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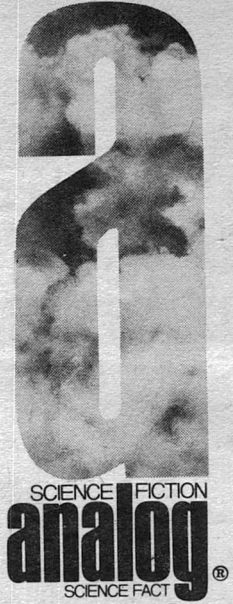
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The Next Century of Science Fiction

(Ed. Note: Jack Williamson's first appearance in this magazine was in November 1933, with a story titled "Dead Star Station." He has been a steady and brilliant luminary in the science fiction firmament, best known for his Legion of Time stories, his development of the concept of contra-terrene (CT) matter—which actually predated discovery of antimatter—and his masterpiece, "With Folded Hands." In April 1977, at the annual Nebula Awards banquet of the Science Fiction Writers of America, Williamson was honored with the special Grand Master Nebula in recognition of his long and illustrious career in science fiction. The following is the speech he gave upon receiving the award.)

Jack Williamson

Now in 1977, it's just over 50 years since I discovered science fiction. Extrapolating from those five decades, I want to speculate on the next hundred years. The result, of course, will only be science fiction about science fiction, not to be taken very seriously. Yet, at least to me, the project looks interesting and timely.

Once a weather forecaster for the Army Air Forces, I know how often forecasts go wrong—but also how to hedge. I'm sure some of these predictions will miss the mark, but time will take a hundred years to show all of them up, a margin that leaves me safe enough today.

Science fiction has changed a lot since I saw a first stray copy of *Amazing Stories* in the fall of 1926. So have I. I was 18 then, just out of a country high school and still at home with my parents on a not-very-productive sandhill farm in eastern New Mexico, 30 miles from town. Dreaming vaguely of better futures, I had no visible way to reach them. I kept saying I wanted to be a scientist, but nobody offered me a scientific education. Having heard that Mark Twain was paid a dollar a word, I naturally thought of becoming a writer. My imagination had already been captured by a few such books as his *Connecticut Yankee*, and I had often made up endless stories of my own that I told to my brother and sisters while we were at work in the field, but nobody else had been impressed with my literary gifts. Desperately, I needed some lucky strike.

When luck struck, it was science fiction. Hugo Gernsback had begun publication of *Amazing* that spring, but I didn't learn about it until a friend showed me a copy of the November issue—the cover showing the ark that saved the human race in *The Second Deluge*, by Garrett P. Serviss. That looked exciting enough, but I didn't know about newsstands and in those hard times I had no money to spare.

Later, I saw an ad in a little farm paper, offering free sample copies. I wrote for one, and finally received the issue for March, 1927. It featured "The Green Splotches," by T. S. Stribling, with that splendid Paul cover showing the alien space ship taking off for Jupiter. Inside, I found A. Merritt's "The People of the Pit"—which haunts me yet—and the second part of Burroughs's *The Land that Time Forgot*—as magical as the title.

I was totally wonder-struck. That copy of *Amazing* hit me with an impact that's hard to imagine today, when we're saturated with science fiction, the ideas that dazzled me then repeated over and over into boredom every Saturday morning now on the kiddie TV shows. To me, then, it was all dazingly new and utterly real. That spaceship lifted me out of the grim little world where I had been trapped. I had caught the science fiction bug, and I never got over it.

With my sister's help, I found money for a subscription—it began with the May issue and the second install-

ment of Merritt's marvelous *Moon Pool*, which bewitched me all over again. I borrowed an old typewriter and started writing science fiction of my own.

A handful of those early manuscripts survive in the Special Collection in the library at Eastern New Mexico University, one written on a strip of wallpaper, most not finished. Three or four I completed and mailed to Gernsback. They came back, not surprisingly, with rejection slips—one has a word spelled wrong in the title.

But then there was another, written, in the summer of 1928, that didn't come back. My hopes rose high for a while, but finally died. That fall, passing a newsstand, I recognized my hero in a blazing Paul cover on the December *Amazing*. Suddenly, I was a writer!

For me, at least, that first lone pulp magazine was the beginning of science fiction. Really, of course, it wasn't so totally new as it seemed to me then. H. G. Wells had been creating it 30 years before, but I had never heard of Wells. Gernsback had been experimenting with it in his other publications. *Argosy* and other pulps had been printing Merritt and Burroughs. But *Amazing* was the first magazine that was all science fiction.

I've lived through the changes since—greater changes, maybe, than any likely to happen in the next hundred years. Here, in the middle of Suncon, it is hard to recall what a small and lonely endeavor science fiction seemed in 1927. The term itself

hadn't been invented—Gernsback called it "scientifiction," and I had to keep explaining what that meant.

My ambition to write it seemed unwise to my parents, and I suppose it should have looked insane to me. *Amazing* had begun as a reprint publication, reselling the classics of Wells and Merritt and Verne and Poe and Burroughs, and I soon found Gernsback distressingly reluctant to pay new writers anything at all.

Over-hopefully, when I found "The Metal Man" in print, I guessed that the rate of pay would be around ten cents a word—the magazine's sister quarterly was offering that much for editorials—and I estimated that my check would be perhaps five hundred dollars. When it finally arrived, in response to my timid inquiries, it was twenty-five.

There was then no real book market for science fiction, though there were occasional volumes from such old hands as Merritt and Conan Doyle that I seldom saw and couldn't afford to buy. There were no newsstand paperbacks, no science fiction comics, no science fiction on radio or TV. Though there had been a few great science fiction films, such as *Metropolis*, I had never heard of them. Altogether, science fiction wasn't a very promising field for a green farm boy. Slowly, however, things got better.

Science fiction soon became a pulp category. *Amazing*, with the classic reprints in its early issues, had begun as something more than pulp, and the amateur fiction that replaced them

made it often something less, but *Astounding*, launched in 1930, was part of the Clayton pulp chain, written and edited by fairly-paid professionals.

I have always respected the pulps as a fine training ground for student writers, but they were unsophisticated. The letter columns in the old magazines show the typical reader to be a young male, bright enough but without much money or education. The preferred style was simple; the plots stressed savage action; the themes reflected optimistic expectation of the wonderful worlds to come.

Rather rapidly, all that changed. Readers grew up, earning and learning more. World War II was a big turning point. It pulled our whole generation out of wherever we were and exposed us to all sorts of experience all over the world—all we could take and sometimes more.

Our old dreamlands were shattered. The spaceships and time machines of early science fiction had carried us off to glorious adventure, but the first real spacecraft were the V-2s, raining death on London. Though we had been writing about atomic war since Wells, I think we had more often seen the atom as a glowing promise of power for paradise. The war ended with the mushroom clouds of the first A-bombs throwing a black shadow over science fiction. It was never the same again.

John Campbell, at *Astounding*, had been the major science fiction editor from the late 1930s through the war

years, gathering great new writers and redirecting a few veterans to create the famous “golden age.” He was a lover of technology, generally an optimist about science and the future.

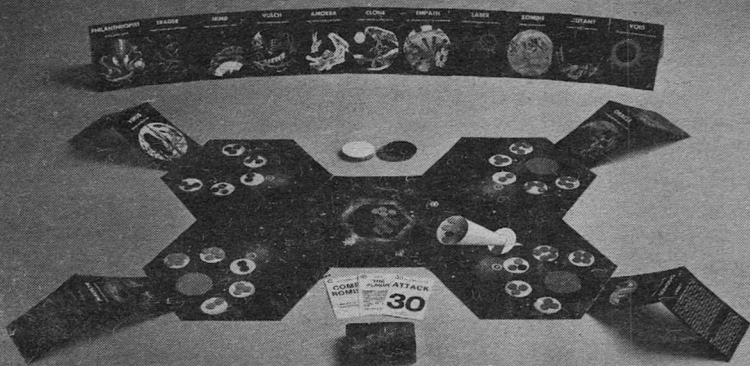
By 1950 he had two outstanding rivals: Tony Boucher, with *Fantasy and Science Fiction*, and Horace Gold, with *Galaxy*. Tony wanted more literary grace and subtlety than John cared about. Horace was less the optimist, and he shifted emphasis from future technologies to their human and social consequences, usually seen as alarming.

The history of science fiction from 1950 to the Suncon is so familiar that I won't say much about it. It has kept on growing, kept capturing new media. Charlie Brown's tally of the published books, in *Locus*, is coming close to a thousand a year. We've had *Star Trek* and now *Star Wars*. All sorts of people have discovered money in science fiction.

Before we look ahead toward the next century, we need to set up a method of projection. That depends on what science fiction is. The critics can't agree on a definition, and the label is pinned on many different types of writing. There isn't much you can say about Edgar Rice Burroughs and his John Carter novels that is also true of Chip Delany and *Dahlgrin*.

To me, however, hard science fiction is really linked to science. It's about what is not yet true, here and now, but what might be possible, elsewhere or elsewhen. Fantasy, on the other hand—some of it called science

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fiction—deals with the outright impossible. Exploring the possible, we're accepting change. I like to think of serious science fiction as a response to progress in science and technology.

Defined in this way, it's not yet two centuries old. Earlier, the rate of change was too slow to get much attention. There were fantasies about other worlds and miraculous machines, but without any sense of real possibility. Serious concern with change began only with the industrial revolution and the idea of evolution. In *Billion Year Spree*, Brian Aldiss discusses Mary Shelley's *Frankenstein*, published in 1818, as the first important bit of science fiction.

Looking a little more closely, I think we can see three related stages in this process of change. First, there's the new fact or the new idea. For one famous example, Einstein's equation, $E=mc^2$.

The next stage takes us from theory to practice. The technicians turn the abstract thought into new hardware. The nuclear bomb, for example, and the nuclear power plant. This takes time. Einstein published his equation in 1905, and even today commercial fusion power is still to come.

Finally, there are the social consequences, the impacts on our lives. In the case of the atom, it's still far from clear what there will be. In the real world, we have engineers developing better bombs and diplomats meeting to stop them, engineers designing breeder reactors and activists rioting against them. In fiction, we've had a

thousand visions of the ultimate outcome, mostly horrifying.

With this analysis for a guide, I think we can make some reasonable forecasts for the future history of science fiction. On the principle that what is happening is likely to keep on happening, the method is to trace out trends in the past and project them into tomorrow, beginning with the pure abstractions, the new ideas.

Certainly, through the past 50 years, new knowledge has been reshaping science fiction. When I began writing, there were still blank spots on the maps of our own Earth where stories could be set. We could still write about the steamy jungles of Venus and the ruined cities the canal builders had left on Mars. Steadily, since I began, the growth of knowledge has pushed science fiction off the Earth and out of the solar system, always opening new frontiers to make up for those it closed—Hubble didn't discover the red shift and announce the expansion of the universe until 1929.

With most of the scientists who ever lived still at work, we seem certain to know a lot more in the year 2077 than we do today. Milton Rothman in a current article asks whether physics is finished—whether physics has at last explained the origin and the nature and the future of our whole material universe, maybe as the logical and necessary consequences of one big bang.

