Olie drew the c-w pistol he had snatched up when he left his lab. He thought it was charged, but he couldn't really remember, so he stripped out the power and checked it while he got his breath.

A quick visual inspection of the shed showed that it was operating and intact. The sheds themselves were longish, semicylindrical affairs with double walls of vyathane film. Between the walls, a pressure of one and a half atmospheres kept the structure rigid, but allowed it to ripple enough so the stormy winds of Flannigan didn't damage it. On the outside, tie-downs anchored to dead-men buried in the frozen ground helped hold down the otherwise lightweight structures. On the inside, a system of web baffling helped the leeward side of the structure hold its shape in a wind-storm by giving the skin walls something to tug against.

The inflatable sheds came down with the station pods, packed in canisters, and were erected by pulling a ring lanyard which activated a gas cell. The canister itself contained a small compressor and a set of sensors. When it was patched into the power supply of the station, it continued to operate as a regulator that maintained proper pressure between the vyathane walls and flashed an alarm if the pressure dropped below an optimum level or if the skin of the walls was breached.

Shed twelve was a back-up shed, used to house short-run control groups of Yeep. Normally, no one ever needed to enter it except the organic mechanic who was doing the mutation runs on the Yeep.

That person was Olie Struan.

Olie made his way to the rear of the shed, where a web fence, running across from one wall to the other, partitioned off the control group of Yeep about which he had been so concerned.

They didn't look like the old strain of Yeep, nor did they look a great deal like the new strain—the new strain which was failing, as far as Olie could see, just as miserably as had the old Yeep that were dependent on the puffdocks. The old Yeep had stubby ears, a pair of curved, black horns, were covered with a thick, gray wool, and had four stubby legs which terminated in four-toed, manlike feet. The new Yeep had essentially the same appearance, but were decorated with large, floppy, cocker-spaniel ears, long, fluffy tails, and even larger anthropoid feet.

The Yeep in Olie's secret flock were somewhere in between, but with some minor exceptions—exceptions which Olie believed would make them a viable species, even in the changing ecology of Flannigan. They had stand-up, more efficient ears, much like a mule deer's, and broad, flattened noses. Their longer legs terminated in a foot

with two wide, spatulate toes, arranged opposably, and covered with a thick, horny sheath. At the posterior cleft of the foot was a stubby, articulable phalanx, equipped with a thick toenail. Their relationship with the other Yeep was evidenced by two small, vestigial toes, on either side of the foot, located above each half of the hoof. The whole foot was a good deal like that of a camel in appearance, but it was better engineered, and all the phalanges were subject to voluntary control by the Yeep.

Hooves.

Hooves didn't freeze. And, with the opposable-toe arrangement, Olie's secret Yeep could grip things, albeit in a very rudimentary manner, a feature that would assist them in keeping their footing on slick ice.

Also, Olie liked to think that these Yeep had kinder eyes than their cousins—eyes that seemed to him to hold at least a spark of intelligence.

He had gone ahead and developed this strain on his own, deliberately operating outside procedural requirements of the project and without authorization. If he was found out before he actually got authorization to develop this mutation, it could cost him his post. But, he had reasoned, if the new Yeep—the ones that were failing to operate and dying of frozen feet—turned out to be a complete failure and there was nothing else in the

works to back up the project in a way that could justify it both to the Gratchii and the Terran government, then he was in trouble, anyway.

He was the organic mechanic at Botany Bay, and, when an aid project of this type backfired—as it occasionally did—it was usually the organic mechanic who had to take it on the chin. The organic mechanic was in the uncomfortable position of being the guy who couldn't cover himself by passing the buck.

Olie had suspected the problem, and as far as he could see, had anticipated the answer as soon as he discovered the new strain of Yeep beginning to die off. He had started his own program, at first as a research control, but he had never gotten a chance to even try and sell it. Elsa Spitzen was the engineer in charge of the Botany Bay project, and she was six feet of raving Teutonic precision. She had loudly insisted that "guesswork" had no place in the scientific method; that project policy would be followed to the letter; that a solid body of supporting data would be assembled *first*; that it would be evaluated; that curves would be established; that then and only then would any new strains be developed, if and only if it was clearly indicated as a necessity for the success of the project.

If Elsa found out that Olie had gone against her orders, she would

have no hesitation about cutting him off right at the ground. Elsa wouldn't let her own personal affection for Olie soften her response to such a situation. She wasn't built that way. Six feet tall, blond and blue-eyed, solidly built yet slender at a hundred and fifty-five pounds. That was Elsa. She was always feminine, even when she was working in the sheds, wearing boots and a baggy one-piece. There was never any question that she was a woman, but she was also an ecological engineer—one of the best—and she knew she was one of the best.

She ran Botany Bay station like the quarterdeck of an Eighteenth Century man-of-war.

No. Olie had no self-delusions about what would happen to him if Elsa got wind that he had deliberately gone against her orders.

Olie moved to the wall of the shed and looked out through a glassane window. Outside, the shouting was drawing closer, as the Gratchii warmed to their task of stealing as many Yeep as they could cart off.

Maybe the Gratchii were hungry. It was anyone's guess why they had broken into the compound at Botany Bay, but that could be the reason. After all, they had oriented their own food chain and trade development to a system that depended much too heavily on the Yeep. They used them for meat.

They used their wool to make the rough, homespun woolen clothes that protected them from the harsh climate of Flannigan. And they used Yeep as a medium of exchange. Their entire commerce used Yeep as money. A thing was worth this or that many Yeep. If you wanted to buy, you had to buy with Yeep, and if you didn't have any Yeep, you had to sell something to get them, or venture out into the frozen countryside and catch some. If you wanted to sell, you had to take payment in Yeep.

It was, of course, entirely possible that the Gratchii had mounted this raid on Botany Bay station simply because they couldn't resist the temptation of all that "money" being stashed away by the Terrans.

As Olie looked out on the melee in the compound, he had no trouble distinguishing between the Terrans and the Gratchii. The average Gratchii was a good six inches shorter than the average Terran. The natives of Flannigan had chubby, moon faces, with beards and long, wild hair. Their deep chests gave them a stocky look, which was given a ridiculous appearance by their bowed legs.

Somewhere in their chain of evolution, Olie mused, their legs had become bowed in order to allow them to move over slick ice without falling down a great deal, as was evidenced by the peculiar, bobbing gait they used when run-



ning. A Terran could not run on slick ice. He had to move with a rapid, sliding shuffle and keep his feet in contact with the surface of the ice. Otherwise he would lose his footing every few steps. The Gratchii, however, could trot along at a pretty respectable speed.

They were running every which way, now, out in the compound.

Rather than take the obvious method of gaining entry to the sheds, some of them had avoided the doorway hatches and tried to hack their way in through the walls.

The sheds, when robbed of the air pressure between the vyathane skin double walls, had, of course, collapsed, but not fast enough to

keep the Gratchii out. They had poured into the sheds through the holes cut with their knives, unaware that the whole structure was in the process of sagging to the ground like a flaccid tent with poles suddenly turned to sponge rubber.

The collapsed sheds rippled in the wind, and were filled with

lumps that represented Gratchii, Terrans, and Yeep. All were thrashing madly, and screaming unintelligible curses of confusion, if the Yeep could be said to be capable of cursing.

The effect was much like two busted marble bags full of jumping beans. Hysterical Gratchii were writhing under the vyathane film,



slashing madly with the large skinning knives they all carried. Some of them were, largely by chance, chopping holes in the collapsed sheds and escaping into the open air, even more disheveled than usual, and reeling, glassy-eyed, away from their recent astonishment at being attacked by a building.

The Terrans knew more about what needed to be done when a shed comes down on one. Beams of light from c-w weapons stabbed out through the vyathane. Terran technicians, bellowing their customary, ritual profanities, had whipped out their sidearms, stopped the power down to minimum level, and systematically sliced their way out from under. They were coming out now, tousled and enraged, but still mindful of what needed to be done. The Gratchii and the Yeep—and a few Terrans who had lost their c-w weapons in the scuffle—had to be gotten out of the collapsed sheds before they used up the little air trapped under the vyathane and smothered.

The Yeep were reacting like the lovable idiots they were. They were hopping up and down in one spot and howling, with the ear-splitting shriek that had inspired the Terrans to call them Yeep in the first place.

Fist fights had broken out in scuffling clumps around the two collapsed sheds. It was plain that the Gratchii had no lethal intentions—they were smart enough

to know the Terrans had them completely outgunned. They didn't want to hurt anyone. They just wanted to steal some Yeep from the station. The Terrans didn't want to hurt the Gratchii—that would be bad public relations—but, they didn't want the experimental flocks of Yeep carted away, either.

A Gratchii would snatch up a groggy, confused Yeep, and start hot-footing it for the snow ramp over the stun-fence. A Terran would tackle him, or knock him down, or simply seize the Yeep and dash for the nearest functional shed, where other Terrans were dumping bewildered Yeep through the hatchways and securing them from the greedy grasps of the Gratchii.

Once burned, the Gratchii showed no further interest in getting into the other sheds by cutting a hole in the walls. They were concentrating on the Yeep which were loose in the compound, and more were being turned loose every minute by groups of Terrans who were feverishly shredding up the collapsed sheds and disentangling those—both Yeep and Gratchii—still trapped under the vyathane. Once in a while, as a knot of Yeep were sprung from confinement, a Terran technician would break cover with them, red-faced from respiration reduction, and roaring obscene maledictions on everyone and everything within earshot. His aggravation was usually alleviated by the

deliverance of a good, swift kick in the rump to the nearest Yeep, or, in some cases, the summary decking of a convenient Gratchii.

Little clusters of Yeep stood about, knotted together, with their heads touching, like a huddle of football players, jumping stiff-legged and shrieking piteously.

The Terrans were trying to gather up the loose Yeep as fast as they could. The Gratchii were trying to steal them just as fast. Once in a while, a Terran technician would grab hold of a Yeep at the same time as a Gratchii grabbed hold of the other end of the same animal. The two of them would tug back and forth, stretching every part of the Yeep's anatomy, while the Yeep howled bloody murder with its tongue hanging out and a glazed look of astonishment in its eyes. The Terran usually won the Yeep, but the Gratchii were determined little fellows, and they would hang doggedly onto the prize as some burly Terran technician carted it toward a shed, dragging the Gratchii along behind.

The noise of the battle filtered through to the inside of shed twelve, where Olie was sticking close to his secret flock of improved-design Yeep. He could hear the shouting confusion outside, and the meaty *pop* of fists striking flesh. Through his glassane window, he saw the Gratchii begin to thin out as most of the Yeep were secured by scurrying Terrans.

Once, a bow-legged Gratchii trotted laboriously past, just outside the window, lugging a Yeep under each arm. Pausing for breath, he looked up at the window and saw Olie staring at him. He dropped the Yeep and scampered off through the snow. The Yeep licked their noses and sat down disgustedly, only to be scooped up by another Gratchii who came sprinting along, heading for the snow ramp and the safety that lay beyond it.

The second Gratchii wore exactly the expression of a Terran who has just spotted a bundle of money lying in the street. He paused for a moment, looked up and down, then grabbed the two dazed Yeep—one under each arm—smiled broadly, and, grunting under the weight, labored off toward the perimeter of Botany Bay station.

When Olie was satisfied that the station was secure—satisfied that no more larcenous Gratchii were lingering inside the perimeter—he turned back to his Yeep.

They stood, some with their heads cocked to one side, and regarded him aristocratically.

"Well," he said softly, "you're still safe—so far—my chickens."

That seemed to satisfy the Yeep, and they moved along the web fence to their feeding trough and began to munch quietly. Olie stared at them for a few more minutes, looking at the control tag on

the pen without really seeing it.

"E.M.," it read, short for Experimental Mutation; followed by the digital readout that would identify data on this group in the computers—if Olie could just engineer a way to reveal his Yeep to Elsa without getting laced up one side and down the other by her temper.

"Yeep. E.M. 57-50-88." Letters and numbers, burn-stenciled on a plain white sign that was riveted to the web fence. To Olie, that "Yeep. E.M. 57-50-88," was the critical data on which would hinge the success or failure of the Botany Bay project—as well as the success or failure of a certain organic mechanic who had gotten himself a long way out on a very shaky limb.

Olie puffed out his cheeks and emptied his lungs. He was just as tired as if he had been out there, running around with his colleagues, belting Gratchii and lugging Yeep.

Outside the shed, he holstered his c-w pistol and dogged the hatchway shut against the wind. He rubbed his face with both hands and looked up at the overcast sky. Clouds were rolling in off Botany Bay, and the wind had gotten higher during the hour that had passed since the security alarms had first sounded.

A storm was shaping up. Olie noted the fact mentally, reflecting, as he trudged back toward the station pods, that it would be no inconvenience to him, since he had

plenty of work to do in his lab: first spinning down the analyses on the tissue samples he had collected; then, trying to pound some sense into Altborg's head so he could get an opportunity to try to pound some sense into Elsa's head.

He latched his door behind him and leaned against it briefly. It wasn't the work that was wearing him down. He enjoyed his work, felt it was important, and never tired of it. When he carefully manipulated very tiny organic parts and pieces which controlled the whole organism of a creature, even though he knew what he was going to get, he was always faintly surprised and pleased that it worked.

No, Olie decided, it wasn't the work that was making him tired. It was the pressure from Altborg, the inability—or refusal—to listen to what Olie was trying to get across to him. Olie's painstakingly orderly methods, together with years of experience, had given him an insight and intuition which told him he already knew the answer—told him that his lab findings would simply verify what he had guessed at the beginning.

He unbuckled the belt and hung his pistol on a hook by the door, then moved across to the bio-analyzer console and punched up the power source.

An hour later, he was still hovered over the screen. When the analyzer had spun down and broken up the tissue sample a series of

readout models would come up on the screen—cells, chains, nuclei, molecules. Olie's finger hovered over the print key, methodically punching it for a hard copy of each readout. He had a healthy pile of paperwork—detailed tissue diagrams on all the dead Yeep he had found that morning—when Altborg entered the lab.

Olie glanced up from the bio-analyzer. "Hi," he said, and turned back to the screen.

Altborg smiled crookedly.

"Fifty-seven; fifty; eighty-eight," he said.

Olie switched off his machine and swung his chair around to face Altborg, who was leaning on a lab bench. "I beg your pardon?" Olie asked calmly.

"Fifty-seven; fifty; eighty-eight," Altborg repeated. "Mean anything to you?"

"Sounds like a digmudent to me."

"Say!" Altborg feigned surprise. "That could be it. Digital mutation indentification. It's arranged the same way. I don't know, though. Our operational strain is only fifty-seven; fifty; seventy-five. How could there be an eighty-eight strain? It's not logged in the computer."

Olie laid his hand on the pile of printouts, as though they needed his protection. "I don't really have time to play cat-and-mouse with you, Altborg. What's on your mind?"

"O.K. You have loused up the detail. You have said the hell with policy orders and program definition, and put together a mutation strain on your own hook. That's what's on my mind."

"What makes you think so?" Olie asked evenly.

"Been there," Altborg replied. "To shed twelve. All tucked away in the back pen," he added by way of verification.

Olie stiffened. He started to reach for the commo key, but Altborg waved him off. "Don't worry. They're all right—for now. I didn't hurt them. But, we *will* be getting rid of them pretty quick."

Olie looked at him questioningly. "Get rid of them? What in blazes do you mean, get rid of them? The eighty-eight strain is the answer."

"They're not in the program," Altborg said smoothly.

"Oh, for Christ's sake. *Put* them in the program! That won't kill us, will it?"

"According to my paperwork and reports," Altborg replied, "the seventy-five strain is operational, is getting the job done, and functions well within program curves."

"What? They're dying off! And you know it!"

"Not on my books. My relative program evaluations say we'll be out of this hole in less than a month."

"God damn it, Altborg!" Olie smacked the pile of printout diagrams with the flat of his hand.

"The dope is right here. It's like I said, and I can cut samples from now till doomsday and still get the same answers. The tissue freezing and gangrene is a product of peripheral circulatory insufficiency. They don't get enough blood into their feet and ears to keep them from freezing. The old Yeep had smaller, tougher feet, and tiny ears. Further, the seventy-five strain is stupider than the old Yeep, the circulatory disorder also affects their brains and eyes. Cerebral circulatory insufficiency, and retinopathy. That's another reason for their feet freezing. They're too damned dumb to know anything's wrong with them until they drop dead."

"Hm-m-m." Alborg got to his feet and began to pace up and down the lab. "Well, that's very nice, but I'm not in a position where I can back up, now."

"The seventy-five strain is *not* operational! If we pick up and leave *them* to replace the old Yeep, the project will be a big, fat zero. The seventy-five strain can't function as well as the original strain. Yeep will be *extinct* before we've gotten back to base. Look, Alborg, you can't just kiss off the Gratchii that way. They're cold, hungry, and broke right now—and, there are few Yeep left. This afternoon proves that point. The raid—"

"Stroke of luck, that." Alborg rubbed his chin.

"What?"

"The raid, Olie. That's how I

found out about your illegal Yeep. I got to wondering just what there might be out in shed twelve that would send you streaking for it the way you did—when the Gratchii were hitting shed number ten and shed number nine."

"So, you waited—"

"Right. I waited until you left and then took a look."

Olie smiled cynically. "Something told me I should lock it up."

Alborg quit pacing. "At least, you haven't lost your sense of humor. No, locking the shed would only have gotten someone to wondering about it long before this. Come on, Olie . . . *hooves*, for God's sake. Where'd you get *that* brilliant idea?"

"Humph. Hooves won't freeze."

"They won't work, either," Alborg said flatly.

"Hah! You seem pretty sure about that."

"I am. Trouble with you is, you're so busy tinkering over your micros, latching and unlatching DNA chains, synthesizing new quasiviruses, that you don't pay attention. Look around you, damn it! The answer is always in the ecology."

"Sure," Olie said, "And this ecology is getting colder and meaner. The hooves—"

Alborg slammed his hand down on the lab bench. "Look at the other species for a moment. Pay attention. If hooves made operational feet on Flannigan, there would be

at least a few species here that had them. There aren't. And, you don't have any idea *why* they don't exist, because you're locked in so damned tight on your own narrow specialty. Ask me. Ask Elsa. The larger system picture is our job."

"So, all right." Olie was fighting to hang onto his half-Nordic, half-Scots temper. "I'm asking, professor. What about it?"

"It's the slick ice. Animals with hooves can't get a grip on it. Natural selection knocked hooves out of evolution here long ago. You stick your 'new and improved' Yeep out there on that greasy ice, and they'll spend so much time falling on their prat and getting up again that they'll never get a *chance* to eat anything."

"If you had bothered to look *just* a little more closely," Olie said evenly, "you *might* have noticed that the hoofed phalanges are both articuable and opposable. Grip and traction are—"

"Agh!" Altborg snorted. He turned abruptly and resumed his pacing up and down. "We were dropped down on this hellhole to breed a strain of Yeep with a broader food-chain capability. We've done just that."

"But," Olie protested, getting to his feet and picking up the sheaf of printout paper, "they're *dying*. The seventy-five strain is—"

"Is *what*?" thundered Altborg, interrupting again. "Is dying of *what*? I say it's systemic, not genetic. I say

we can make a spot correction on it and get out of here."

Olie threw down the printouts. "Maybe it is a disease, but if it is, it's inherited. I've got the same thing in two generations, now. There's a third generation just coming out of the chute, and I can see the same thing starting up in them." Olie ticked them off on his fingers. "Peripheral circulatory insufficiency. Retinopathy. Cerebral circulatory insufficiency. The seventy-five strain will be extinct in two generations, once our control flocks are turned loose. Don't you care anything about what happens to them—to the species? And what about the poor, miserable natives of this planet? Don't you care what will happen to them, once the Yeep are *all* dead?"

"No!"

Olie Struan and Rudolf Altborg stood, staring each other down, their eyes fairly crackling hostility across the lab bench.

When Altborg spoke again, his voice was low and even. "I care about my career. I care more about it than I do about you, or the Yeep, or the Gratchii, or this whole crummy icebox of a planet. I started out as a biomedgen tech—organic mechanic—like you. And I worked, and skulled, and learned, and beat my brains out until I worked up to biochemist. I'm still working and beating my brains out to get up to ecological engineer. I didn't get this far by kicking over

the program every time I got to feeling sorry for myself, or got to feeling sorry for some tribe of smelly natives. Get me? You don't make it in this business by going outside the program. Right now, I *certainly* don't need you—or anyone like you—lousing up the detail.”

“Sure,” Olie said sarcastically. “Maybe you can draw a slot on your next project as ecological engineer in charge.”

“Maybe I can,” Alborg said. He hesitated for a second. “So?”

“Nothing. By that time the Yeep will be extinct and the Gratchii will be starving to death. Pretty expensive, isn't it? I mean—for two pay jumps and a bigger office?”

Alborg sat down wearily on the stool by the lab bench. “Listen, Olie. Get it through your head, will you? We have completed our aid program on Flannigan. We have engineered a new strain of Yeep that can live on most anything, short of animal protein. We have produced a stabilized metabolism in the seventy-five strain that does not depend on the puffdocks for a food supply. That was the program for this project. We have accomplished that. They'll adapt to the feet-freezing that you're so all-fired worried about—and, I think they'll adapt before they all die off.”

“I don't think so.”

Alborg snorted. “I *know* you don't think so! That's why you've been doing your damndest to wreck my section. Quit it!”

“All right,” Olie said soothingly. “All right. Hear me out, then. Now—the cat's out of the bag; or, the Yeep's out of the shed, so to speak. Give me a chance to sell you on it. If what I say makes any sense to you at all, we can—maybe—quietly turn my eighty-eight strain loose in the snow and forget they ever existed.”

“Oh for—”

“Hold on. What have we got to lose? They're not logged into the records. If you think I'm on to something, all I ask is that you don't murder my eighty-eights—”

“Euthanasia isn't—”

“It is to me,” Olie insisted.

“Oh, for—” Alborg began, again.

“Come on, now.” Olie's voice began to show strain. “Are you so closed up you can't listen?”

“You think I *owe* you a hearing?”

Olie hesitated. “In a way—yes.”

“All right. All right.” Alborg threw both hands over his head, then let them drop. “I'm only the man in charge. Why should my judgment amount to anything? Go ahead. Tell me about it.”

Olie licked his lips as he gathered his thoughts. Then, he sat down in the control chair at the bio-analyzer. “It's true; the seventy-five strain has mutated perfectly well—within the program. As you say, they can live on almost anything, short of animal protein. You say they have a systemic disorder that will adjust out. I say the cir-

culatory disorders are the result of a minor genetic drift—the small, annoying float-gene that we can never predict, but which crops up in the mutated strain once in a while. Normally, this isn't any real problem. Normally, it has nothing to do with our alterations of the basic metabolism of a given creature to solve a given problem."

Altborg's voice was impatient. "Look, Olie. I don't really need a lecture on organic chem-engineering."

"O.K., O.K. Just pay attention."

Altborg got to his feet and resumed pacing, hands behind his back. He nodded toward Olie, indicating that he was ready to hear him out.

"We use endocrine therapy to alter the animal's metabolism in samples of the species. Once our clinical evaluation satisfies us that the alteration is functional, we can synthesize a quasivirus to do the same thing as the drug matrix. We inject that quasivirus into a new group—control group of animals. The nucleus of the virus detaches in the bloodstream, tacks itself onto the DNA molecules in the tissues, and our alteration becomes a trait that will be genetically transmitted. If the transmission holds up throughout the control group, we have a mutation, but there are always some drifts—side-effect mutations—"

"Come on," Altborg said waspishly. "I was *producing* organic pro-

grams and shoving them into the works long before you ever jerked a tissue sample."

"I've no doubt of it," Olie replied quickly. "It's always come off before. Our systems have worked every time—but, *because* the minor genetic drifts never superimposed themselves on the object of the mutation. This one *does*. That's why I'm carefully going over this ground—"

Altborg stopped in front of Olie, his hands still clasped behind his back. "I *know* what you're talking about. It's very basic stuff; but how does it form any decent argument that the seventy-five strain is a bust, while the eighty-eight—" Altborg checked himself. "While your illegal strain—developed outside the program—will be such a galloping success?"

"It gets back to the same old thing. Peripheral circulatory insufficiencies. Poor collateral circulation—in this case affecting the extremities, eyes and brain. In the seventy-five strain, there simply isn't enough capillary formation in the tissue masses. In itself, that's within tolerance levels, but only in a general way. This climate brings it to critical importance in the areas of the Yeep's body that I've mentioned. You see it as systemic, as something that can be solved through pathology. That's because you're thinking in terms of biochemistry. I'm looking at it as a cell mechanic—and, I can see that it

will have to be built out of the seventy-five strain.”