If life is no more than a phenomenon of energy-flow from a star into

space, as it seems to be, then all its potentials and limits depend on the nature of matter and energy and space itself. When we have come to understand all the laws of physics and their biological corollaries, we should know the limits of evolution—here on Earth and also on the farthest star. Galactic explorers should find no surprises.

But maybe physics isn't finished, or even half finished. When I first learned about atoms, they were still the tiny orbital systems that Ray Cummings wrote about in *The Girl in the Golden Atom*. Steadily, since, the models have become more complex. We have found or produced several hundred nuclear particles, bewildering bits of matter that now seem to be composed of quarks.

The quark is thought to behave like a mathematical point, with no room for anything else inside. There is no way, even in theory, to examine an individual quark, because the energy used to pull it out of place would be converted into a new companion particle.

Yet the quark is not the neatly fundamental uncuttable unit that the old Greeks imagined, not even as simple as the little solar systems Ray Cummings was exploring. There are quarks and anti-quarks of a good many kinds, differing not only in mass and electrical charge but in the exotic qualities that have been called flavor, color, strangeness, and charm. That kind of complexity seems to hint at unknown structures beyond the quark, maybe forever out of reach.

Looking from infinite smallness to infinite vastness, we see much the same situation. Through the past 50 years, models of the universe have grown always larger, always older, always more remote from any hope of total understanding, the quasars as surprising as the quarks. On both frontiers, the large and the small, we seem to find more new puzzles than ultimate solutions.

The biologists, breaking the genetic code, may have come closer to knowing the nature of life, but the social scientists are still a long way from understanding man and his society. I suspect, in fact, that most of them are badly handicapped by false assumptions about the human animal. There's more truth, I imagine, in Robert Ardrey's controversial anthropology and maybe in sociobiology.

Surveying such unsolved mysteries, I doubt that we'll know everything by 2077. Personally, I almost hope we don't. All my life, I've been trying to keep up with science, to follow our explorers down into the atom, and around us into the secrets of life and the nature of man, and out to the ends of the universe. That's the supreme intellectual adventure of our time. Somehow, I can't help doubting that any complete understanding of the universe will ever be as exciting and absorbing as the long search for it.

Even if we never learn everything, I'm afraid the drama of that search will fade. More and more, I think, the mysteries that remain will be abstract problems for the specialists and their

computers, their partial solutions abstract mathematical statements without much interest for the average citizen or the science fiction reader.

Here is one of my central concerns about the future of science fiction. The expansion of knowledge tends to erase "the sense of wonder." As Sam Moskowitz and others have observed, this loss of wonder began some time ago. To recall it as I used to feel it, look at the names of the early magazines. Besides *Amazing*, we had *Astounding* and *Wonder* and *Startling* and *Marvel*. When everything is understood, there will be no marvels left, no surprises, no source of awe. Nothing will be wonderful. And I'm afraid there will be no science fiction.

But let's move on to the second phase of change, to the new technology that results from new knowledge. No matter what we learn or fail to learn, technological progress will certainly go on through the next hundred years; the time lag between the idea and the hardware assures us of that.

Though a dolphin engineer might suppose that our weapons research and development had gone far enough, the evolution of military hardware looks almost impossible to stop. Future war had already become a staple science fiction theme before Wells wrote *The War of the Worlds* in 1897, and it will probably be with us for another hundred years.

The peacetime applications of what we already know have already inspired whole libraries of science fiction, but the possibilities are far from ex-

hausted. As the century moves along, still more new science will inspire more new writers to keep ahead of the engineers.

Eventually, I suppose, the technological revolution will have to slow down. When we know all the laws of nature and the best way to use them, a time should come when we have developed the best possible machines, with no demand for new models every year.

Perhaps that could begin in our next century, at least to the hardware of fiction, because imagination can run so far ahead of the actual engineering. If science does finish its search in the next few years, if the quark turns out to be the final key to the nature of the whole universe, the science fiction of 2077 may have anticipated all the technological progress that will ever take place.

Even if the flood of new knowledge does continue, the expansion of scientific certainty will keep on pushing some of our favorite assumptions across the border from science fiction into fantasy. Though now we still sometimes tolerate time machines and telepathic pickups and ships that pass the speed of light, they and other such devices will become pure magic, beyond the pale of possibility.

The third phase of change deserves more concern than the other two, in fiction as well as fact. The new ideas may expand our minds, and the new hardware may be wonderful or fearful, but what really matters is the human impact: what happens to us. Though

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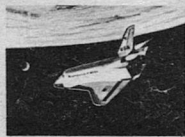
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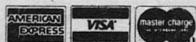


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This last phase is again delayed: the social revolution lags behind the new technology, farther perhaps than the technology lags behind the new idea. Even today, the ultimate social effects of Einstein's epochal insight still belong to speculation. We've had thirty years of nuclear nightmares, in both fiction and reality; we're in danger of a century more.

Though the atom gets most of the headlines, there are other factors probably even more critical in our crisis of change. The medical technology that triggered the population explosion. Electronic communication, as a vehicle for information and misinformation, for education and propaganda. The computer, evolving toward artificial intelligence and a capacity for total social control.

Our response to this technological avalanche has become a sort of social quantum jump. Our existing social setups were evolved to fit the technologies of a hundred or a thousand or ten thousand years ago. If we are to survive in an age of computers and nuclear science and genetic engineering, our whole social system will have to change.

That's no new idea, certainly not my own. It was painfully clear to H. G. Wells, before I was born. The vital leap, as he saw it, is toward a world state. The effort to warn and train and urge the world toward this new unity

took most of his life. He died in despair, convinced that he had failed.

But we're still here. I think we can still complete the jump. The necessity for some kind of strong and stable world order seems clear enough. Our technological culture depends on specialization and division of labor, an organization even more intricate than that of the ants or the bees. The smooth and continued operation of our perfected world machine is going to require a disciplined cooperation that we don't yet display. In the long run, I don't think society will tolerate actions that threaten to stop or wreck the social machine. Nations and unions will have to be restrained, like individual terrorists. So will human breeding. Maybe even freedom of the press—eroding public trust in every leader and every institution, the free press sometimes seems suicidal.

The big question, of course, is who will run the united world. What I fear most, next to world destruction, is a worldwide Stalin-type dictatorship set up by nuclear conquest or nuclear blackmail. But any prudent future world controllers, however humane, would probably feel compelled to limit many of the privacies and freedoms we have learned to value so highly, and I doubt that they would feel very friendly to science fiction.

Any stable world system would have to be pretty careful with the advocates of change, and it's hard to foresee the total freedom for satire and social criticism that I have always enjoyed in American science fiction.

Even if there is no threat of labor camps or lunatic asylums or chemical mind control, the media would no doubt be used to shape good citizens, not to encourage dissidents. Those citizens themselves, led to respect the status quo and mistrust change, would probably feel no need for science fiction.

Probably, but I own no crystal ball.

In any case, no matter who rules the future, science fiction can't go on forever. When their time has past, literary forms fade away. We no longer write epic poems or sonnet cycles or even radio plays. When we have learned all about the world and ourselves, when we have finished the technological application of that knowledge, when our social responses to it are finally stabilized—then the reason for hard science fiction will be lost.

It's hard to guess when that might be. There are limits, of course, to what we can learn. No matter how fully we come to understand the quarks and the quasars and the possible shapes of evolving life, most of our own galaxy and all the others are beyond our reach. We will be subject forever to the hazards and the limits of our own small corner of the cosmos, and science fiction has already dramatized ten thousand ways to end the human race. There's no certainty anywhere, at least not for us.

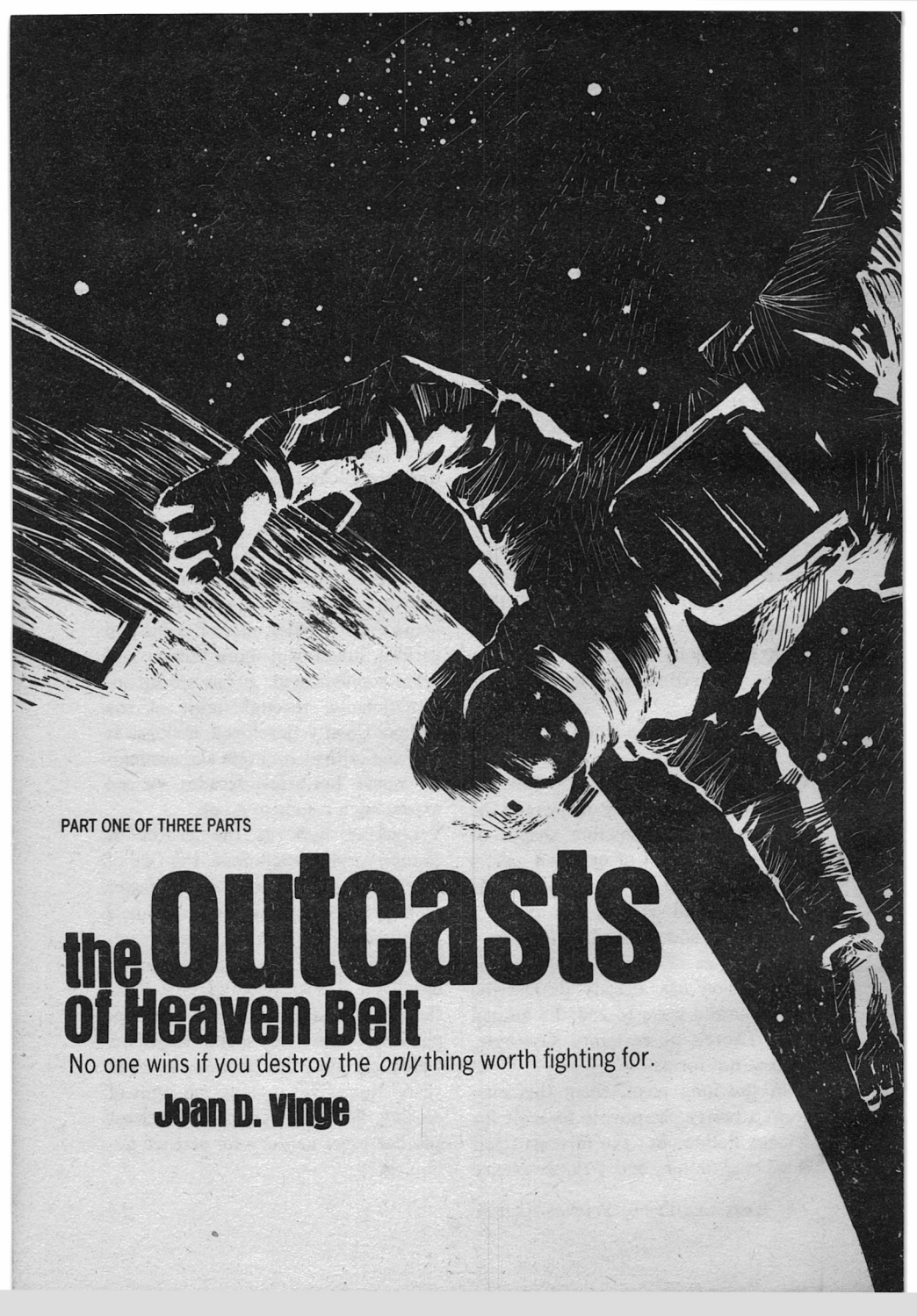
In the long term, then, this may seem a pretty pessimistic forecast for science fiction. But the forecast itself is science fiction, and I think science

fiction nearly always tends to be more pessimistic than the facts can justify. As the writers compete for readers, the cry of "Fire!" gets more attention than "All's well."