“Well, you’re out of luck!” snorted Altborg. “It’s too late for that. The seventy-five strain is in operation, and passed by the system evaluation—”

“Of course it’s too late,” Olie said. “I’m only the organic mechanic, but I can see that we’d have to work up an entire new strain to get rid of the problem with the vascular system. In the eighty-eight strain, I simply knocked out the parts of the machine—the animal—where poor collateral circulation was causing trouble in this climate.”

“Hm-m-m,” mused Altborg. “I still say the hooves won’t work—not on slick ice. The whole thing sounds flaky. It’s too easy.”

“Maybe so,” Olie said. He sensed that Altborg was beginning to soften, but that his enormous ego prevented him from actually voicing any specific agreement.

“Look, Altborg. There’s nothing to lose, really. Just turn the eighty-eight control flock loose. See how they do. If they look like they’ll make it, leave them loose.”

“Sure,” Altborg sniffed. “What will the follow-up team log them as when *they* check up on the Botany Bay project, later on?”

“They’ll log them as a selection variation, and you know it. I haven’t been on too many follow-up teams, but I’ve pulled samples for enough of them to know they’ll

stretch a point pretty far to make observed results fit the system evaluation on a project.” Olie laughed a short, hard laugh. “Those guys are like you. They like their paperwork to go together nice and smooth.”

“Hmmp!” Altborg sniffed, again. “Who doesn’t? And, what if your ‘eighty-eight’ strain is a flat failure? What if I *am* right—and I am very apt to *be* right, you know?”

“Well,” Olie said, “you can relieve me from the project and ship me home.”

“Hah! I can do that right *now*!”

“Yes, but if you’ll give the eighty-eight strain a fair shake—and give the Gratchii a fair shake thereby—and my Yeep *do* fail, I’ll sit still for getting fired.” He measured his words carefully. “I’ll shut up and take it. You’ll have a free hand with Elsa—uh—off-duty-wise.”

Altborg’s eyes narrowed. “I’ll have to think it over.”

“Fair enough.”

“Let me have your hard data on the eighty-eights. I’ll run it through the sides program—see how it stands comparative analysis.”

Olie began shuffling together his pile of printouts, and stacked some more sheafs of data on top of it. Then he paused. “How about copies? They do just as well?”

Altborg shrugged and turned his back. “Sure. Copies are fine.”

Outside the pods of Botany Bay station, the early front of the rising

storm was building itself on the prevailing winds that carried it in upon the land from far out over the cold sea—miles away from the shore where constant wind and water motion did not allow the sea to ice over as it had in Botany Bay itself.

The wind had risen during the afternoon, from its usual low whistle to a persistent whine. It drove small maelstroms of powdery snow across the slick ice and methodically piled up the heavy clouds in the eastern sky, as some mythical god-child might stack snowballs in preparation for a bursting good sham-battle that it was plotting with friends.

The vyathane skins of the sheds, reined by the tie-downs outside and the web baffling inside, rippled steadily under the rising wind, rustling softly as the web baffles stretched and tugged, making the entire structures creak and sigh. The Yeep shuffled nervously in their pens and knotted together in little clumps which shifted constantly as their instincts told them of the coming storm.

Rudolf Altborg hunched over the console in his darkened office, his face lit from below by the lights of the feeder complex. He was putting Olie's data into an analysis program of Botany Bay station's main computer. He muttered to himself as he worked. "If he hadn't caught on and insisted on giving me copies, I could have shoved the

data into a non-retrieval and dumped his eighty-eight strain." He sighed. "Now I've got to go ahead with it, but I might as well give him a square analysis. He may be onto something that will be useful on some other project . . ."

The commo key on Altborg's desk console lit up.

He ignored it and continued feeding the job into the computer's sides program.

The key buzzed, softly at first, then more loudly as the reception cycle was manually overridden. Only one commo outlet in the station was equipped to do that: talk to you if you *didn't* answer the call.

"Rudolf," said Elsa Spitzen's voice from the desk console. "Will you get up here to my office as soon as you can?"

"I can't come right now, sweets," Altborg said, without turning. "I'm feeding a job into the computer. I can't break off till it's all in."

"O.K.," Elsa replied, after a brief silence. "Will it bother you if we talk while you're doing it?"

"Nope. Not a bit. What's on your mind?"

In her own office, Elsa switched her commo key to broad range, and turned her chair away from her desk console so she could look out the large window behind her desk.

"I just had the Alapah of the local Gratchii tribe in here. The translation was a bit strange, but it was an interesting conversation."

Altborg stopped what he was doing and looked intently at the pickup that was broadcasting Elsa's voice. *Now what?* he thought to himself.

In her office, Elsa had not turned on the lights, even though the afternoon light was beginning to go—even faster, now, with the weather beginning to kick in earnest.

She had changed her clothes, was no longer wearing the rather severe one-piece she favored during business-as-usual hours when her job was to let no one make a mistake about her being the ecological engineer of the project—female or not. Now, she was wearing a lightweight, loose-fitting one-piece of soft silken net that accentuated the full curves of her body. Sitting behind her desk console, silhouetted against the fading light that came through the window, she put her feet up, kicked off her deck slippers and began to take her hair down. As she talked to Altborg over the commo, the pale blond mantle began dropping about her shoulders—full, wavy hair that seemed to glisten as the dying light from the overcast sky of Flannigan shone through it.

"Are you interested, Rudolf?" she said into the commo.

"Sure," Altborg replied in his own office. "What did your friend the Alapah have to say? Did you find out anything about this afternoon's snatch expedition?"

"Not much we didn't already know.

Except for this one crazy thing."

"What's that?"

"He said—as nearly as the translator could tell—that the seventy-five strain of Yeep are dying off as fast as the base strain."

Altborg hesitated. "Must be an error somewhere with the translator. The base strain are still starving out, but my evaluations—"

"That's what disturbs me, Rudolf. You may have overlooked some points, somewhere. It's not like you. Have you had any data on the seventy-fives' freezing their feet and dropping dead?"

Altborg continued feeding data into the sides program. He couldn't stop, now that he had started, until all of Olie's material had been put into the job. "Oh," he replied absently, "we've had a little trouble along those lines, but it looks systemic to me—a float gene at the worst. We're working it out."

In her own office, Elsa opened a compartment in her console and removed a hairbrush. She didn't look where she was reaching, because she knew precisely where the brush was placed in the compartment. She began brushing out her full, Norse-blond hair as she talked to Altborg. "I haven't pulled any data, yet, Rudolf. It seemed only right to talk with the section chiefs, first. Do you think this might be an idiopathic disorder—something to do with the emotional tension on the part of the Yeep at being held in the control sheds?"

"Hm-m-m. Possible," Altborg replied. "We've some data on cyanosis of the extremities in affected Yeep—"

"Vascular constriction?" she cut in. "Could it, then, *not* be a genetic drift?" There was a hopeful tone to her voice. "If it's only systemic, we can treat it with an induced auto-immunity system."

"We're taking RNA inventories now," Altborg said, as he punched up a retrieval system that would give him that information, "toward a system setup."

"Get together a workup on this idiopathic thing. It could be something on the order of—say—Raynaud's Disease."

Altborg wrote it down. "Been checking that out, but I haven't found too much on it. Fairly recently identified, isn't it?"

"First described in the Nineteenth Century." There was a sudden, sharp chill in Elsa's voice.

"Oh."

"Let's get some real results, Rudolf. Your reports look rosy and your section runs smoothly, but your paperwork is a little too good to be true. I want this mutation wrapped up so it works right. We're coming down to the end of our funding. At least for this project. If I ask for an extension to straighten out some screwup, I know what the answer will be."

"Yes?"

"They'll cancel the programming on Flannigan and let the Gratchii

float on their own—sink or swim. I don't know about you, but I don't propose to have it on my record that I was in charge of a project that was scrubbed for failure."

"Uh, I'll get right on it." Altborg cursed under his breath, silently. This was just the thing he had been trying to avoid. "I'll start pulling evaluations and putting them through the sides program. My techs will be pulling tissue samples as soon as we finish talking. Don't worry. I'll find the fly in the ointment."

"You do that, Rudolf. I've got to get an update on this weather situation—it looks bad. I'll get back to you." She paused. "Anything else?"

"I've got it."

"O.K." The commo key light winked out as Elsa broke the circuit.

Altborg leaned back in his chair, put his hands on top of his head, and exhaled noisily. He lifted his right foot and gently shoved forward the switch that would start sides analysis of Olie's data on the illegal eighty-eight strain.

As the computer sucked in the information that had been stored in the feeder complex and gained up on the comparison cycles, Altborg whistled tunelessly—as he had a habit of doing when the pressure was building—and made up a limerick to take his mind off his troubles.

"An ecologist fair named Spitzen,

To make certain that everything fits in,

Says 'Rudolf, clean up the program,

Even if you don't give a damn,

Or whether you're coming to your wits' end.'"

Altborg smiled. "Hey diddle, diddle; right down the middle. Who's on the griddle?"

"Wow. That gal is too much," said the meteorologist.

"Hm-m-m?" his partner grunted, without looking up from his monitors.

"She's calling for a new weather plot every fifteen to twenty minutes."

"So—she wants to keep informed. She's the boss, isn't she?"

"No way to make a mistake about it. She just had Altborg on the pipe, and laced him up one side and down the other—as much as she ever does on the commo, at least."

The monitor section of Botany Bay station did more than plot and record the weather. It resembled the bridge of a starship—though it was not nearly so large or complex. Data came into it from a dozen different kinds of sensors and systems. Security personnel kept their attention to visual readouts of sensing devices on the station perimeter and in the control sheds. Records specialists were constantly feeding information from chips into retrieval storage and recording all in-

ternal commo between compartments and sections. The two weathermen at their console were only a small part of the constant activity in the monitor section.

"How did he take it?" asked the second meteorologist.

"There's only one way with her, and that's to take it, and smile, and say 'Thank you,' when she's finished."

"I suppose." The second meteorologist straightened from his screens and with the heel of his hand rapped a key that would send a recap of the current weather status into the crossover for storage in the main computer's memory. "The trouble with Altborg is he's got the hots for Elsa. Wrecks his objectivity. His judgment isn't working at all well."

"How do you know so much about it?"

"Jill told me."

"Leave it to a records specialist to be up on the gossip."

"Besides that, she's nice to look at."

The first meteorologist chuckled. "Count your blessings that you're involved with Jill. If you had hooked up with Elsa, you sure wouldn't have any time for section gossip."

The other smiled. "Yeah. I don't know if I could handle her at all."

"That's what's eating Struan, probably. Damn, has he been in a mood, lately. Beats me why he ever picked on Elsa to begin with."

"I think it was the other way around," the second man said.

"Yeah?"

"Sure. Elsa's satisfied with Struan as an object of her affection—she knows she can handle him—knows he won't give her any trouble."

"That's one of the things that's got Altborg chewing up the rug. I think, anyway. Elsa is apparently perfectly satisfied with Struan, but she won't give Altborg a tumble. Like you said—it's hard on his ego—wrecks his objectivity."

"Logical."

"What Altborg can't see is that Elsa wouldn't be likely to care for any liaison with him; if for no other reason than the fact that she's pretty heavy on the ego, herself. Oops. Here she comes, again."

The commo key lit up and buzzed simultaneously.

"Yes, Elsa," said the first meteorologist.

"What's the weather doing?" Elsa asked.

The first meteorologist quickly scanned the screens and riffled through the hard copies of the recap printouts. "Still stiffening. The kph is up 7.6. Barometer still dropping, steadily. Current rate of storm: force gamma-zero. The activity center is fifty clicks out, coming in on bearing two-zero-five at twelve clicks per; up two full clicks from last recap."

"What's your plot on full break?"

"Hm-m-m. Trend sides indicate

we'll get it about 2300, but it will be slacked off enough for us to get out of the pods by 0600."

In her office, Elsa smiled slightly. "In other words," she said into the commo pickup, "we better nail our shoes to the deck, or we'll blow away."

"Affirmative," the meteorologist replied. "This looks like the meanest stroke of weather we've seen yet on Flannigan."

"O.K.," she said. "I'll get back to you."

At the exit portal of the main pod, Olie took his bug off the board, wrote on it where he was going and his expected time of return, and handed the plastic chip across to the security man on duty, who punched the information into his console. The active inrush data in this local console continued to sort itself until each entry was manually cleared. If a technician was gone over his estimated time, the console would flash the information up on a screen, alerting the duty security to the possibility that the man might be in some trouble. The only other job which that duty security had was to make certain that no local natives or animal life gained entry to the pod. The night security duty was a good place to catch up on your reading.

The security man had his reader propped on his knees and jacked into the library channel. "Hit the sign-out sheet, too," he said to

Olie. "We're on a weather alert."

"Sure thing," Olie replied. "What are you reading?" he asked as he carefully printed the information on the clipboard.

"Spec-fiction," the other man answered. "'Slavers of Space.' Weird stuff. Don't catch cold," he said as he activated the portal.

Olie gasped as the wind hit him full in the face. He had to lean steeply into the fierce gale to keep his feet, and still nearly fell several times before he got to shed number twelve.

The wind nearly tore the hatchway from his hands as he opened it. It slammed back against the frame, but the noise was lost on the howling wind, which was beginning to drive snow before it now, as it swept in off Botany Bay. The piling clouds were no longer visible in the darkness—only the scream of the wind and the sleet, biting into the surface of Flannigan. But that was enough to tell anyone that even heavier weather was already on the way.

Olie had to throw all his weight on the hatch to pull it shut behind him. There was a low click as the electric hinges engaged, telling the security monitors that the hatch was now closed.

The Yeep were all up and twittering among themselves, awakened by the blast of wind from the open hatch. Olie hurried to the rear pen and his eighty-eights.

They clustered near the fence

when they saw him, and made inquiring little noises at him. Olie was the only human they knew.

"Take it easy, chickens," Olie said, as he spread feed into their trough. "Take it easy. Just a little bad weather."

The eighty-eights were plainly jumpy at the noise of the wind and the creaking of the shed, but Olie's voice seemed to reassure them, as did his regular habit of feeding them himself. These Yeep didn't know their existence was a secret. They only knew that this man came to feed them twice each day, and they sensed his special feeling for them.

Olie fed the other Yeep that were housed inside the shed, then returned to the pen where his eighty-eights were now feeding quietly.

"Altborg wants to kill you all," he said to them.

One tiny Yeep, only a few weeks old, was bobbing around the cluster of his elders, trying vainly to shoulder his way up to the trough. The more he struggled, the less effect he had. The older Yeep munched their feed contentedly and ignored him. As his vexation grew, he began to squeal furiously—his attempt to duplicate the shrieking sound made by adult Yeep.

"So," Olie said, "you think the squeaky wheel always gets the grease, do you? Well, kid, the older you grow, the more you'll learn. 'Tain't necessarily so. Altborg is

boxing me in, slowly but surely, just like your folks, here—and, God knows, I've been howling my head off. What has it got me? Nothing but trouble. I *know* I'm right—but Altborg *knows* he's right, too. We can't both be right, can we, kid?"

The baby Yeep was beginning to wear himself out now. He stopped squealing and retired to the far side of the pen, where he licked his nose disgustedly and sat down, panting for breath.

"Rather than let Altborg exterminate all of you, maybe I'd be better off to do the job myself and try to forget about it. I don't know why I'm so upset about you guys, anyway. No one else seems to give a damn. If I killed you all off, there wouldn't be any evidence—no real evidence—that you ever existed. My career would be clean, and I'd be out of trouble."

The baby Yeep got to his spindly legs and looked straight at Olie, with his head cocked to one side. Olie cocked his own head and looked back. "You think I'm nuts, don't you, kid? Maybe I am." Suddenly, Olie smacked his fist into his hand. "But, damn it, I'm *right*. Everything I know tells me I'm right." Olie thought for a moment, sorting over all the desperate alternatives that were open to him now, since he had managed to work himself into this very tight spot. None of them made real sense to him, except one. He knew he couldn't bear to kill off the eighty-eights himself,

and he didn't think he could take knowing that Altborg would have it done.

"Phooey," Olie said to himself. "Altborg isn't going to buy my bargain. He isn't going to let me turn you loose to see if you can make it."

The baby Yeep at the rear of the pen sniffed the ground, and pawed at it, flexing both halves of his right front hoof.

"You know it, too, don't you kid. If Altborg won't give you a chance, maybe I'll just sneak out there—as soon as the storm lets up—and turn you all loose myself."

The baby Yeep took a deep breath, gathering himself on his skinny legs, and galloped headlong toward the cluster of Yeep at the feeding trough. The momentum of his charge carried him well into the flock. Squealing triumphantly, he squirmed and wriggled his way up to the trough, almost falling head-first into it. He looked up smugly at Olie, as if to say, "See? That's how it's done," and then he began to eat.

Olie looked down at the trough for a moment. Not only was this youngster tougher than the others, he assuredly was smarter. Olie blinked his blue eyes a few times, then straightened to his full height, and turned toward the hatchway.

Back in the main pod, Olie signed in and hung his bug back on the personnel board. "How's the book?" he asked the security man.

The duty security shrugged. "I don't know why I read the stuff."

"How's that?"

"Oh, the guy had everything going good; then, all of a sudden, he decided it was long enough and ended it. I was just getting wound up, and he said 'Surprise!' and wrapped it all up on me in three pages. I don't know why I read the stuff."

Olie strode purposefully down the passage, thinking to himself what would be the best way to handle this thing. *Get to your own lab*, he decided, *and call Elsa from there. No point in just busting in on her. She'll be furious enough when she has the whole story, anyway. Altborg isn't going to give you any satisfaction. On the other hand, he does deserve the courtesy of asking what he got from the sides evaluation of the eighty-eights. That will have to be done first. Going straight to Elsa, now, after having made a deal—however shaky—with Altborg, would just be going off half-cocked.*

He didn't knock.

Altborg looked up from the console, where he had been sitting, pondering the whichness of the why. "Yes?" he said.

My turn, thought Olie. "What'd you find out from the computer about the eighty-eights?"

"Haven't got it back out, yet," Altborg lied. "The job is sitting on standby."

"What for?"

"The machine is busy running data updates and recapping this weather development."

"Very likely," Olie replied. "I've just been out in it. It's rotten."

"Not a fit night out for man or Yeep, eh?"

"Something like that." Olie's gaze moved about the room, stopping abruptly at a pile of printouts next to the feeder complex. He moved closer to Altborg and the console. "I've made up my mind, Altborg."

"About what?" Altborg asked pleasantly.

"About my eighty-eights. I've been out there in the shed with them. They can make it. I know they can make it."

"Hang on a minute," Altborg soothed. "Let's see what the comparative analysis says."

"Nope. I'm going to Elsa."

"You're what?"

"I'm going to Elsa, and I'm going to lay it on the line."

"Don't be a sap, Olie."

"I told you. My mind is made up."

"Hah! Question is, what's it made up of?"

"Skip the word games, Altborg. If you've got the sides program printout, say so. If you don't, I'll go without it."

Altborg got to his feet. "You *won't* go—with it *or* without it. Look, I'm trying to keep both of us from being boiled in oil. If anybody goes to Elsa, *I'll* go . . ." He

smiled crookedly. "Unless, of course, you have a purely social call in mind."

Olie bristled. "I'm tired of that noise, too. So forget it. Don't worry. I won't implicate you. I'll take the whole load myself. I developed the eighty-eights—not you. If anybody gets roasted, I'll take the whole roasting alone. No one has to know that you were even aware of the eighty-eights."

"That may sound all right to you," Altborg said quickly. "But, it will sure make me look like a prize sap, and you know it."

"Oh?" Olie was beginning to lose his temper. Something, he thought for an instant, rubbed him the wrong way about Altborg. It had, he decided, always rubbed him the wrong way. He was getting mad now, and he was enjoying it, as he had never enjoyed getting mad before.

"Oh?" he repeated. "How's that?"

"Some section chief I'll look like—when everyone knows that a plain organic mechanic pulled the wool over my eyes—developed a strain of Yeep outside the program without my ever knowing it."

"Well," Olie shrugged, "that's the way it is. Too bad."

"Wait a minute," said Altborg smoothly.

Olie edged around toward the console. When he was close enough, he reached out and snatched up the printout, glancing

at it briefly. "Looks like your job came out of the computer while you were asleep, or something."

He moved toward the door.

"Put that down!" snapped Altborg, who was already moving around from behind the console toward Olie.

"Too late, Rudolf. Too late." Olie realized with a smile that this was the first time he had ever called Altborg by his first name. He didn't know what the change was—he was too busy—but he knew it felt good.

Even as Altborg swung his fist, Olie—like the frustrated baby Yeep—was charging forward. His momentum carried them both to the deck. The pile of printouts Olie had been clutching tumbled in a heap by the doorway. They rolled behind the console, thrashing madly, each trying to get on top and land a punch. Altborg tangled in the console chair as Olie scrambled to his feet, but as he came up after him, Altborg brought a fist with him from the deck. It didn't land squarely. Olie had seen it and was already moving to one side, but the blow glanced off his jaw, and sent him backwards over the console, headfirst.

Altborg started to climb after him. Olie came up from the deck, eyes glassy, but he was clutching a heavy dilon waste canister in his right hand. As Altborg launched himself from the work surface of the console, Olie brought the canis-

ter around in an arc and bounced it off his skull with a clang. Altborg's forward momentum slacked for a second, then he sagged to the deck. He gathered his legs under him, starting to pull himself to his feet.

No point in being halfway about it, thought Olie. He brought the canister down on top of Altborg's head, then dropped it, steadied himself against the console to keep from falling, and looked down at the still form lying on the deck.

As was his methodical custom, Olie knelt beside Altborg, checked his pulse and respiration, skinned back an eyelid, and then smiled. "Well, he's not dead . . . But, he's going to have one hell of a knot on his head when he comes around."

That felt good, too.

Olie stayed on one knee until he caught his wind. Only one thought kept him from lying down, himself. He wanted, at that moment, to just lie down and go to sleep, and never get up again. But, regardless of what happened now, he had to put the whole thing before Elsa.

Wearily he gathered up the printouts he had dropped and headed for his own lab, straightening out the computer evaluation as he half ran, half staggered down the passage.

In his lab, he gathered the originals of his hard copy runs on the Yeep, including his eighty-eights, and stuffed the whole works into a case. While he worked, he rapped

the commo key with his knuckles and punched out the call for Elsa's office.

No answer.

He put in a second call, to her quarters.

"Yes?" she answered.

Olie smiled. "Elsa? Are you decent?"

"Olie? Is that you? You sound awful."

"I am," Olie panted. "Are you decent?"

"Yes, but—"

"I'll be right there." He broke the circuit and headed for the door.

For a patient forty minutes, Elsa listened while Olie briefed her on his findings about the seventy-five strain of Yeep, piling up data sheets and tissue printouts of sample bio-analyses as he went. And, while he laid out the entire story on the eighty-eight strain, why he had developed them, why he believed so strongly in them, and his reasons for believing Altborg had been dealing to him off the bottom of the deck.

Finally, he had gone over all of it, and stood waiting for her reaction, not having any idea what form it would take.

She stared at the wall for several minutes, then turned to him. "Very concise report, no more chance for preparation than you had."

"Like I said," Olie replied, "I didn't know what the sides evaluation was. I never had time to

read it over until I laid it on your table, here."

"Even so," she said, "It does support your guesses. Guesses have no place in scientific work. I thought you knew that."

"Yes, Elsa. I know it. Believe me, I know it. But, I *knew* I was right."

Her eyes narrowed. "What if you had been wrong?"

"But, I wasn't—"

"You *might* have been. You know damn well you might have been."

"I know. But, I couldn't get anything from Altborg—and he was greasing up his reports with all kinds of optimistic information that was only a skip and a hop from being downright false."

"Agreed. That was something you should have brought to me at the time, instead of going off half-cocked—outside the program. I can't go along with that kind of rule-breaking, Olie—regardless of my personal feelings for you. The only way any of us can be scientists is to *be* scientists and technicians when we're supposed to be scientists and technicians. The fact that we're men and women," she paused, "and we sometimes have personal, emotional relationships, is something we have to put away. We have to lock it up somewhere before we go into the lab or into the field. That's what Rudolf *didn't* do. It got him in a mess, didn't it?"

"That's what I'm saying. Yes. He

got so pushed out of shape about you not giving him a tumble, he fell down on the job."

"And so did you, Olie. Don't look at me that way. You know damn well you did. You got so wrapped up in the Gratchii and the Yeep with your emotions, that you couldn't see them with your science. You, much as I hate to say it, blew it. You went outside the program, didn't you? Because you couldn't stay within the very necessary discipline of scientific procedures offered by that program—disciplines that are set down to keep us objective."

She waited for him to answer.

"Yes," he admitted. "Yes, I did."