Anyhow, this can't be a very firm prediction. There are too many wild cards in the deck. We can't foresee what new geniuses will rise to revive science fiction, or what new media may be invented to replace the movies and TV and even the printed word, or what new scientific insights will open unexpected avenues for fictional extrapolation.

For the near term, at least, we can forecast a fine future for science fiction. Through the fifty years of my own involvement, it has steadily become more popular, more flexible and various, much of it more literary and more sophisticated. It has spread internationally, through most of the technologically developed nations. It has won critical attention and academic respect. For a few decades, we can expect such trends to go on.

Looking back at the phases of change we have examined, the tide of new knowledge is still rising faster than ever, with new facts and new theories in every field of science coming so fast that I despair of keeping up. Even if that flood of new ideas should end today, the engineering applications and the social responses would certainly fill another hundred years. But as yet it shows no signs of ceasing. We can safely predict at least another great century for science fiction. ■

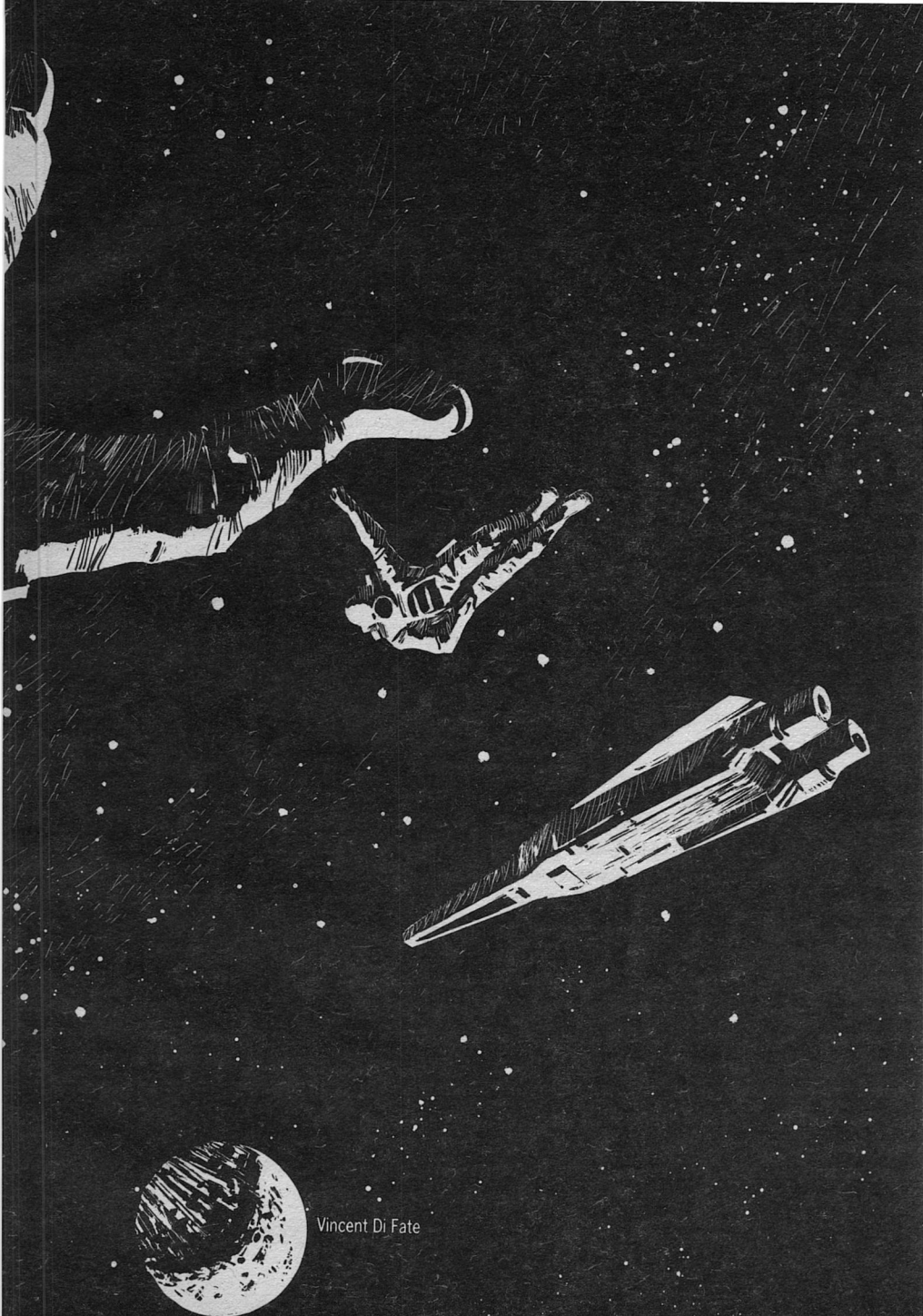


PART ONE OF THREE PARTS

the Outcasts of Heaven Belt

No one wins if you destroy the *only* thing worth fighting for.

Joan D. Vinge



Vincent Di Fate

There are more stars in the galaxy than there are droplets of water in the Boreal Sea. Only a fraction of those stars wink and glitter, like snowflakes passing through the light, in the unending night sky above the darkside ice. And out of those thousand thousand visible stars, the people of the planet Morningside had made a wish on one—called Heaven.

Sometimes when the winds ceased, a brittle silence would settle over the darkside ice sheet; and it might seem to a Morningside astronomer, in the solitude of his observatory, that all barriers had broken down between his planet and the stars, that the very hand of interstellar space brushed his pulse. Space lapped at his doorway, the night flowed up and up and up, merging imperceptibly with the greater night that swallowed all mornings, and all Morningsides, and all the myriad stars whose numbers would overflow the sea.

And he would think of the starship *Ranger*, that had gone up from Morningside's fragile island into that endless night: a silvered dustmote carried on a violent invisible breeze across the cathedral distances of space, drawn from candleflame to candleflame through the darkness . . .

They would be a long time gone. And what had seemed to the crew to be the brave, bright immensity of their fusion craft shrank to insignificance as they left the homeworld farther and farther behind—as the *Ranger* became only one more mote,

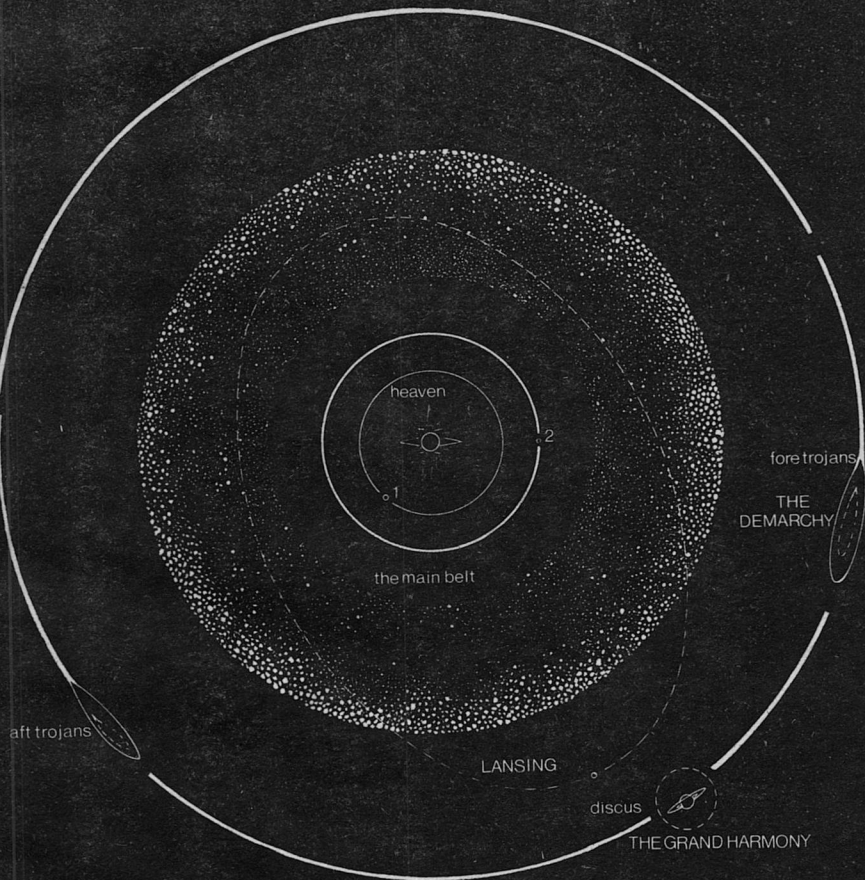
lost among countless unseen motes in the fathomless depths of night. But like an ember within a tinderbox, their lives gave the ship its own warm heart of light, and life. The days passed, and the months, and years . . . and light years, while seven men and women watched over the ship's needs, and each others'. Their shared past patterned their present with images of the world they had left behind, visions of the future they hoped to bring back to it. They were bound for Heaven, and like true believers they found that belief instilled a deeper meaning in the charting of stars and the tending of hydroponic vats, in their silence and their laughter, in every song and memory they carried with them from home.

And at last one star began to separate from all the rest, centering on the ship's viewscreen, becoming a focus for their combined hope. Years had dwindled to months and finally weeks, as, decelerating now, backing down from near the speed of light, they kept their rendezvous with the new system. They passed the orbit of Sevin, the outermost of Heaven's worlds, where the new sun was still scarcely more than an ice-crowned point of light. Counting the days now, like children reaching toward Christmas, the crew anticipated journey's end before them: all the riches and wonders of the Heaven Belt.

But before they reached their final destination, they would encounter one more wonder that was no creation of human kind—the gas giant *Discus*, a

The Heaven System

○ sevin



billowing ruby set in a plate of silver rings. They watched it expand until it obliterated more of this black and alien sky than the face of their own sun had blocked in the dusty sky of home. They closed with the giant's lumbering course, slipping past like a cautious firefly. And while the crew sat together in the dayroom, gazing out in awe at its splendor, the captain and the navigator discovered something new, something quite unexpected, on the ship's displays: Four unknown ships, powered by antiquated chemical rockets, on an intercepting course. . . .

Ranger (Discan Space) +0 Seconds

"Pappy, are they still closing?"

"Still closing, Betha." Clewell Welkin bent forward as new readings appeared at the bottom of the screen. "But the rate's holding steady. They must be cutting power; they couldn't do ten gees forever. Christ, don't let them hit us again. . . ."

Betha struck the intercom button again with her fist, "It's going to be all right. No one else will get near us." Her voice shook, someone else's voice, not Betha Torgussen's, and no one answered. "Come on, somebody, answer me. Eric! Eric! Switch on—"

"Betha," Clewell leaned out across the padded seat arm, caught her shoulder.

"Pappy, they don't answer."

"Betha, one of those ships, it's not falling back! It's—"

She brushed away his hand, searching the readouts on the screen. "Look

at it! They want to *take* us, they must; it's burning chemical fuel, they can't afford to waste that much." She held her breath, knuckles whitening on the cold metal panel. "They're getting too close. Show them our tail, Pappy."