"You defied production requirements. You chucked procedures into the can. You deliberately flouted my authority—disregarded my orders. You broke every rule in the book."

Olie stared at her. *Not here, too*, he thought. *She's saying the same things Altborg said. I thought—I thought she would be, somehow . . .*

Finally, he spoke. "I thought . . . I mean, that's the kind of thing Altborg was giving me. You—"

"You thought I'd let you get away with it, just because I happen to like you a hell of a lot? Just because I might be in love with you?"

"Well?" he said irritably. "Aren't you?"

"I don't know," she replied evenly. "And neither do you. We've talked about that, before.

Summer romance, and all that. We won't really know—either of us—until we get this project wrapped up, get off Flannigan, and spend some time back in civilization. I think I do love you, but I can't let that have anything to do with this business with the Yeep."

"Damn it! Charity is not what I'm after!"

She put her hand on his arm. "Oh, Olie!" She paused, searching for the words. "You're such a fool, sometimes. Don't you see? If I let this go past, just because I think I love you, I won't be any better than Rudolf—a knothed of a scientist who can't tell the difference between his emotions and his work. That can't be the basis for this—it just can't."

Olie rubbed his eyes. "You're right. You're right. I'm sorry I barked at you. I didn't expect you to just pat me on the head and kiss me. I guess I got mad because I was hoping you would, even though I knew you wouldn't."

"The point is, Olie, as I said, that you broke every rule in the book. You even broke the rules when you punched Rudolf. Personally, I'm glad you did. I wish I had seen it. I think he probably had it coming. But, as the ecological engineer in charge, I have to look at it from a further perspective."

"I agree with all that," he said. "But—after all is said and done . . . And, by the way, I'm willing

to take whatever you dish out—whatever you think is right. After all is said and done, what about my Yeep? I agree that I let my own objectivity get away from me. I can see that, now—now that it's too late. It may prove to be a pretty expensive lesson, but I can see it, now."

She smiled. "I didn't think you had it in you—to believe so strongly that you were right that you would kick over the program and take the bit in your teeth that way. Good for you, Olie. I don't know if you know it or not, or even if I should tell you, but that's how I made my reputation. I got stubborn about a program once, on Kallenberg's Planet. I juggled data. I fed phoney information into the computer. The works."

Olie blinked. "You—"

"That's right." Elsa chuckled throatily. "Me. 'The iron fist in the velvet glove,' I believe they call me around here. Yes. I did the same thing. I was right, though, so my bosses didn't roast me alive. I was right, but for all the right reasons, I was wrong. I just got lucky. It taught me a hell of a lesson, believe me."

"What about my Yeep?" Olie asked, again.

"Good question. I don't want to see the Gratchii fall on hard times, either. Not because their Yeep are dying off, and not because our seventy-five strain is a flat failure. I think you're right about the eighty-

eight strain." She arched an eyebrow. "The eighty-eight strain that you developed *without* authorization."

"Don't rub it in."

"You need to have it rubbed in, Olie. If you learn the same lesson from this as I did on Kallenberg's Planet, the whole mess will be worthwhile."

"And the Yeep?" he persisted.

Elsa sighed. "I'm going to give them a whirl. See how they do. Not because of you, personally," she added quickly. "Make no mistake about that. I think you may have the answer. I'm not going to kiss off your work just because you let a lot of other things run away with your responsibilities as a technician—as a scientist. Science is science, discoveries are discoveries, even if they're made by a homicidal maniac who is researching for a novel way to poison someone. I know the differences about that, too, though I didn't learn them the same way as I learned the lesson about scientific discipline. Now, are you satisfied?"

"Except for one thing."

"Which is?"

"Altborg. He'll try to kill the eighty-eights, once he knows I've given you this information."

"No, he won't."

"What makes you so sure?"

"The pods are sealed. Have been for nearly an hour, since you were in his office. If you hadn't been punching each other silly, you

would have heard the alert. The weather is up to the point where we can't safely go out until the storm has passed."

"Oh."

"So, your Yeep are safe till morning—provided they don't blow away tonight." Elsa reached for the commo key and punched through to security.

"Yes, Elsa."

"Dr. Altborg is restricted to the main pod."

"For how long?"

"Until after I go out in the morning."

"What reason are we to give, if he inquires?"

"My orders!" she snapped.

"Good enough?"

"Yes, ma'am!"

Elsa broke the circuit, and punched out a shutoff code to the effect that she would take no more calls until 0630.

Then, she turned to Olie. "Now, then. Let's get a good night's sleep; then, we'll see what your Yeep can do."

The pale sunlight of Flannigan broke through a soggy, overcast cloud-cover and sparkled on the clean, new snow and fresh slick ice deposited by the storm.

Only two sheds were still standing. The inflatable control sheds had been engineered for some stiff weather, but the massive storm which had swept across Botany Bay station during the night was far

past the margins that had been built into these systems. Several sheds had gone down as their webs and guying had given way, allowing the gale winds to stretch the vyathane skins beyond their limits of elasticity. One shed was completely blown away—ripped loose from its moorings and carried off by the fierce wind and sleet. Two sheds had been reduced to shredded tatters, still guyed down, but only torn fragments of vyathane, flapping in the morning breeze.

Shed number eleven and shed number twelve.

The perimeter of the station was littered with dead Yeep. As the sheds had started to give way, they had panicked—like the lovable idiots they were—and scattered. Some had been smothered in the sheds that went down. Others had died at the stun-fence. Still others had piled themselves together in clumps to keep warm, and smothered the ones on the bottom of the pile.

Olie was weary and defeated as he and Elsa walked the shed area, surveying the damage.

They stopped alongside one of the dead eighty-eights.

"Maybe it's better this way," said Olie ruefully. "Maybe they wouldn't have made it, after all."

"We'll find out," Elsa said. "I think you had* the answer. I thought you had it last night, and I still think it—storm or no storm."

Olie shook his head dejectedly. "I guess—I sort of made pets out of my eighty-eights. That's why it's hard to take—seeing them spread out, dead, all over the place."

"Nonsense," said Elsa briskly. "We've got your data. We'll program up a new group of eighty-eights—inside the system, and see what we get. Don't go off half-cocked again, Olie. It won't be hard to get a body-count on the eighty-eights. Maybe some of them made it."

Elsa's commo beeped.

She flipped the key. "Yes?"

"Altborg, here, sweets. Come up to the top of the main pod, will you? Bring Olie along. I want to show you something."

Altborg was sporting a large shaved spot on his head and a spray-web dressing, which covered the contusion left by his skull's sudden collision with the waste canister.

"Did you drag us up here to see the sunlight glint on that knot on your head?" Elsa asked. Her tone was half-joking, half-irritated.

"Not a bit. Hardly felt it." He eyed Olie. "No hard feelings, old man." He reached out and stroked the large bruise on Olie's jaw. "Looks like I gave as good as I got."

"All right, Altborg. Get to it. What's on your mind?" Olie instinctively drew away from Altborg's touch.

"Take a peek in the scope." He motioned for both of them to come closer to the optical system.

Far below them, out on the fresh slick ice, there was a milling clump of eighty-eights.

Olie's face brightened. "They made it! Some of them made it!"

"Well," Alborg said, offhandedly. "Like I said, they're falling down a lot. But, take a closer look."

It was true. Most of the eighty-eights were wobbling around on the slick ice, their gait growing more and more unsteady. When they finally lost their footing, one end of them would go down with a splat, slamming either their heads or their rumps onto the slick ice.

They would remain in that grotesque posture for several seconds, then gradually pull themselves up on all four legs once more, only to have the other end flop out from under them.

A few, notably the younger ones, were sailing along without any apparent difficulty. With their inborn

habit of locking their knees and jumping up and down in one spot when they were excited, it was a simple step for them to lock their legs into a stiff position, draw the two articulable halves of their hooves close together and skim along on the slick ice, as though they were wearing ice skates. When they wanted to slow down, they simply spread each half of the hoof and dug in the little finger at the rear of the foot, setting up braking friction on the ice.

Olie laughed aloud.

"Lo and behold—serendipity," Alborg said.

"One thing that's wrong, though," Elsa mused.

"What's that?" Olie asked suddenly.

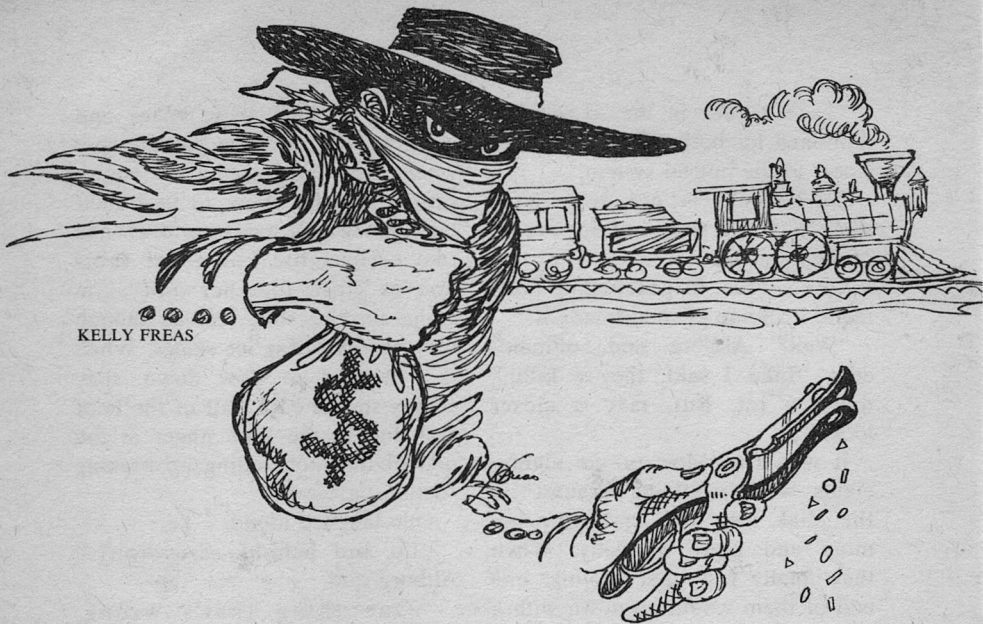
"Look at the speed they're making," she answered. "They're sailing along much faster than the Gratchii can run. Now the Gratchii won't be able to catch them."

"Maybe," Olie remarked, "we could teach the Gratchii how to ski." ■

IN TIMES TO COME Robert Heinlein returns to Analog after too long an absence, with "The Notebooks of Lazarus Long," from his forthcoming novel, "Time Enough for Love."

The cover of the June issue is by Kelly Freas, illustrating the Skylab manned orbital laboratory. Kelly was asked by NASA to design the shoulder patch worn by the Skylab One crew, and he tells how it all came about in an article, "Skylab Patchwork."

Also, Norman Spinrad has a personality profile of B. F. Skinner, Laurence Janifer reviews the ill-fated Broadway play, "Via Galactica," and much, much more!



L. E. Modesitt, Jr.

Sometimes the builder of a better mousetrap doesn't want anyone to know about it!

THE GREAT AMERICAN ECONOMY

"What a miserable day it is," grouched James Boulin Chartwell, III.

As junior member of the Council of Economic Advisers, he often grouched. When he didn't grouse, he grumbled.

George didn't exactly agree with his boss. True, the smog had cut the visibility outside to less than a hundred yards. The April day was grayer than usual, but what else could you really expect in the

Greater Washington Reservation?

"George! Do you know that our figures are off by One Hundredth of One Percent?"

George sighed. He'd known since yesterday when the monthly inflation statistics had been printed out that there would be trouble. For the third month in a row there had been a small, but significant, inflationary trend in the Gross National Products figures. The unplanned increase could not be ex-

plained by increases in wages, construction costs, defense spending, conservation and reclamation projects, or anything else.

"George! Do you hear me? The President is Not At All Happy about this. If it gets out that there has already been an annual rate of inflation of over one tenth of one percent this year, that could swing Public Opinion heavily in the elections. You know we can't keep it a secret much longer."

James Boulin Chartwell, III, refilled his glass with One Hundred Percent Pure mineral water.

"I take it, sir, that you would earnestly desire me to discover the cause of this Blight upon our Great American Economy." George was about ready to quit, if only he could persuade himself that leaving the Reservation would not be the end of his career.

"I don't give an obsolete gold piece what you do. But you ought to want to know how this could happen, when Government Expenditures are registered to the Last Penny, and when our computers keep track of the Private Sector to the Very Last Dime." James Boulin Chartwell, III, was a firm devotee of the bureaucratic school that spoke in Capital Letters.

George sighed again. It would be a long day.

"George! Don't you understand? It Can't Happen. It just Can't Happen." James Boulin Chartwell, III, finished his second glass of One Hundred Percent Pure mineral water.

George shrugged. He knew why it wasn't supposed to happen. The growth of the nongovernment sector was computed on a full-coverage, day-by-day, real-time basis, taking into account all variables such as price and wage increases, construction rates, investment rates, and savings. The basic government budget was programmed into the computers as well. Adjustments in the basic growth rates were made on a weekly basis by changing the magnitudes of variable items in the government budget. The system was about ten years old in its present form. It had worked reasonably well, although many government agencies complained bitterly about budgets that varied from week to week. Defense and Urban Affairs, of course, were above variable controls. Status was working in a department with a Fixed Budget.

"Well," demanded James Boulin Chartwell, III, "do you think that you can Solve The Problem?"

George shrugged again. He wanted his morning Coke.

"I'll see what I can find out."

As he left the office, he smiled at Mildred. She glared back, as usual. She disliked George's flippant attitude toward the Very Respected Junior Adviser.

George wandered down to the cafeteria. It was after coffee break and deserted. He picked up a cup, filled it with ice, and pounded on the soda dispenser until it delivered his Coke. He debated sitting down, then went back to the office he shared with two secretaries and three other junior economists. Tricia was the only one present. He looked at her.

"Mary took leave today. She'll be back tomorrow." Tricia had a very pleasant voice. She also weighed close to two hundred pounds and was a head taller than George. George liked to consider himself as a full six feet.

He eased behind his desk, setting the cup down on his blotter. Tricia began to type again.

"Tricia, can you get me the income figures on the Mafia for the last quarter?"

She nodded, but did not stop typing.

"Now! Damn it!"

"Yes, Mr. Graylin."

He looked around the office. He imagined that the other three economists were scattered all over the Washington Reservation briefing various staffs on the sundry economic idiocies still existing.

"Tricia, add to that a summary of the major flow of Union Funds.

Make sure that includes the pension funds and the mutuals."

"Yes, sir."

He felt guilty for yelling. He'd pay for it later. He sipped the Coke and tried to think. Who could be pumping all those dollars into the economy?

"Mr. Graylin, your read-outs are coming through."

"Thank you, Tricia." He went over and collected the first pile of print-outs. Tricia smiled too sweetly and resumed typing.

After five hours, including a hasty Coke and a sandwich, he was still in the dark about the Blight on the Great American Economy.

He picked up the phone and punched out a combination.

"Morey, this is George Graylin. I've got a problem that maybe you could help me with. Can you stop by after dinner—say about eight-thirty?"

"Fine with me, George. Delores has chamber music appreciation tonight."

George wound up the rest of the afternoon's trivia, had a Coke, and dinner, in the cafeteria, then marched to the Reservation gate. The exit machine refused his bank card and insisted on his ID. Outside it was raining. He had left his raincoat in the office. He only had to straight-arm one secretary to get a cab, but got a faceful of Mace when the girl already in the back panicked. On the second try he made it. After locking the doors, he

dialled in his block code. The cab almost wouldn't accept his slightly mangled bank card, but finally digested the information after burping the bent card back twice.

Exiting the cab at full gallop, he dashed into the foyer, slammed his entry card into the gate, and slipped through into the apartment recreation hall. A few were playing pool, but the area was generally deserted. Eight was still early in the evening.

Morey Weissenburg was small and intense. He was a very good attorney.

"Let me get this straight, George. Someone or some organization is putting money into the economy. What's wrong with that?"

"No, no. It's not that. Somehow someone is putting money into the economy that never entered the country legally or was never earned here."

"How do you figure that?"

"Because for the last three months, overall income is higher than the total of all goods and services indicates it should be. It's driving us nuts. The Honorable James Boulin Chartwell, III, especially. Taxes are being paid on that unknown money. It pays for more goods and services. It's not from the government."

George gulped down the rest of his Coke.

"So you're wondering if one of my clients might know where this extra cash is coming from?"

"Morey, I checked the records of your boys before I called you. As far as I can tell, they have nothing to do with it. It just boils down to the fact that there is more money in the country than this country could have produced."

"I get the picture. And you figure that if you can't solve it, you're liable to get a runaway inflation?"

Morey was sipping Scotch, intensely.

"Not really. It's not even a whole lot of money. Could be as little as three to five million. Maybe less, depending on where it's dumped into the economy and the multiplier effect. The real problem for me is that it's got the Council all upset because their pretty little charts don't work out."

George wandered into the kitchen, grabbed another Coke and poured it into his glass.

"Care for more Scotch?" he mumbled while crunching an ice cube.

"No, thank you. George? Have you thought about an outside country dumping funds just to foul up your computers?"

"No, but I think that the effort would cost more than the results. You'd have to have a pretty sophisticated distribution system. I'll check on it tomorrow though."

"I really ought to go, George. Delores will be furious if she happens to get home first. I'll let you know if I hear anything."

"Well, thanks anyway, Morey."

After Morey left, he reset the defense screen and went to bed.

"Good morning, Mr. Graylin," called Mary cheerfully.

"Morning, Mary."

George crawled behind his desk and clutched the Coke she always had waiting. He hadn't slept well.

"Mary, can you get the currency transfer records for the major Commbloc countries?"

He sat in his normal morning stupor until they arrived. The records said no country had the international balance to get away with it undetected.

The morning memo run had an Important Memo from The Desk of James Boulin Chartwell, III, to the effect that James Boulin Chartwell, III, suggested that George Jordan Graylin, Junior, stop riding a donkey and get on with discovering Who was Betraying The Great American Economy before All Was Lost.

Feeling that all was lost anyway, George took the Reservation shuttle over to the newest new congressional addition and briefed Congressman Dither's new staff economist on the role of recovery and reclamation in the variable budget system. He came back to the office to find another Important Memo on his desk. It said, translated: Have you Saved The Great American Economy?

He threw it in the pulper.

"Mr. Graylin, you have a lun-

cheon engagement with the Bank Tellers of Greater Washington at twelve o'clock at the Burr Room." Tricia smiled a very superior smile as he scurried out the door.

Percival P. Pentamount, Executive Vice-President of the Greater American Bank, was the featured speaker. The topic was "The Role of the American Banking System in the Great American Economy." Since the Government regulated the economy, and the banks' role was zilch, George went to sleep. He woke up to the relieved applause of the Bank Tellers of Greater Washington.

The meeting broke up as the tellers scurried back to their tells. Percival P. Pentamount was approaching. George eyed an emergency exit, then shrugged.

"Did you like the talk?"

Percival P. Pentamount was round, white-haired, pleasant looking, blue-eyed, and was well aware of all four attributes.

George suppressed a yawn. "It was quite a pep talk."

"Must keep the troops happy. I enjoy making them all feel wanted." Percival rubbed his hands together eagerly. He continued, "All in a day's work, you know. Banking is the Heart of the Economy." Percival then beamed at George.

George managed a smile.

"Well, I must be hastening back to The Bank. A pleasure meeting you, sir."

Percival P. Pentamount waddled quickly off.

George sighed, gulped down the rest of his Coke, and lurched to his feet. He only knocked over one glass in his retreat.

Getting back to the office was easy. He grabbed the first cab that slowed, after shattering the eardrums of a teentough who tried to cycle him down. He recharged the ultra-beamer as soon as he got through the Reservation gate.

Collapsed at his desk, he found another memo. This Important Memo decreed: "Get to the Heart of The Problem. The President and I are Counting On You, George."

He tossed it into the pulper. Then he burped.

"Bad day, George?"

Norman Dentine had a flashing smile and a slightly patronizing manner. His only asset, to George's way of thinking, was that he was seldom in the office.

"No. Terrible day."

Norman flashed his smile again.

"Sorry to hear that. I'd give you a hand, but I'm due to brief Senator Titegold in an hour."

"No problem, Norm. No Problem."

George sighed. There ought to be some way to get to the Heart of The Problem. He straightened up, abruptly.

"Mary, I need some statistical research done."

"But, Mr. Graylin, I'm way behind."

"Don't worry about that. The President is Counting On Us, as the Very Honorable James Boulin Chartwell, III, would say."

Three days later, George emerged from his stack of print-outs with very little printable to say. It was Monday, and it was still gray.

He picked up the telephone.

"Morey, you've got to help me. I think I'm on to something, but it's driving me nuts."

Morey arrived promptly at eight. George reset the defense screen by the apartment door.

"Delores says I can give you an hour and no more, George, so get on with it."

George poured Morey a Scotch, lifted an ice bucket and a carton of Cokes, and lumbered into the study. He slumped into the chair behind the desk.

"All right, Morey. Here's where I am. First, this bootleg money has to get into the economy from some legitimate source. It can't come through a sector which deals with physical goods because I'd be able to catch that through the IRS Data Link by comparing costs, input-output, and profit figures. Any goods producer would have to hide it through abnormally high profits. Same in the service sectors. No one in any of those sectors is showing higher profits. Then I hit on the financial service boys—the brokerage houses, the mutual funds, the insur-

ance companies, and the banks. I thought that if anyone showed a higher net, I'd be set. But the fluctuations from institution to institution killed that idea."

George paused and gulped the rest of the Coke. He opened another.

"George, what about the possibility of higher costs disguising higher profits?"

Morey was still on his first Scotch.

"That doesn't show up either. I ran a cost analysis of everyone big enough to have that kind of effect. According to Census and IRS data, no one big enough to affect the economy has costs appreciably higher than competitors."

George dropped into the chair again and kicked off his shoes.

"Hell, Morey, I'm going nuts. I even checked the Treasury Department and the Fed about the total money supply. The Treasury said no, they were not fiddling with the money supply and ran me a set of tests to prove it. The Federal Reserve boys nearly blew their programming computer when they saw the figures I brought them. They agreed and didn't like it one bit. If I don't get an answer immediately, they'll have those figures all over Greater Washington in a day or so."

"You mean, the money supply is definitely larger? Are reserves a problem?"

Morey was interested, abstractly.

"That brings us to the point, Morey. I do have one idea, but I don't know if it's technically possible. And I can't ask anyone if it is. The question itself would panic too many people. So . . ."

"Well, what is it, George? I can do your dirty work for you again, I suppose."

George told him.

"I don't know, George. I'll let you know."

George reset the apartment defense screen when Morey left.

"George, you have rendered the Government a Great Service. You have stopped a Despicable Plan to Undermine The Great American Economy. I am Proud of You. The President is Proud of You."

James Boulin Chartwell, III, no longer the Junior Economic Adviser, sipped his glass of One Hundred Percent Pure mineral water.

"I think We just might be able to Find a Place for You, George."

George smiled. It was going to be a long summer.

The formalities accomplished, Mary waited for George. She cornered him with a Coke.

"Why banks, George?"

"As Percival P. Pentamount would say, Banking is The Heart of The Economy. What better place to pump in a little umph?"

George sipped the Coke thoughtfully.

"Once I saw how it could be done, and Morey confirmed it, the

hardest problem was to find out who was doing it. The idea wouldn't have been possible years ago with all the paperwork involved then. Now it's simple. All a crooked banker has to do is a little computer manipulation. When funds are transferred, the bank computers link. The sender bank computer subtracts funds from itself and the accounts involved. The receiver bank computer adds funds to both. Old Percy had a percentage of the funds retained when his bank sent them to another. But only on certain accounts. This created a bit of extra money."

"George, that doesn't make sense."

"But it does. Look at it this way. Say that Percival has a hundred dollars in his own account. He transfers fifty dollars from this account to another account in his own name in another bank. The computer in Percy's bank obediently sends the fifty dollars to the second bank. The next step was Percival's Stroke of Genius. He programmed his own bank's computer to 'forget' to deduct that fifty dollars from his original account. Since the computer conveniently 'forgets' that Percy even sent the funds, Percy is left with his original hundred dollars still intact, plus fifty more in his second account in the other bank."

George took a quick swallow of the Coke.

"Now you have to realize that

this actually happened only to a few out of all the bank's fund transfers. Percy was smart enough to realize that the gimmicked transactions could just be a small percentage of the total number of transactions that the computer handled."

"But how did they balance the books?" Mary was a great believer in balance.

"That was the beauty of it. Since Percy programmed the computer to 'forget' the gimmicked deals, the magnetic transfer slips covering those deals were never printed out. That meant that the printed records of the bank agreed with the computer records. According to both the printed and the computer records, the money never left Percival's bank."