Pale eyes flickered in his seamed face. "Are you—?"

She half-rose, pushed back from the panel, down into the seat again. "Clewell, they tried to kill us! They're armed, they want to take our ship and they will, and that's the only way to stop them. . . . Let them cross our tail, Navigator."

"Yes, Captain." He turned away from her toward the panel, and began to punch in the course change that would end their pursuit.

At the final moment Betha switched the screen from simulation to outside scan, picked out the amber fleck of the pursuing ship thirty kilometers behind them—watched it fleetingly made golden by the alchemy of supercharged particles from her ship's exhaust. And watched its gold darken again into the greater darkness shot with stars. She shuddered, not feeling it, and cut power.

"What—what do we do now?" Clewell drifted up off the seat, against the restraining belt, as the ship's acceleration ceased. The white fringe of his hair stood out from his head like frost.

Before her on the screen the rings of Discus edged into view, eclipsing the night: the plate of striated silver, twenty separate bands of utter blackness and moon-white, the setting for

the rippling red jewel of gas that was the central planet. Her hand was on the selector dial, her eyes burned with the brightness, paralyzing her will. She shut her eyes, and turned the dial.

The intercom was broken. They still sat at the table, Eric and Sean and Nikolai, Lara and Claire; they looked up at her, laughing, breathing again, looked out through the dome at the glory of Discus on the empty night. . . . She opened her eyes. And saw empty night. *Oh, God,* she thought. The room was empty; they were gone. *Oh, God.* Only stars, gaping beyond the shattered plastic of the dome, crowding the blackness that had swallowed them all. . . . She didn't scream, lost in the soundless void.

"They're all—gone. All of them. That warhead . . . it shattered the dome."

She turned to see Clewell, his face bloodless and empty; saw their lives, with everything suddenly gone. Thinking, frightened, *He looks so old.* . . . She mindlessly released her seat-belt, pushed herself along the panel to his side and took his hands. They held each other close, in silence.

A squirming softness batted against her head; she jerked upright as claws like tiny needles caught a foothold in the flesh of her shoulder. "Rusty!" She reached up to pull the cat loose, began to drift and hooked a foot under the rung along the panel base. Golden eyes peered at her from a round brindled face, above a nose half black and

half orange; mottled whiskers twitched as the mouth formed a *meow?* like an unoiled gate hinge. Betha's hands tightened over an urge to fling the cat across the room. *What right does an animal have to be alive, when five human beings are dead?* She turned her face away as Rusty stretched a patchwork paw to touch her, *mrring* consolation for an incomprehensible grief. Betha cradled her, kissed the furred forehead, comforted by the soft knot of her warmth.

Clewell caught Rusty's drifting tail, bloodied at the tip. "She barely got out."

Betha nodded.

"Why did we ever come to Heaven?" His voice shook.

She looked up. "You know why we came!" She stopped, forcing control. "I don't know . . . I mean . . . I mean, I thought I knew—" Four years ago, as they left Morningside, she had been sure of everything: her destination, her happiness, her marriage, her life. And now, suddenly, incredibly, only life remained. *Why?*

Because the people of Morningside, the bleak innermost world of a pitiless red dwarf star, had a dream of Heaven. Heaven: A G-type sun system without an Earth-like planet, but with an asteroid belt rich in accessible metals. And with Discus, a gas giant ringed in littered splendor by frozen water, methane, and ammonia—the elemental keys to life. The ore-rich Belt and the frozen gases had made it feasible—almost easy—to build up a colony entirely self-sufficient in its

richness; heaven in every sense of the word to colonists from Sol's asteroid belt, who had always been dependent on Earth for basic survival needs. And it had become a dream for another colony, Morningside, hungry now for something more than survival: The dream that they could establish contact with the Heaven Belt, and negotiate a share in its overflowing bounty.

The dream that had carried the starship *Ranger* across three light-years; that had been shattered with the shattered dayroom, by the reality of sudden death. The desolation burned again across her eyes; her mind saw the *Ranger's* one hundred-meter spindle form, every line as familiar as her own face, every centimeter blueprinted on her memory . . . saw it flawed by one tiny, terrible wound; saw five faces, lost to her now in darkness, endlessly falling. . . .

Clewell said softly, "What now?"

"We go on—go on as planned."

"You want to go on trying to make contact with these—?" His hand pointed at the ruin on the screen. "Do you want to lead them home by the hand, to murder all of Morningside? Isn't it enough—"

Betha shook her head, clinging to the arms of her seat. "We don't have any choice! You know that. We don't have enough hydrogen on board to get the ship back to ramscoop speeds. We have to refuel somewhere in Heaven, or we'll never get home—" A vision of home stunned her: Firelight on dark beams, on the night before their de-

parture—a little boy's face bright with tears, buried against her shirt, *Mommy . . . I dreamed you had to die to go to Heaven*. Remembering her child's sobs waking out of nightmare, her own eyes filled with tears and the endless darkness. . . . She bit her lip, *God damn it, I'm not a child, I'm thirty-five years old!*

"Pappy, don't start acting like an old man." She frowned, and watched his irritation strip ten years from his face. Without looking, she reached out to blank the viewscreen. "We don't have any choice now. We have to go on with it." *We have to pay them back*, her eyes flickered, hard edges of sapphire glinting. She tossed Rusty carefully away, watched her cat paddle uselessly as she drifted out into the room. "We have enough fuel left to get us around the system . . . but who do we trust? Why did they attack us? And those ships, chemical rockets—they shouldn't have anything like that outside of a museum! It doesn't make sense."

"Maybe they were pirates, renegades. There's nothing else that fits. . . ." Clewell's hand hung in the air, uncertain.

"Maybe . . ." She signed, knowing that renegades had no place in Heaven. Having no choice except to believe it, she forgot that the angry, mindless fact that had cursed her on their screen had called her *pirate*. "We'll go on in to the main Belt, to the capital at Lansing, as planned, then. And then . . . we'll find a way to get what we need."

Toledo Planetoid (Demarchy Space)

+30 Kiloseconds

Wadie Abdhiamal, negotiator for the Demarchy, stirred sluggishly, dragged up out of sleep by the chiming of the telephone. He turned the lights up enough to make out its form and switched it on, "Yes?" He saw Lije MacWong's mahogany face brighten on the screen, pushed himself up on an elbow in the bed.

"Sorry to wake you up, Wadie."

He grinned. "I'll bet you are." MacWong enjoyed getting up early. Wadie glanced at the digital clock in the phone's base. "Somebody need a negotiator at this time of night? Don't the people ever sleep?"

"I hope they're all sleepin' now. . . . Are you alone?"

Wadie glanced back over his shoulder at Kimoru's brown, sleek side, her tumbled black hair. She sighed in her sleep. He looked back at MacWong's image, judged from the disapproval in the pale blue eyes that MacWong already knew the answer. Annoyed but not showing it, he said, "No, I'm not."

"Pick up the receiver."

Wadie obeyed, cutting off sound from the general speaker. He listened, silent, for the few seconds more it took MacWong to surprise him out of his sleep-fog. "Be down as soon as I can."

He got out of bed, half-drifting in the scant gravity, and went into the bathroom to wash and shave. When he returned he found Kimoru sitting up in bed, the pinioned comforter

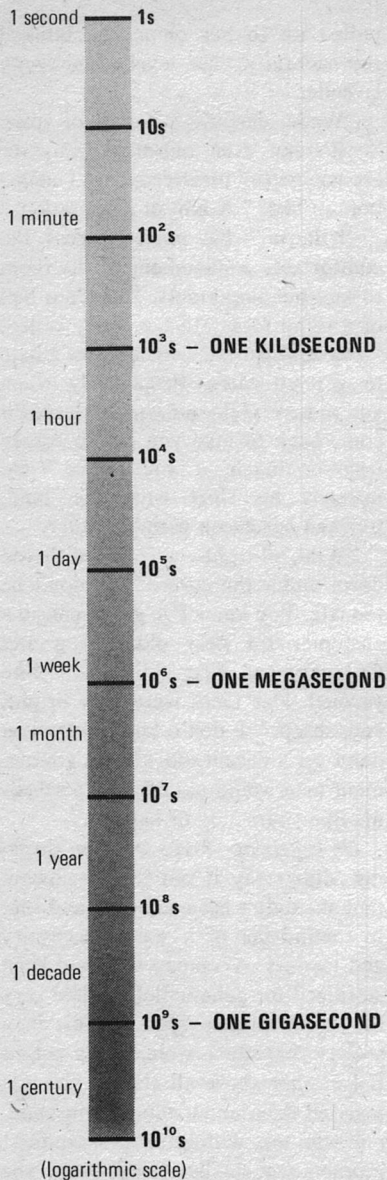
pulled up to her chin. She blinked reproachfully, her eyelids showing lavender.

"Wade, darlin'—" a hint of spite, "—it's not even morning! Whyever are you gettin' up already; am I such a bore in bed?" A hint of desperation.

"Kimoru." He moved across the comfortable confinement of the room to kiss her lingeringly. "That's a hell of a thing to say to me. Duty called, I've got to leave . . . you know I hate to get up early. Particularly when you're here. Get your beauty sleep; I'll come back to take you out to breakfast—or lunch, if you prefer." He fastened his shirt with one hand, touched her cheek with the other.

"Well, all right . . ." She slithered down under the cover. "But don't be too late. You know I've got to charm a customer for dear old Chang and Company at fifty kilosecs." She yawned. Her teeth were very bright, and sharp. "I don't know why you don't get a decent job. Only a government man would put up with a schedule like yours . . . or have to."

Or a geisha—? He went on dressing, didn't say it out loud; knowing that she didn't have a choice, and that to remind her of it was unnecessary and tactless. A woman who had been sterilized for genetic defects had very few opportunities open to her, in a society that saw a woman as a potential mother above all else. If she was married to an understanding husband, one who was willing to let a contract mother provide him with heirs, she could continue to lead a normal life.



But a woman divorced for sterility—or an unmarried sterile woman—had only two alternatives: to work at a menial, unpleasant job, exposed to radiation from the dirty postwar atomic batteries; or to work as a geisha, entertaining the clients of a corporation. It was prostitution; but it was accepted. A geisha had few rights and little prestige, but she did have security, comfortable surroundings, fine clothes, and enough money to support her when she passed her prime. It was a sterile existence, but physical sterility left her with little choice.

Knowing the alternatives, Wadie neither blamed nor censured. And it struck him frequently that in working for the government, he had picked a career that most people respected less than formal prostitution—and one that had left his private life as barren of real relationships as any geisha's. . . .

ONE HOUR—
approximately three
kiloseconds

ONE DAY—
approximately eighty
kiloseconds

TWO WEEKS—
slightly more than
one megasecond

ONE YEAR—
approximately thirty
megaseconds

THIRTY YEARS—
approximately one
gigasecond

He looked past his own reflection in the mirror, at Kimoru, already asleep again with one slender arm reaching out toward the empty half of the bed. He had no children, no wife. Most of the women he saw socially were women like Kimoru, geishas he met while negotiating disputes for the corporations that used them. He avoided them while he was on assignment, because he avoided anything that could remotely be considered a bribe. But in their free time the geishas liked to choose their own escort, and he had enough money to show them a good time.

But he rarely stayed in one place long enough to get to know any woman well; and the few normal women he had known at all had bored and aggravated him with their endless insipid conversation, their endless coquetry.

Wadie brushed back his dark curling hair and settled the soft beret carefully on his head. He was a fastidious dresser, even at dawn. It was expected. He picked up a silver ring set with rubies, slipped it onto his thumb. It had been a gift of gratitude, from two people he had helped long megaseconds before, a husband and wife prospecting team. He remembered that woman again—a woman pilot, a sound, healthy woman who had chosen to be sterilized in order to go into space. No kind of woman at all, really; because no real woman would willingly reject a home and family. That woman had been a freak—stubborn, defensive, self-right-

eous; a woman out of her place . . . out of her depth. And yet her partner had married her. But he had been a kind of freak, himself; a mediaman—a professional liar—with scruples. It was no wonder the two of them chose to spend the rest of their lives in the middle of nowhere, picking over salvage on ruined worlds. . . .

Wadie shook his head at memory, looking into the mirror, into the past. He wondered again, as he had wondered before, what bizarre chemistry had drawn them together, and still kept them together. And wondered briefly, almost enviously, why that chemistry had never worked on him. He shrugged on his loose, forest-green jacket, buttoned the high collar above the embroidered silken geometries. Hell, he was eleven hundred and fifty megaseconds old—thirty-eight Old World years—most of them spent solving everyone else's problems, living everyone else's life instead of his own. If he hadn't found a woman by now who would accept him on his own terms, or one who could make him forget everything else, he never would. He wasn't getting any younger; if he wanted a child, he couldn't afford to wait much longer. When he finished this new assignment he would hire a contract mother to bear his child and raise it while he was away. He glanced back one last time at sleeping Kimoru as he left the apartment, closing the door quietly.

Wadie yawned discreetly as he left the building's shadow and started

across the quiet square. It was barely daylight now; the glow of the fluorescent lamps brightened like dawn in the ceiling's imitation sky, ten meters above his head. The magnetized soles of his polished boots clicked faintly on the polished metal of the square, added security in the slight spin-gravity of Toledo planetoid. The surface of the square curved along the inside hull of a massive, hollowed chunk of iron, a rich miner's harvest and a solid home, but one that was beginning, ungraciously, to show its age. The silvery geometric filigree of pure mineral iron beneath his feet had been preserved once by a thin bonding film, but it was oxydizing now as the film wore away. He could trace rusty paths, dull reddish brown in the early light, leading his eyes across the square and under the tarnished rococo wall to the entrance of the government center. Symptoms of a deeper illness . . . something like panic choked him; habitually he took a long breath, and eased back from the edge, from admitting that the disease would be terminal. He went on toward the center, ordering the lace at his cuffs. *Living well is the best defense*, he thought sourly.

Lije MacWong was waiting for him inside. Officially Wadie worked for the citizens of the Demarchy; actually he worked for MacWong. MacWong, the People's Choice: The Demarchy's absolute democracy was an unpredictable water beneath the fragile ship of government, and it had drowned countless unwary representatives. But

MacWong moved instinctively with the flow of popular opinion, sometimes even risked diverting that flow to suit his own vision of the people's needs. He did the people's business, and made them like it. Wadie wondered from time to time what MacWong's secret was; and wondered whether he really wanted to know. "Peace 'n' prosperity, Lije."

MacWong glanced up as Wadie entered the office, ice-blue eyes placid in his dark face. "Peace 'n' prosperity, Wadie." He rose, returned a formal bow, and moved reluctantly away from his aquarium.

Wadie peered past him for a glimpse of the fish—three glittering golden things no larger than a finger, with tails of shining gossamer, moving sinuously through sea grasses in the green-lit water. The goldfish were the only nonhuman creatures he had ever seen, and for all he knew MacWong was still paying for them. He pulled off his hat, watched its soft mushroom roundness begin to flatten beside MacWong's on the desk top. "With all due respect, I trust this news about a Mysterious Message from Outer Space is genuine, an' I'm not here because you like to see me suffer." He sank slowly into MacWong's neocolonial desk chair, smoothed wrinkles from his jacket.

"Have a seat." MacWong smiled, tolerantly. "The 'message' is genuine. These aren't home movies I'm goin' to show you." He leaned carefully against the corner of his desk, avoiding the fresco of silver animal heads,

and flicked a switch on the communications inset. Nothing happened. "Damn it." He picked up a platinum paperweight shaped like a springing cat and dropped it on the panel. The impact was unimpressive, but the Kleinfelter mural projection on the far wall faded, and was replaced by the image of a woman's face. "I don't know what I'll do if this desk quits working. They don't build 'em like they used to." He set the paperweight gently back in place.

"They don't build 'em at all, Lije." Wadie traced the scrolled embroidery on his jacket front; his fingers froze as he looked up at the screen. "A hologram? Where'd you get that, MacWong?"

"We picked it out of the air, or space, anyhow, thirty kilosecs ago. It's a genuine hologramic transmission; it took us ten kilosecs to figure that out. And it's not beamed. Think of the power and bandwidth something like that requires! I don't know anybody who can do that for the hell of it any more."

"Not many that can do it at all. . . ." He broke off; watching, listening, as the woman's voice rose. Her skin was pale to the point of colorlessness, like her cropped, floating hair; her face was long and angular. She wore a faded shirt open at the neck, without jewelry. In her thirties, he judged, and making no attempt to cover it up; her plainness was almost painful. He put it out of his mind, concentrating on her voice. She spoke Anglo, but with an unfamiliar accent;

the most common words seemed to take on extra syllables in her mouth.

". . . please identify yourselves further. We were not aware of violating your space. We are not, repeat *not*, from your system; and we—" She was interrupted by a noise that barely recorded; Wadie saw her pale skin blush with anger, her eyes sharpen like cut sapphire. He glanced at MacWong.

"The Ringer navy," MacWong said, "their 'cast went the other way. This is all we picked up."

The woman glanced offscreen, and spoke words that he couldn't hear, insulting words, he guessed; but her voice was steady as she faced the screen again. "This is not a Belter ship, we are not 'Demarchists', and we have committed no acts of 'piracy'. . . . You have no authority over my ship; permission to board is denied. But if you will give us co-ords for your—"

Again she was interrupted, he watched tension grow, tightening her face, "We're not armed—" And resolution, "But we deny your 'right of seizure.' Pappy, get us—" She turned away again, and her image was ripped apart by a burst of red static. For half a second more he saw her, and then the screen went white.

"Well?"

Wadie loosened his hands on the metal frame of the chair. "Did they destroy it? Is that all?"

MacWong shook his head. "The ship took a hit, but it got away from the Ringers—all but one of 'em. We

monitored some of their followups; that alien ship is a ram-scoop, and when one of the Ringer pursuit craft got too close she just used the exhaust to melt it into scrap. Maybe that indignant Viking Queen isn't armed, but she's dangerous."

Wadie said nothing, waiting.

"We don't know where the ship is now, or even why it's here. But I have some ideas. She said it was from outside the system, and I believe that. Nobody in the Belt has anything that sophisticated any more. And a woman runnin' it . . . particularly a woman who looks like that—"

"Maybe she's an albino . . . maybe she's from the Main Belt. The scavengers don't care who goes into space; they've got no protection against radiation anyhow. Maybe they got very lucky on salvage . . ." And yet he knew that MacWong was right; that the woman and her accent were too alien.

MacWong looked at him. "Nobody gets that lucky. What's wrong, Wadie, the miracle too much for you? This isn't some mediaman's fantasy, believe me. That's a ship from Outside, the first contact we've had with the rest of humanity in over three gigasecs. And the course they set away from the Rings could be taking them to the old capital, Lansing. If that's right, there can only be one reason why that ship is here: they don't know about the Civil War. They've come to Heaven lookin' for golden streets, and when they learn there aren't any left we'll never see 'em again. We can't

let that happen . . . not now."

"What good would one ship do us now?" He stared at the blank wall screen, against his will felt another question stubbornly taking form.

"*That* ship could do us all the good in the universe." MacWong picked up his platinum cat. "*That* ship is treasure, that ship is power . . . that ship could save us."

Wadie nodded, admitting to himself that the ship's immense fusion reactor alone could give the Demarchy the start to rebuild capital industry. And God only knew what other technology—functioning technology—they might have on board. Just the possession of a ship like that would change the Demarchy's snow dealings with the Rings forever. They could even bypass Discus and the Ringers, set up distilleries of their own out on Sevin's moons. . . .

For as long as he could remember he had lived with signs of a society gradually coming apart at the seams, alone in the wasteland that civil war had made of Heaven Belt. Because of its peripheral location, the Demarchy had survived the Civil War relatively intact. But the Main Belt had been destroyed, and now the Demarchy's only outside trade contact was with the Grand Harmony of the Discan Rings, and the Ringers were barely surviving. The Demarchy was slipping down with it, but because it had so much farther to go, he had discovered that no one else seemed to realize the truth. They were blinded by the fierce, traditional self-interest that was the

Demarchy's strength—and perhaps, now, its fatal weakness.

He had become a negotiator hoping to bind up his people's self-inflicted wounds. He had believed that somehow the unifying element, the common bond of need that joined every human being, could be used as a force against disintegration and decay; that the Demarchy would continue, that they would find an answer. And with this ship— His imagination leaped, fell back as the Question struck him down: Who would control a ship like that . . . and who could control the ones who did control it? "But like you said, that ship will go back home, once they see what's left of Lansing."

"Maybe." MacWong flicked dust off of his cuff. "But Osuna thinks they might need to refuel first. It's a long way home to anywhere from here. They're not likely to go back to the Rings to get fuel, under the circumstances. Which means they might come to us; if they need processed hydrogen, there's no place else to go. So I'm sendin' out everyone I can spare. I want you at Mecca. The distilleries will make it a prime target, and you're more experienced at dealing with—'aliens' than anybody on the staff."

Wadie accepted the tacit compliment, the tacit distaste, remembered fifty million seconds spent in the Grand Harmony of the Discan Rings, and things it had shown him that he had never expected to see. He stood up, reaching for his hat. "What if they're not in the mood for negotia-

tion? What happens then?"

"I don't expect they will be. But that doesn't matter; you're paid to put them in the mood. Promise them anythin', but keep them here, stall that ship, until we can take control of it."

Wadie adjusted his beret, looked back from the mirroring wall. "What do you mean by 'we', Lije? Just who *is* goin' to control that ship? It won't be the government, the people will see to that. And the first kid on the rock to own one—"

MacWong was not amused. "I sometimes wonder if you didn't spend too much time with the Ringers, Abdhiamal— Damn it, Wadie, I'm not still questioning your loyalty, after two hundred megasecs. But there are still some who do; who think maybe you'd really like to see a centralized government here. . . ." He stopped. "There'll be a general meeting to settle the issue once we have the ship." He leaned forward across the gar-goyled desk. "The Demarchy has to have that ship, an' no one but the Demarchy."

"You're the boss." Wadie bowed.

"No." MacWong straightened. "The Demarchy is the boss. We give the people what they think they want. Nothing else means anything. Forget that, and we're out of a job—or worse. If I was you, I wouldn't forget it."