"Now, wait a second, George. You mean that Percival just sneaked down into the computer room one night and told the machine to do all this?" Mary shared a certain awe of computers with the rest of the world.

"No, he had an accomplice, the head programmer. There were actually three separate accounts that had this special programming. The gimmicked transfers were from Percy's personal account, the programmer's personal account, and one of the bank's investment accounts."

George took a deep breath, tilted the plastic cup back to catch an elusive ice cube, and crunched the

ice into satisfying fragments.

"You see, Percy had created a separate portfolio for investments which only he managed. No one would notice the discrepancies but a portfolio manager, and Percy was the manager. By doing this he hoped to increase the bank's assets gradually, but dramatically, and thus boost his banking career."

Mary was beginning to look dazed.

"Now Percival was pretty smart. He had accounts in several other banks, and by shuffling funds between his own accounts he managed to create quite an increase in his personal fortune. Because banking is so anonymous today, he got away with it.

"If he'd really been an idealist, I never could have caught him. The business with the investment account was set up beautifully. A certain percentage of fund transfers failed to be deducted. Period. Yet, according to the books of other banks, everyone got the money. Basically, Percival had the philosopher's stone."

George swigged his Coke contentedly.

"But how did you find him out, considering the number of banks and bankers?"

"I just hooked into the IRS Data Link with a requirement to see the dossiers on any bankers whose assets had recently shown a marked increase. Percival knew that he had to pay taxes, since his additional

savings would automatically be reported by the member bank computers. He knew that the IRS computer is pretty dumb. All it cares about is whether your taxes agree with your income. Unless you get an executive order, you can't pull a search like I did. He would have been safe, except . . ."

"Except what, George?"

"That the bureaucracy is so settled that the tiniest bit of inflation is more important than the biggest bank swindle in history."

George thought of James Boulin Chartwell, III, and his One Hundred Percent Pure mineral water and The Great American Economy.

"What will happen to Percy?"

"I doubt if anything serious will. They may even have trouble getting the money he made by the system back. Legally, it doesn't qualify as counterfeiting, as no actual currency was involved. The bank laws refer to falsifying written books, and he never really laid a hand on anything, except a computer program, and currently, there's no law against that. It wasn't tax evasion. He didn't steal or embezzle anyone's funds, because the funds he got didn't exist before he created them. It wasn't fraud since no one else can prove that they were defrauded of anything. All he really did was create excess credit. Most people want credit for doing as little as possible. He went a step further. He got credit for nothing." ■

the reference library

P. Schuyler Miller

"BEST" TIMES FIVE

Good ideas have a way of going seriously wrong. It seemed logical, last summer, to use this column for a report on the two "best science-fiction" anthologies that had appeared at that time. After the column was written, another appeared—then a fourth, and finally a fifth. These five books contain fifty-six stories, three poems and two satires by fifty different authors. It would take most of our available space to list them, so what you will get is a weaseling sort of selection process.

The books, listed alphabetically by editor, are:

Terry Carr's "The Best Science Fiction of the Year" (Ballantine paperback No. 02671; 340 pp.; 11 stories; \$1.25).

Lester del Rey's "Best Science Fiction Stories of the Year" (E. P. Dutton & Co.; 250 pp.; 15 stories; \$6.95).

Harry Harrison and Brian W. Aldiss' "Best SF: 1971" (G. P. Putnam's Sons; 253 pp.; 16 stories, 3 poems and 1 diagram; \$5.95). A Berkley paperback is due any day as I write this.

Frederik Pohl's "Best Science Fiction for 1972" (Ace Books No. 91359; 315 pp.; 10 stories; \$1.25).

Donald A. Wollheim's "The 1972 Annual World's Best SF" (DAW Books No. 5; 302 pp.; 14 stories; 95¢). The Science Fiction Book Club is putting out a hardback edition as a throwaway for new members.

Any one of these five books would live up to its name quite reasonably. All together, they are bewildering—not the least so because the six editors don't agree.

Only one story was selected by three of the six editors: Theodore Sturgeon's "Occam's Scalpel." It's a good enough story, but need not even be science fiction except for the old-fashioned "snapper" ending (are there really aliens among us?). I'm afraid this is a "Thank God Sturgeon's back!" choice.

Seven other stories are in two of the five books, and three of these seven authors are tapped for other stories, as are four others represented by two or more different stories. The seven (again alphabetically) begin with Poul Anderson's "A Little Knowledge," one of four from *Analog* (I prefer his "Queen of Air and Darkness," which won both a Hugo and a Nebula and is in Terry Carr's book). B. Alan Burhoe's "Ornithanthropus" is a fine story of winged men living symbiotically with balloon-like creatures. No quarrel—nor have I one with Arthur C. Clarke's *Playboy* dazzler, "A Meeting with Medusa," which placed second in the Hugo voting. His "Transit of Earth" is in a third book.

Philip José Farmer has well earned his place with "The Sliced-Crosswise-Only-on-Tuesday

World," which extends the parallel worlds concept to parallel lives as a solution to the population problem. I don't see why it is in only two books. Barry Malzberg's very short "Gehenna" is a strange little vignette of alternate lives (in alternative worlds? or just as they seem to the livers?). Larry Niven's "The Fourth Profession"—which profession did the alien's knowledge pills teach our hero?—placed twice, but I much prefer his "Inconstant Moon," a lovely "hard SF" story about the end of the world, which Pohl also liked. Niven has a fourth story, "Rammer," in del Rey's book.

Finally, Norman Spinrad's "No Direction Home" is a chilling story of two chemists designing drugs that will custom-tailor life styles. Relevant SF? Certainly. New wave? I suppose so. More of the editors should have picked it.

I've listed two of my own 'druethers in passing: stories that are in one of the five books, and should be in more. Here are some more:

Harlan Ellison's "One Life, Furnished in Early Poverty," about a man who goes back into his own childhood. It's oddly gentle for Harlan, and it shows you what's wrong with Ray Bradbury's brand of nostalgia. Harlan has two-and-a-half other stories spread among the other books ("Life" is in Wollheim's): "At the Mouse Circus" (pure surrealism), "Silent in Gehenna," and "Human Operators" with A. E. van Vogt.

Ursula Le Guin's "Vaster Than Empires and More Slow," about a world-girdling vegetable being. It

was runner-up in the Hugo voting. You'll find it in Carr's book.

R. A. Lafferty's "All Pieces of a River Shore" (Wollheim), about the search for pieces of a fantastic painting that shows the entire Mississippi—as it was in the Ice Age.

Thomas M. Disch's "Angouleme" (Harrison/Aldiss), which is a terrifying glimpse of a group of wholesome youngsters, in New York of a few decades hence, whose game is murder. Read it with Norman Spinrad's story in the same collection.

Doris Piserchia's "Sheltering Dream," picked up by Pohl, solid SF about a slave who isn't quite what he thinks he is.

James Tiptree Jr.'s "Mother in the Sky with Diamonds" (another Pohl selection), which outrageously misuses all the worst SF clichés—beautifully. Tiptree and Lafferty are unpredictable and indescribable, in totally different ways. Both have other stories in the five.

Let me not fail to point out that the Science Fiction Writers of America named Robert Silverberg's "Good News from the Vatican" one of *their* best of 1971 by awarding it a Nebula. It describes, very simply, very effectively, the election of a robot Pope.

I've already run on too long, and there are dozens of other things to say about the five anthologies. Analog is represented by four stories: Poul Anderson's "A Little Knowledge" and W. Macfarlane's "To Make a New Neanderthal" (both in del Rey's book), Alan Dean Foster's "With Friends Like These . . ." (Wollheim), and Fred

Pohl's own "The Gold at the Starbow's End."

We've relied on these annual collections to show us a sample of the best SF from other parts of the world. The English are too well represented to separate out, but Pohl gives us an interesting Japanese story, part of a "future history" cycle, in Ryu Mitsuse's "The Sunset, 2217 A.D.," and Wollheim has "Timestorm," an award-winner by the young Belgian writer, Eddy C. Bertin, and "The Sharks of Pentreath" by Michael G. Coney of Antigua. B. Alan Burhoe is Canadian.

There are all kinds of other goodies among the five books, and I sincerely wish I had sense to take them one at a time. There are big names: Lloyd Biggle, Alexei Panshin, Harry Harrison, James Blish, Brian Aldiss, Joanna Russ, John Brunner . . . There are nuggets like Arnold Auerbach's "If 'Hair' Were Revived in 2016" and Gahan Wilson's "The Science Fiction Horror Movie Pocket Computer" (both in Harrison/Aldiss, who also have the three short poems and some other off-trail bits).

Which do I recommend? All of them—but I find that I starred more outstanding stories in Terry Carr's collection, with Harrison/Aldiss next, then Wollheim, then Lester del Rey, and Pohl last. Since Donald Wollheim left Ace Books to form his own paperback company, his and Terry Carr's anthologies are a spinoff for the book they used to do together, and Pohl was their replacement. Harrison and Aldiss have been picking winners for

five years, and this is del Rey's first "best" collection.

It bothers me that there are a dozen or so other excellent stories—stories I marked for comment—that I haven't even mentioned. Make that "dozens": these editors choose well.

THE LISTENERS

by James E. Gunn • Charles Scribner's Sons, New York • 1972 • 275 pp. • \$6.95

When all the experimental conceptions of "New Wave" SF have dribbled away, there will still be books like this that are good science fiction and good and coherent novels. By the time you read this it may well have won the Science Fiction Writers of America's Nebula for best novel of the year, and it should at least be on the fans' list for a Hugo vote.

If James Gunn were other than the person he is, he and his publishers might be vehemently denying that his book is science fiction. Its theme and subject is what a possibly hopeless quest does to a group of dedicated people, and to their leader in particular. That the quest happens to be a search for some communication from other intelligent beings, out among the stars, and that the message does come at last, after half a century of listening, is incidental. As I write, another quest may have ended—at least for our generation—with Apollo 17. Men in space bore the American public and no longer promise votes in Washington. In A.D. 2028 another Administration has decided that the taxpayers are

bored with their "listeners."

The problem is only incidentally technical, though that comes too. We have the personal problems of the project's director—a wife whom he has neglected to the point of suicide; a son who wants no part of his father's cause. We have the clash of science and religion in the Solitarians who know by divine revelation that Man, being made in God's image, is alone in the universe. We have a black President, whose son has been trapped by the vision of the Project. We have a skeptical newsman who comes to destroy and remains to believe.

And we have the message from Capella, rising at last above the murmur of the Galaxy and making itself understood. This is old stuff in science fiction, but it is new and real in "The Listeners." There is to be an SF Book Club edition not long after the original hardback, and there may be a paperback before this gets into print. You have no excuse for missing it.

THE GOD MAKERS

by Frank Herbert • G.P. Putnam's Sons, New York • 1972 • 190 pp. • \$5.95

Frank Herbert seems to be reworking some old themes in this genetic superman book. It's effective, but not up to his own high standard.

We have the genetic conspiracy of a galactic women's elite (from "Dune"), in its way a possibly more viable version of Isaac Asimov's "Second Foundation." We have the galactic religion that is really something much more pow-

erful than it seems, an ingredient boiled, baked and fried by many authors. We have galactic bureaucracies, sworn to keep the peace by different methods and in head-on conflict about which is the right way: I-A (Investigation-Adjustment, whose techniques can be pretty heavy-handed) considers R&R (Rediscovery and Reeducation, a gentler lot) "fat kiestered politicians." We have Psi, used by all the agencies, taught by the priests of Amel, the ecumenical world where all sects share personnel and powers—and used by them to make all-powerful "gods."

And we have Lewis Orne, who has fled his native world to get out from under the thumb of the women of his powerful family, who is too talented for R&R, who is drafted into I-A, who is not only killed but destroyed, yet remakes himself, and who is consequently sent to Amel and put through the god-making ordeal.

The early parts of the book, in which we are shown the R&R and I-A machinery at work, finding and stamping out all traces of war-oriented societies, are the best. In the middle reaches, Orne is sent to infiltrate and expose a suspected conspiracy by descendents of the ancient, aggressive Nathian empire. In the final part, he explores and is absorbed by the universal religion. These later parts somehow lack suspense and urgency. Although the book's basic concepts are developed gradually, and quite fully, the story trails off as "Dune" never did. Too bad . . . but it may read better second time around.

brass tacks

Dear Mr. Bova:

I am writing this letter out of puzzlement, and I thought that some of your readers might be able to help me. Recently, in the Brass Tacks section of *Analog*, I have noticed a number of letters decrying the treatment of sex in such stories as "Foundlings Father" (December 1971), "The Gold at the Starbow's End" (March 1972 issue), and "Hero" (June 1972). It seems that any mention of sex is considered to be degrading, or to constitute psychic pollution. I would be interested to know the reasoning behind these statements.