And knowing that MacWong never did, Wadie left the office.

Ranger (In Transit, Discus to Lansing)

+ 130 Kiloseconds

Betha left the hydroponics lab at

last, and began to climb up through the hollow silence of the central stairwell. She could no longer remember how many times she had climbed these stairs in the past two days; the duties of a crew of seven were an endless treadmill of labor for a crew of two. She passed the machine shop on the fourth level, kept on, reached their sleeping quarters on the third. One more level above, across the well, the flashing red light over the sealed day-room door caught her unwilling eyes. She stopped, wrenched out of her fatigue by a fresh rush of grief.

She stepped hurriedly through to the corridor that ringed the stairwell on the third level, that gave access to seven private rooms . . . and all that remained of five human beings who were lost to her forever. To her right, Lara's room; everything in its place, mirroring the precision of Lara's mind. . . . Betha remembered the crisp directness of her voice across an examining table in the ship's infirmary; her graying hair, the warm concern in her gray eyes that denied her clinical detachment. There was a padded stool in Lara's room made from a cetoid vertebra; a *Color Atlas of the Diseases of Fish, Amphibians, and Reptiles*. She had been a medical researcher on Morningside, before their family had become a crew and she had become their doctor; but marine biology had been her hobby, her real love. And Sean, the smart ass, had written a song, "Lara and the Levjathan," that swallowed her up in verses about this "cetoid monster",

the *Ranger* . . . their ship.

Through the open doorway directly before her, Betha could see a tangle of electronics gear, Nikolai's balalaika laid out on the sleeping bag on the platform of his bed. She pictured him, balding, bearded, brooding; with a voice like an echo escaping from a well. . . . A patient, skillful teacher, an electronics expert—a repairman, at home, serving the entire Borealis moiety. She remembered him laughing, dodging the shoe she had thrown at Sean for calling her *Ranger* a whale—

She turned to her left, moved along the curving hallway against the currents of memory, like a woman wading into the sea. . . . Remembering Claire, placidly moon-faced, curly-haired; plump, fair farmer's daughter . . . Sean, the red-haired kid among them, only twenty-four. . . .

Betha hesitated, finding herself before her own doorway. She glanced in, at her cluttered desk, her rumped bedding. She moved on desperately, as though she would drown herself, to the next room . . . to Eric. Eric van Helsing, social scientist, moiety ombudsman, spokesman. . . .

You are the rain, my love, sweet
water

Flowing through the desert of my
life.

The words of the song came unbidden into her mind, with the rushing heat of a desert wind on Morningside, the passion of first love:

Let me flower first for you
Let me quench my thirst in you

Share the best and worst with
you. . . .

Her hands twisted, unconsciously; six
rings of gold slid against one another,
circling her fingers, four on the left
hand, two on the right,

Husband, have me for a wife.

You are the rain. . . .

She sagged against the wooden
doorframe, shutting her eyes; pressed
her face against the coolness, sup-
ported by its noncommittal strength.
He was gone; they were all gone: Her
crew, her family . . . her husbands
and her wives. Her strength, the
strength that came from sharing, was
gone with them, bled away into the
bottomless void. How would she go
on? Loss was too heavy a burden, life
was too heavy a burden, to bear
alone—

Something brushed her ankles; she
opened her eyes, focusing. The cat
wove between her feet, meowing for-
lornly. "Rusty—" She leaned down to
pick the cat up, seeing the day of their
departure from Morningside: The
squirming, mewling kitten held out to
her in the grubby hands of her daugh-
ter, Kiki, as all their children solemnly
presented their chosen gifts to each
and every parent. There had been a
dozen grandparents looking on—and
siblings, cousins, nieces and nephews,
their proud, hopeful faces washed
with ruddy light, the Darkside
Perimeter's eternal twilight.

All of them were waiting—all of
them were a part of her. The children
were waiting; she was not alone. But
they were all beyond her reach now,

across too much space and time; and it
was her duty, her responsibility, to get
this ship back to them—

She heard a sound in the hall,
straightened away from the door-
frame with Rusty still nestled in her
arms. She saw Clewell, wearing only
his shorts, standing in the doorway of
his own room, watching her.

"Betha—are you all right?"

"Yes . . . yes, I'm just tired, Pap-
py." *Tired of remembering, and re-
membering. How can one sudden
sorrow turn all my joy to pain?*
Watching him back she saw the same
desolation, the same wound of loss
that tormented her. She felt her fear
rise again, *Oh, Clewell; don't let me
lose you, too.* "May—I share your
room again, tonight?"

He nodded. "Please. I couldn't get
to sleep anyway, alone."

She followed him into his room, and
in the darkness unbuttoned her plain
cotton shirt, slipped out of her shoes
and jeans. She settled into the double
sleeping bag beside him, into his arms,
and put her own arms around him
gratefully in a gesture of long fami-
liarity. He had not been her first
husband, but he had been her friend
through more years than she could
remember now. He had been twenty-
seven the year she was born, one of
many uncles; but from childhood on
he had been her favorite among all the
relatives of her extended family. He
had been an astronomer before he had
become navigator on the *Ranger*; he
had traveled from Borealis on the chill

perimeter of day, out across the Boreal Sea and over the crumpled ice sheet of the darkside glacier, to his observatory under eternal night. Sometimes he had taken her along for a brief holiday of stargazing, free from the duties and clan responsibilities that even a child on Morningside was expected to fulfill.

When she was fifteen she had gone away for her technical training; and then to her first job as an engineer, at a production plant on the desert edge of the subsolar Hotspot. She had fallen in love with Eric, married him; and in time they had returned to the Borealis moiety. She had reentered Clewell's life as a grown woman, and she and Eric had been invited to join his family.

Morningside society grew out of the multiple-marriage family, and bonds of kinship were its strength and security. Marriage among the members of a clan—a parent family, its children, their own children—was socially taboo; but outside the central clan unit, cousins, aunts and uncles, nieces and nephews married freely, their sheer numbers providing the cultural and biological controls. A marriage could be made between a single couple or a dozen people, and each family made its own rules to live by. Special friendships between individuals in a large family were common, and either the group as a whole adapted, or a subgroup split off: Weddings were a cause for general celebration, but divorce was a common, and private, matter for a family group. Three of

the members of Clewell's family that Betha had known as a child had divorced the rest, and his first wife had died, before she and Eric had joined the group, and Claire, and Sean, after them.

Betha remembered the brief, fond ceremony of marriage, the immense, free-form family celebrations that had followed. All of Morningside loved a

Betha



celebration, because too much of the time they had too little to celebrate. And now there would be even less, whether the *Ranger* ever returned or not. . . .

Betha became aware of Clewell's hand moving slowly, tenderly along her side. But the warm, instinctive response of half a lifetime died in her. She buried her face against the pillow, smothering the words, "Oh, Clewell, I can't . . . I can't. Not yet. I'm so sorry . . ."

His arms comforted her again, "No, Betha . . . it's all right. This is all I really need. Just to hold you."

She felt Rusty stir and settle between their feet at the end of the bed. She moved deeper into Clewell's arms, closing him in her own, and fled from memory into sleep.

Lansing 04 (Lansing Space)

+ 190 Kiloseconds

The night stretched like silence beyond their searching eyes; they took comfort in its vast, star-flecked indifference. They were scavengers, picking the bones of worlds; the night gave them shelter because it made no judgments, and they were grateful for its amorality.

Shadow Jack watched the night, or its image on the screen . . . sometimes in the dim, close womb of the ship his mind blurred, and reality began to merge with image. He stretched his legs and scratched, brushed back the dirty hair that drifted forward into his eyes and was as black as the night before him on the

screen. One eye was green and one was blue; both were bloodshot, and his head throbbed with his heartbeat. The carbon dioxide level in the cabin was well over three percent; he had long ago stopped noticing the smells. He pulled himself back down into his seat, looking at one errant hole pricked in the darkness, the one star that was not a star—that was something infinitely more insignificant, and infinitely more precious.

"I think we're close enough to begin scan . . ."

He heard Bird Alyn's voice, barely audible as always, even in the quiet space between them. He swallowed twice, wetting his throat for words. "Right. Go ahead an' run it through."

She reached forward with her right hand, her crippled left hand resting on air as she typed the order into the reconnaissance-unit computer that would begin one more analysis. Shadow Jack watched the long fingers with the broken, dirty nails move over the shining board. He looked away, for the ten thousandth time, at the cramped squalor of the cabin: still finding no miracle to transform the welded scrap-iron husk into a ship to match the technological beauty of the reconnaissance unit. Almost in apology, he smoothed fingerprints from the coolness of the panel with his frayed sleeve. The recon unit was a prize of salvage, a more precious thing than his own life, because it gave his entire world a chance for survival. Before the Civil War it had been a

prospecting unit, programmed for laser and radar analysis of asteroidal metals, organics, volatiles . . . now it scanned for the old instead of the new, searching the debris of death for artifacts to stretch the lives of the living. He looked back at the display with Bird Alyn, waiting, watched figures print out on the flat glossy screen—

“Nothin’,” Bird Alyn said. “No metallic reflections, no radioactivity, no effluent across the surface . . . nothin’, nothin’, nothin’. Nobody ever lived there—”

“It’s always nothin’!” He struck at the thick, darkened glass of the port, at a universe beyond his control.

“Maybe next time . . . besides, maybe somebody else’s found what they need . . . we’re not the only ship . . .” She faded.

“I know that!” His voice battered his ears, he put up his hands. “I’m sorry. My head hurts.”

“So does mine . . .”

He glanced at her. It wasn’t a reproach; her red-rimmed eyes were gentle, before they dropped away, fading against her face and the matted cotton of her hair, brown into brown into brown. Freckles splattered her nose, darker brown. “Do you think there’s any water?”

“I’ll see.” He unstrapped and drifted up out of his seat, one bare foot pushing off from the panel. He reached the wall behind them, read the gauge on the still. “Yeah, there’s some in it now.” He heard Bird Alyn’s sigh as he forced the nozzle through the seal on the drinking cup, waited

while it filled. “Point four liters.” He sighed, too.

They drank, taking turns at the straw, savoring the water’s warm flatness; Bird Alyn reached over to turn down the display on the screen. She hesitated, leaned forward. “This ’s strange. . . . Look, the display’s changed. There must be something else out there; we’re getting a backscatter analysis of somethin’ further on. Metal . . . low radioactivity . . .” Her voice rose until he could hear her without trying.

Bubbles of water burst against his fingers and slimed his hand as he squeezed the cup too hard. “A derelict?”

She tapped the controls briefly, and displayed a picture from the Matsu-kov mirror on the hull. A sunbright needle threaded stars on the blackness. “A ship—” she whispered.

“Oh, reality, look at that . . .”

“I never saw a ship like that . . .”

“There’s never been one.”

“Not since the War. It’s got to be—”

“It’s got to be—salvage.” Shadow Jack leaned forward, touched the ship with a wet fingertip. “I claim you, ship! With a ship like that . . . we could do anything with a ship like that.”

“It’s driftin’, no propulsion . . . that doesn’t mean it’s dead. . . . To find that, here, so close to Lansing—”

“It is dead, it must be more’n two gigasecs old. What’s our relative velocity; can we intercept?”

Her long fingers asked the questions, the board answered. “Yes!” She

looked up. "If we push, in four or five kilosecs."

"Okay." He nodded. "We push—"

They waited, caught inside webs of private dream, as the needle of light grew into an impossible golden insect: triple antennae bristling ahead, spokes on an invisible wheel, its body stretching behind, filament-fine, and broadening into a bulbous, pearlike tail. *A miracle*. . . . The word shone in his mind, and knowing there were no miracles, he believed, defiantly. A ship that could get them water to fill the marshes, to bring back life to the parched grasses and dying trees . . . to the dying people of Lansing.

His mind's eye looked back into the past, down across Lansing's fields from the limits of the sky, where he had worked suspended cloudlike fifty meters up, spinning the sticky patches to mend the plastic membrane of the world-shroud. Somewhere below him through the fragile canopy of trees, Bird Alyn had worked in the gardens. . . . Like a vision of Old Earth, he remembered her crossing the yellowed fields at dusk to meet him, her footsteps lifting her like a bird. When they brought back that ship everything would be made right . . . everything.

He looked over at Bird Alyn, at her hand—three crooked, nerveless fingers and a thumb; felt her catch him looking. *Not everything*. He frowned with helpless self-disgust; she turned her face away as though the frown were meant for her. He looked out at the night, cracking his knuckles as he

remembered why it would never be all right. He remembered the broken sound of his father's reassurance, a third of a lifetime before—as he left his only son sitting in the grass, abandoned to the fatal light, and went back into the sheltering depths of rock alone. . . .

Ranger (Lansing Space)

+ 195 Kiloseconds

Betha heard the intruders banging faintly against the *Ranger's* hull as they moved toward the main lock. "At least they didn't actually decide to cut their way in through the dayroom—"

"Their manners don't impress me. You're just going to let them come aboard?" Clewell rebounded lightly from the wall as he pushed a covered cup into a cubby beneath the panel.

She nodded. "Pappy, we've been tracking that tin can of theirs for nearly two hours; it's hardly a warship. They must be in trouble, their drive is leaking radiation. Besides, we need information, and we haven't gotten much trying to monitor Lansing's radio traffic. Letting them come aboard is the safest, fastest way I can think of for getting some facts." She rubbed her eyes, until brightness drove back the vision of all her loves and one love, and the vision of a pursuing ship consumed by invisible fire. *Besides, there's been enough death*.

"And what happens if they happen to be crazy, like the others?"

"You said yourself they can't all be like that." Her hand closed over the

bowl of her pipe. "But even if they are, they won't take this ship." She let the pipe drift as she rechecked the override program, a mosaic of lighted buttons on the control board. "Just keep your feet near the floor."

Someone had entered the lock. She felt more than heard them through the wall, felt her body tense as the lights changed above the lock entrance. The door hissed open. Two tall figures, amorphous in suits with shielded helmets, drifted into the room. And stopped short, catching at the handrail set into the wall. A muffled, accusing voice said, "What are you doin' here?"

Betha's mouth quivered; helpless with disbelief, she began to laugh. "W-what are we doing here?"

Clewell grunted. "We could ask you the same question; and it wouldn't be nearly as funny. You're lucky you're here at all."

"We thought the ship was dead; we didn't know you had power till your lock cycled." The taller suit shrugged. "You've got a hole in you, and—you mean, you run this thing, you already claimed it?"

"We didn't 'claim' it, we own it." Betha caught her shoe under a restraining bar and twisted to face them. "I'm Captain Torgussen. This is my navigator. We let you come aboard because I thought you were in trouble. Your craft's power unit is leaking radiation; you're barely mobile. Is that why you intercepted us?"

The silvered faceplates showed her

nothing, only her own tiny, distorted face. The voice was tinnily indignant, "What do you mean, leaking? There's nothin' wrong with our drive. We been out a megasec this trip, already."

Nothing wrong? Betha glanced at Clewell, saw his eyes widen. A megasec—a million seconds . . . nearly two weeks. Whoever faced her, whatever insanity moved them, their lives were going to be short and sick spent in a ship like that.

The blind face went on, "We intercepted because we thought this ship was salvage, and we wanted it. I guess it's not." A gloved hand rose from his side, threatening, holding something that glinted. "But we have to have it. So we're taking it anyhow. Get away from those controls." The hand twitched.

"You'll regret it . . . the two of you can't possibly handle this ship." Betha carefully let go of the bar, her feet centimeters above the rug, her eyes on the panel. When she touched one button this room would be under an abrupt one-gravity acceleration: one stranger would fall onto his head, the other one onto his back . . . *And break their necks?* She hesitated, "If you think—"

A blob of mottled fur squeezed out of a plastic port in the wall; Rusty *mrred* pleasantly, circling the knees of the two strangers. Betha heard one of them gasp. He pulled back, bouncing off of his companion. "Look out!" Rusty darted sideways eagerly, enjoying the game. "What is it—?" their voices rose, "Shadow Jack, get it off

me! Help me, would you?"

Betha jerked the computer remote from her belt and threw it. It struck the stranger's arm and his weapon flew out into the room. Clewell moved past her to pick it from the air; the hijackers pressed back against the wall, waiting.

"Rusty. Come here, Rusty," Betha put out her hand, and brindle ears twitched. Slowly Rusty crossed the room to sidle along her waist, purring in satisfaction. Betha scratched under the ivory chin, stroked the brindle back, and shook her head. "Rusty, you make fools of us all."

"Well, I'll be damned!" Clewell began to pry at the weapon; strange shapes bristled along its length. "This is a can opener! Corkscrew, fork. . . . I don't know what this one is—" He pulled himself down. "I've heard of ailurophobes, but I've never seen the likes of those."

Betha caught hold of a chair back, unsmiling. "You two. Get out of the suits." They stripped obediently, rising like moths from the cocoons of their spacesuits: a man and a woman . . . a boy and a girl, incredibly tall and thin, neither of them more than seventeen; barefoot, in drab, stained coveralls. She blinked as the smell of them reached her. "You've just committed an act of piracy. Now tell me why I shouldn't send you out the air lock for it, without your suits." She wondered if the threat sounded as credible or as terrible as she wanted it to.

The boy glared back at her, across a

muffled fit of coughing. The girl moved away from the wall, "It was a matter of life and death . . ." Her voice strained in a dry throat.

"We offered you help. That's not good enough."

"Not *our* lives." She shook her head. "We need the ship for . . . for . . ." She broke off, her eyes darted away, searching the room.

"Bird Alyn, they know why we need the ship." Betha saw a terrible, impersonal hatred settle on the boy's face as he turned back. "You know what we are. We're just junkers, we haven't done anything to you. Let us go."

Betha laughed again in disbelief. "You 'just' tried to commandeer my ship. I 'just' asked you why I shouldn't space you for it. But you expect me to let you go? Is everyone in Heaven system crazy?" Her voice almost slipped out of control.

"It doesn't matter." He let go of the hand hold, shrinking in on himself. "We'll die anyway, everybody's dying. You've still got it good, you Demarchists, it's nothing to you to let us go, or let us die."

Betha found her pipe drifting, fumbled in a pocket of her jacket for matches. "We're not 'Demarchists', whatever they are. We've come from another system to establish contact with the Heaven Belt; and since we've been here we've been attacked twice, with no provocation, near the rings of Discus and by you. Now, maybe you believe you have some sort of 'right' to do it, and maybe you can even make me believe it. Or maybe I'll take you

to Lansing to be tried for piracy." She saw surprise on their faces. "But first you're going to answer some questions. . . . To begin with: who are you, and where do you come from?"

"I'm Shadow Jack," the boy said, "and this's Bird Alyn. We come from Lansing." He waited.

"But that's where we're going—" Clewell began.

"Why?" The girl said, blinking.

"Because it's the government center for Heaven Belt." Betha looked back at her sharply. "Your capital must have come on hard times."

"You really are from Outside, aren't you—?" Shadow Jack folded his legs like a buddha, somehow managing not to flip over backwards. "There hasn't been any Heaven Belt for two and a half gigasecs."

"What?"

He stared, silent; Clewell gestured threateningly at the cat.

"There was a war, the Civil War. Everything got blown up, all the industry. Nobody can keep anything going any more, except the Demarchy and the Ringers. They're the only ones far enough out to have snow on some of their rocks. Lansing is the capital of zero, nothin'; most everybody in the Main Belt's dead by now."

"I don't understand," Betha said, not wanting to understand. *Oh, God, don't let our very reason for coming here have been pointless—* "We heard that Heaven Belt had the perfect environment, that it had a higher technology than any Earth colony:

than even Old Earth . . .

"But they couldn't keep it goin'," Shadow Jack shook his head.

Betha saw suddenly the fatal flaw the original colonizers, already Belters, must never have considered: Without a world to hold an atmosphere, air and water—all the fundamentals of life—had to be processed or manufactured or they didn't exist. And without a technology capable of the processing and manufacturing, in a system without an Earthlike world to retreat to . . . any Dark Age would mean their extinction.

As if he had followed her thoughts, Shadow Jack said, "We'll all be dead, in the end, even the Demarchy." He looked away, forcing out the words, "But our rock is out of water now. Everybody there'll die if we have to go around Heaven again without it. And we don't have a ship left that'll take us to the Ringers—to Discus—for hydrogen to make more. We've got to find enough salvage parts to put one together, that's why we were out here. It's a gigasec before we'll be close enough to Discus to make the trip again."

"You trade with Discus for hydrogen?" Clewell broke her silence.

"Trade?" Shadow Jack looked blank. "What would we trade? We steal it."

"What happens if the—Discans catch you in their space?" Clewell reached under the panel for his covered drinking cup, pulled up on the straw.

Shadow Jack shrugged. "They try

to kill us. Maybe that's why they attacked you: they thought you came from the Demarchy. Or maybe they wanted your ship; anybody'd want this ship. Can you run it all with only two people—?" His mismatched eyes wandered speculatively.

"Not two untrained people," Betha said, "in case you still have any ideas. It's not even easy for us. There were five more people in our crew; the Discans killed them all." *And all for nothing.*

He grimaced, "Oh." Betha saw the girl flinch.

"One more question—" She took a deep breath. "Tell me what this 'Demarchy' is, that everyone seems to confuse with us—?"

Shadow Jack glanced away, suddenly oblivious, as Clewell finished his drink. Bird Alyn licked her lips, rubbed her mouth with a misshapen hand.

Out of water. . . . A memory of her own children, too far away, too long ago, dimmed their hungry faces. She looked down at her own hands, at thin golden rings, four on the left hand, two on the right. "Well?"

Shadow Jack cleared his throat, his eyes daring her to offer water. "The Demarchy—it's in the trojan asteroids sixty degrees ahead of Discus, it's got the best technology left now. They made the nuclear battery that runs our electric rocket; they're the only ones who can make 'em any more."

"If they're so well off, why do they have to rob the Discans?"

"They don't have to. Usually they trade, metals for the processed snow, for water and gases and hydrocarbons. Sometimes things happen, though, incidents. They both want to come out on top. I guess they think someday they'll build up the Belt again. They're wrong, though. Even if they'd quit fightin' each other, it's too late. Anybody can see that."