People defend science fiction for many reasons. SF warns us of future dangers the race may run into, and it points out useful goals, goals the human race can work toward with pride. Finally, SF extrapolates current trends into the future, it shows us where we are headed. Science fiction will take an institution (war, for instance) and tell the reader what to expect in about two hundred years, or two thousand.

War has been discussed quite freely in science fiction; the literature has portrayed many possible variations in the institution. War, at present, is practiced quite widely. It

is prepared for religiously by most of the major countries in the world. It is plain that SF provides a valuable service by detailing future developments in the art of dissension.

Sex, to be blunt, is certainly as widespread as war. It seems that any discussion of the subject would be greatly appreciated by the general public; such discussion would be at least as useful as a debate on the relative merits of war . . .

In view of the enjoyment people derive from sex, and in view of the service science fiction provides by detailing future developments, it would seem that a treatment of the subject would be quite laudable in any magazine. Why, then, is any mention of sex considered degrading? If any of your outraged readers could explain this idea, I would be most thankful.

STEPHEN B. HEPPE

9309 St. Marks Place
Fairfax, Virginia 22030

It boils down to a matter of style and taste. Stories in which sex is an integral part of the plot or character development—and is handled in good taste—will not be ruled out of Analog. It's interesting that in stories of war, in the view of most psychiatrists, the violence is a substitute for sex.

Dear Mr. Bova:

First, let me commend you for your excellent editorial work with *Analog*; you are editing "your" magazine in your own fashion, but upholding the tradition established by John W. Campbell.

Secondly, I am somewhat dis-

turbed by the letters from Mr. Roy E. Hankins and J. B. Lawrence in the December 1972 issue of *Analog*: both were concerned with Joe Haldeman's "Hero" (June 1972).

My opinion of "Hero" differs greatly from theirs, to wit: I found it an excellent tale, both for its scientific extrapolation and its elements concerned with sex.

Mr. Hankins notes that "Hero" is, in his opinion, "mediocre as to science (I should have said totally unacceptable) . . ." For one who subscribed to *Analog*, and who evidently greatly enjoyed the editorship of John Campbell, Mr. Hankins has slipped up. I refer him to John Campbell's editorial, "Final Blackout," in the August 1971 issue of *Analog*. This editorial deals with Black Hole theory and I can only assume that Joe Haldeman read this editorial before writing "Hero" . . .

Now to the sex "problems" of "Hero." For Mr. Hankins to liken author Haldeman to a peddler of heroin is, to be charitable, totally ridiculous. Furthermore, to assume that most readers of *Analog* are "impressionable" is equally absurd. Stories as well written, carefully plotted and exciting as "Hero" are hardly the cause of "psychic pollution" or "degradation of spirit." The sex of "Hero" was plausible and, considering the Navy's permitting women to perform the duties of men on board seagoing vessels for extended periods of time, a logical extension of present military trends; at the very least, it portrayed a possible role of women as

fighting personnel in an army of a future time.

Man's sexual drives must be realized and dealt with and accounted for, especially if men (and women) are situated thousands of light-years from Earth. A healthy heterosexual relationship is necessary for the psychological well-being of most individuals; I assume our future soldiers, be they men or women, will still observe this basic aspect of human nature. In "Hero" the women are equal to the men and are an integral part of a fighting unit. A most logical idea, it seems to me.

My statement above concerning women in the Navy should not be construed to mean that their roles are even remotely similar in the sexual aspect to their counterparts in "Hero." But the trend may have begun.

Mr. Lawrence becomes cranky in *his* denunciation because he feels that "Hero" is a sort of second-rate "Starship Troopers"; this because of Haldeman's "large doses of genital recreation." Now, I like a good Heinlein yarn as well as the next man, but the drawback to "Starship Troopers" was the large dose of political philosophy which slowed the story incredibly. Heinlein can write such things "into" a story, but even he seems to have become somewhat cranky lately. I would remind Mr. Lawrence that the evil demon sex which he resents so strongly in "Hero" has been one of Heinlein's most dominant themes of late—"Farnham's Freehold," "Stranger in a Strange Land," and "I Will Fear No Evil," to name a

few. Why, I even recall a few lines from "The Puppet Masters" . . .

"Hero" was certainly a story of "ideas about science and society"; and the "sexual flavor" of "Hero" did *not* "drown out the rest."

It would appear that some readers of Analog are so tradition-bound that the Victorian era for them has yet to run its course. Gentlemen, and readers, sex is part of our everyday life; it is one of our basic drives. Science fiction cannot ignore sex, and, when it is integrated logically into a story, intelligently explicated and rendered with taste, one can find little that is repulsive.

Science fiction is the last bastion of truly creative writing, and authors are remiss if they neglect an area of potential intellectual excitement because of age-worn and weary taboos. As a matter of fact, I seem to recall one Philip José Farmer writing some rather marvelous stories concerned entirely with sex . . .

Ah well, *I* enjoyed "Hero" and (thus far anyway) I have not encountered any "psychic pollution" or "degradation of spirit." I have not yet raped anyone nor have I been driven to heroin by this story.

If you continue to publish such superlative tales as "Hero," I will subscribe forever. Keep up the good work.

CRAIG W. ANDERSON

910 South 7th Street

San Jose, California 95112

We can't please everybody with every story. But "Hero" did win first place in the AnLab, it's already been snapped up for an anthology, and it

is in the running for the Science Fiction Writers of America Nebula Award.

Dear Mr. Bova:

I've noticed lately complaints in your letters about supposedly declining standards in Analog since the death of Mr. Campbell. These complaints focus on the treatment of sex and violence in your magazine.

What's new? One of the reasons SF is so much fun is that it's free of the restrictions to be found in most other forms of literature. In most cases this freedom is used in good taste. In the past Analog has printed stories in which the characters engaged in sex practices uncondoned by our society, and I have read no complaints in your magazine about them. Or is it a new policy to print the complaints that come in?

Jason din'Alt shacked up with his Pyrran lady friend, Meta, in "The Horse Barbarians," and I read no complaints about that. The main character in "The Ancient Gods" had a "port wife" and implied that there were others, and also implied that she had other husbands. When they offer their "total hospitality" to their guest, it sounds like a *menage à trois* to me, and I read no complaints about that story. Trigger Argee has an off-and-on-again marriage, whatever that is, and I have heard no complaints about that either. Other readers can no doubt find other examples; I'll let these prove my point.

The upraised finger in "Found-

lings Father" brought in some complaints. Perhaps the complainer objected to the sexual connotation? Would the reader have been mollified if the characters had expressed disdain by thumbing their noses? If so, then the complainer does not know the origin of that gesture. Analog has printed illustrations in the past depicting people thumbing their noses at each other, and again, I have read no complaints.

Mack Reynolds has inserted "swear words" into his stories that are not used in our society. I have read no complaints about them. Maybe the words were not recognized, but what of that. Is a made-up word less offensive than a normal one? (Would Mr. Reynolds tell us what "nardy" means?)

To sum up, I've noticed no change in Analog, but some of the readers seem more sensitive than before.

RAUL REYES

1915½ Addison Street, #102
Berkeley, California 94704
There were no complaints, either, about the picture of the Pioneer 10 plaque in our June 1972 issue!

Dear Mr. Bova:

It would seem that the Puritans are at it again. When I first read the letters attacking the "obscene" picture in "Foundlings Father" I was somewhat puzzled, as I had read the story and did not remember noticing any picture as being obscene, or even out of the ordinary. I checked the appropriate issue, and found, to my considerable surprise, that I *had* noticed the picture in question, but beyond appre-

ciating the sentiment so clearly expressed, I had not considered the picture unusual for Analog. It seemed, then and now, to be perfectly appropriate for the story.

Now attacks are being launched at "Hero" for its "pornographic" content, along with the ridiculous claim that it is a rewrite of "Starship Troopers." The *only* element of the story which brings Heinlein's masterpiece to mind is the use of powered armor, which is an almighty small base to rest a rewrite on. Besides, with the work being done today on powered exoskeletons and the like (which was, I believe, discussed in the October Analog), the concept of powered armor is getting to be pretty basic. Finally, in his use of this concept, Mr. Haldeman improved it with some very original extensions, like his semi-log control.

Apparently some people feel that if sex comes into a story more explicitly than the use of male and female characters, the story is automatically pornographic. They somehow manage to ignore any other features of the story, no matter how original, or claim that they are mediocre. Or they yell rewrite. This selective blindness puts me in mind of "1984" doublethink. I hope that other readers who feel as I do are giving you their support.

One last opinion: if Heinlein had written "Starship Troopers" in 1972, I'd give large odds the M.I. would be coed.

KIMBALL M. RUDEEN
289B Carlton Avenue
Piscataway, New Jersey 08854
At least!

achieve? To drive the invaders out of South Vietnam? To keep the Saigon government in power? To establish a coalition government in the South? A reunification of the North and South?

Whoever is in charge ought to at least make a clear statement of what we're after. Because the dreadful suspicion among most Americans is that the price we've paid has been much higher than the worth of the goal.

There's been plenty written about the cost of the Vietnam War: the division of this nation, more bitter than any split since the Civil War; the inflationary spiral fed by the billions being spent in Southeast Asia; the crippling of domestic programs to feed the war machinery; the curtailment of health services and scientific research.

But let's look at a very pragmatic and frightening cost of the Vietnam War—the destruction of the American armed services as a credible deterrent to aggression.

When we first got into Vietnam in a big way, military observers around the world were impressed with the professionalism of our Army. It's no secret that many generals looked on Vietnam as an exercise field, where they could test the new tactics of "vertical envelopment" using helicopters to outmaneuver the foe.

Today that Army is dispirited

and disgusted with itself. Fighting units have refused to obey orders. Field commanders have resorted to asking their men to vote on whether or not they'd like to go out on patrol. Drug addiction has become an Army-wide problem.

The United States Navy, inheritors of a tradition that goes back to John Paul Jones and the still-proud "Old Ironsides," has never experienced such morale problems as it has now. Much of the problem is racial, but there's no doubt that the frustrations and confusions of the Vietnam War have triggered them.

And the United States Air Force, despite the unending bravery of its fliers, has shown that its most sophisticated weapons systems cannot assault areas defended by third-rate anti-aircraft guns and missiles without suffering very heavy losses. The B-52's that are supposed to be part of our nuclear deterrent against Russia have taken unacceptable losses during the bombings of Hanoi. Is it credible that they could deliver successful nuclear strikes deep inside Russia?

Who is accountable for all this? The President? His advisers? The Pentagon? Congress?

President Nixon was re-elected last year by a huge majority. Many of the people voting for him believed that "peace is at hand," as Henry Kissinger announced in October. Those people were bitterly disappointed when the peace nego-

tiations broke down in December and heavy bombing of North Vietnam resumed during Christmas week. Many Americans felt betrayed. As this is being written, we have agreed to a cease-fire. But will there really be peace, or is our involvement in Southeast Asia endless, like the war in Orwell's "1984"?

Although the newly-installed Congress threatened to cut off funding for the war, and thus tie the President's hands, most of the real decisions on ending the fighting were still being handled in the same manner as the decisions that got us into the war: by the President and a small group of advisers. The Congress—and the people—were on the outside looking in. The President and his special advisers were very much in charge, making the

decisions, conducting the negotiations, and informing the people when and how they please.

Certainly no one expects the President and his advisers to poll the Congress or ask the people for a vote on every day-to-day decision that must be made. But just as certainly, most Americans feel as if their own desires are being ignored. In this Republic, we like to believe that *we* are in charge, however indirectly. That belief is in jeopardy.

Perhaps the present cease-fire will endure, and a just and lasting peace will be made. Perhaps.

But how do we guarantee that the same thing won't happen again in Pakistan, or the Philippines, or the Middle East? How do we turn an office that's become a God Kingship back into an office of a Citizen President? THE EDITOR

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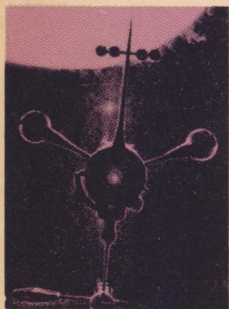
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