"Not exactly a cockeyed optimist, are you, boy?" Clewell said.

Shadow Jack frowned, scratching. "I'm not blind."

"Well, Clewell." Betha felt Rusty snuffling against her neck, settled the cat on her shoulder. Claws hooked cautiously into the weave of her denim jacket. "What do you think? Do you think it's the truth? Did we—come all this way for nothing?"

He rubbed his face with his hands. She saw his own wedding bands reflecting light, three on the left hand, three on the right. "I guess it's possible . . . it's so insane, it's the only way to explain what we've been through."

She nodded, glanced at the haggard faces of the waiting strangers: *Not exactly angels.* Victims, of a tragedy almost beyond comprehension; a tragedy that had reached into her own life, and his, to destroy the dreams of another people as it had destroyed its own. This Heaven, like all dreams of heaven, had been a fragile thing; perhaps none of them had ever been meant to be more than a dream. . . . She lit her pipe, calmed by its familiarity, before she searched the two tense, expectant faces. "I'll make you

a proposition, Shadow Jack, Bird Alyn: You said Lansing needs hydrogen for water; we need it for fuel. We're going after it now. Come with us and tell us things we need to know about this system, and if we succeed we'll share what we get with you."

"How do we know you'll keep your word?"

Betha raised her eyebrows. "How do we know you've told us the truth?"

He didn't answer, and Bird Alyn frowned at him.

"If you're honest with us, we'll be honest with you." Betha waited.

He looked at Bird Alyn; she nodded. "I guess anythin's better than our chances alone. . . . But what about the *Lansing 04*? We can't junk it—"

"We can take your ship with us. It's possible we can repair your shielding."

His mouth opened; he shut it, embarrassed. "We—can we radio home, Lansing, and tell 'em what happened?"

"Yes."

"Then, it's a deal. We'll stick with you, and tell you what we know." They relaxed visibly, together, hanging like rag dolls in the air.

Clewell folded his arms. "Just keep one thing in mind—that the captain meant it when she told you it takes training to run the *Ranger*. We'll be accelerating at one gravity. Even if you took over the ship and contacted

your people, they'd never catch up with you. All you'd get out of it was a one-way journey to forever."

Shadow Jack started to answer, kept silent.

"I'll see to your ship, then. Clewell, will you take them below? Maybe, ah . . ." She looked back; tactfulness eluded her. "They could use a shower."

"A shower of what?" Bird Alyn murmured.

Betha paused, inhaling smoke. "Well . . . water."

"Unfortunately we're out of champagne." Clewell pushed off for the doorway.

Shadow Jack laughed uneasily. "Enough water to wash in?"

She nodded. "Use all you want; please. We have plenty. And soap. And clean clothes, Clewell—"

"With pleasure." He led them eagerly out of the room into the echoing stairwell; Rusty floundered after them. For a moment Betha drifted, listening, her eyes taking in the grass-greenness of the rug, the dust-blue sky color of the walls, that had been designed to keep seven people from going mad during more than three years tau of close confinement. She realized the vast and pernicious emptiness that had filled the room, the entire ship, in the past few days; like the greater desolation beyond its hull. Realized it, now that suddenly it was no longer true. She heard the sprayers go on, and faint yelps of excited laughter.

Clewell reappeared in the doorway,

carrying Rusty. "I hope they don't drown themselves . . . though anything would be an improvement."

She looked down at the pipe in her hand, remembering how he had carved it for her during their final days in Borealis. Surprising herself, she began to smile.

Ranger (In Transit, Lansing to Demarchy) + 290 Kiloseconds

Bird Alyn moved slowly through the green light of the *Ranger's* hydroponics lab, her frail body twitching with the effort of standing upright in one gravity. She hummed softly, oblivious to discomfort, pulled into the past by the cool constant moistness and the smell of apples, the hum of insect life. Shadow-dapples slid over the tiles, merging and breaking with the drift of canopied leaves, showering sparks of veridian fire over the viscous liquid inside clear, covered vats.

The setting was strangely alien, like everything in the bountiful alien wonderland of this starship. But a fern or a tree were always the same, no matter how gravity or its lack contorted them. They were living things that required her—that rewarded her care and attention with a leaf or a blossom or fruit to give her people life. The only living things that willingly absorbed all the love she could give them, that never turned away from her because she was an ugly, ungainly cripple. . . .

Bird Alyn drew the dipstick out of another vat, studied the readings,

shook it down. She sighed and slid down the vat's side to sit on the floor, massaging her swollen feet. They prickled, with the sluggishness of poor circulation. She leaned back, looking up through the shifting green; imagined she saw the milky translucency of the Lansing shroud and Shadow Jack working as a spinner, instead of the banks of fluorescent lights:

She had counted the kiloseconds, the very seconds of every Lansing day, until Shadow Jack came down to join her for the day's one meal. Silent, moody, filled with futile anger—he was still the one person in her world who responded to her, who pushed out of his own shadowed world each day long enough to show her kindness. Sometimes she wondered whether he was kind out of pity; never caring whether he was. She was simply grateful, because she loved him, and knew that love had no pride.

From childhood she had understood that she would work in the surface gardens; through all of her life she had seen why—that she was different, deformed. Her parents had trained her to use a computer, because they had accepted that she would have to work at a job where the radiation level was high; they had equipped her to work on a ship, to do the best she could for the survival of her world. But beyond that they had withdrawn from her, as people withdraw from a mistake that has ruined their lives, as they withdraw from the victim of a terminal disease.

And she had never questioned her

own inferiority, because Materialist philosophy taught her that every individual must accept the responsibility for his own shortcomings. She had gone to work on Lansing's surface almost gladly; glad to escape from the world of normal people, glad to lose herself in the beauty of the gardens, solitary even among her fellow defectives.

And then she had discovered Shadow Jack sitting dazed and frightened in the grass at the entrance to the tunnels. . . . Shadow Jack, who had grown up used to a normal life of security and acceptance. Who had been told, suddenly, that he was not normal, and cast out into an alien world, ashamed, abandoned. She had comforted him, out of compassion and her own need; his need had bound him to her, and made them friends.

But as they grew older she began to want more than just his friendship; even though she knew that it was wrong, and impossible— On the Lansing surface the mores of the tunnels were distorted by neurosis, or by need, until each person became literally responsible for his own actions, and endured whatever consequences followed. She had seen things that would have appalled her parents, and learned to see that they did no one any harm; to see that that was the only real criterion for what was right or wrong. And there were things that had made her afraid, once she understood them, and grateful that Shadow Jack slept beside her every night in the sweet cool grass or between the

sheltering pillars of the abandoned state buildings.

But Shadow Jack would never touch her, never let her ease the anger and the helpless resentment that never let him go. And helpless in her own futility, she kept her silence, knowing that it was wrong for a defective to want a husband; impossible, that Shadow Jack could ever love an ugly, clumsy cripple. . . .

Bird Alyn saw someone draw aside the insect netting and enter the lab, brushing aside grasping shrubs and vines. She struggled to her feet, trying to make the figure into Shadow Jack . . . heard a woman's voice call softly, "Claire?"

Bird Alyn stood on tiptoe, fading against the flowers in her green shirt and blue jeans. "What?" She teetered and almost dropped the dipstick. She clutched it against her side with her crippled hand, "Oh, Betha."

Betha stared at her in return, shook her head, bemused and disconcerted.

Bird Alyn smiled, glancing down. "I—I thought it was Shadow Jack. He said he was goin' to come watch me work . . ." Her smile collapsed.

"Pappy's got him cornered; he's showing him around up in the shop." Betha touched a fern, pulled off a yellowed frond, pulling the dead past loose from the present. She looked back, concern showing on her tired, pale face. "Are you sure you want to do this, while we're still at one gee?"

Bird Alyn nodded. "It's all right. I sit down a lot, and just—watch, and smell, and listen. It's so long since I

worked in the gardens. Do you mind—?”

“No . . . no. You don't know how much I appreciate it. There's enough work on this ship for seven people. And—Clewell's not as young as he used to be.” The captain's eyes left her, searching the green shadows. “You have the perfect touch, Bird Alyn . . . I almost took you for a dryad when I came in.”

“What . . . what's that?”

“An enchanted forest spirit.” Betha smiled.

“Me?” Bird Alyn twisted the dipstick, laughed her embarrassment. “Oh, not me. . . . These plants take care of themselves, really, it's easy . . . not like Lansing . . . they look so different here, so thick and squat. . . .”

“These?” Betha looked up.

“On Lansing things keep growin' up, they don't know when to quit; it's tricky, the root systems have to go down to bedrock and catch hold . . . and with the mutations. . . .” Bird Alyn faded, suddenly aware of her own voice.

Betha sat down on a tiled bench, reached out for the strangely shaped thing half-hidden under a fall of vine. “Claire's guitar. Claire used to run hydroponics, she used to play for the plants. It's a musical instrument,” seeing Bird Alyn's puzzled expression. “We all used to come down here in the evenings, and sing. She used to claim the plants enjoyed the music, and the emotional communion. Of course, Lara would claim it was just the

carbon dioxide they wanted . . . and Sean said it was the hot air.” Her mouth curved wistfully, “And Eric— Eric would say that it was probably a little of everything. . . .” Her hand rose to her face; Bird Alyn counted four plain golden rings, surprised, before it dropped again.

“How . . . um, how does it work?” She had known a girl once who had a whistle made from a reed. “The— guitar, I mean. . . .” She leaned back against a heavy wooden shelf, pushed up onto its edge with an effort.

“I can't really give you a proper idea—Claire was an artist; I only know a few chords. But it's something like this—” The captain settled the guitar across her lap, positioned her fingers on the strings. She stroked them tentatively.

Bird Alyn shivered. “Oh . . .”

Betha smiled; her fingers changed position on the strings and the shimmering water of sound altered. She began to sing—almost unconsciously, Bird Alyn thought—in a warm, clear voice merging with the flow of music:

“Understanding comes from
learning,

No one ever changed a world.

Live your life, don't waste it
yearning,

You can't change it, little girl—”

Bird Alyn felt her throat tighten, looked down at her twisted hand, blinking hard.

She heard the captain take a long breath, caught in her own memories. “I'm sorry,” the clear voice strained

slightly. "I should have found something a little more cheerful."

"Please . . . will you—will you do some more?" Bird Alyn looked up.

Betha's face eased. "All right. . . . They aren't much, just some old folk tunes. But it's a strange thing, the effect that everyone singing together has—the bond that grows between you, the feeling of unity. It gives you the strength to carry on, when things are hard. And it's hard to hate anyone when you're singing with them; hard to be angry. . . .

Together we continue,
Our song will never end.
Sister, brother,
Father, mother,
Share their lives with one
another:

Woman, man and friend. . . ."

Bird Alyn leaned forwards, like a flower leaning into the light. "Morningside must be a beautiful place!"

Betha made a sound that was not quite a laugh. "No, it's— Yes. Yes . . . in a way. In its own way." Her fingers brushed the strings again.

"I wish I could do that. . . . Do you . . . know any love songs?" The captain looked up sharply; Bird Alyn realized that somehow she had said the wrong thing.

"I'll be glad to show you what guitar chords I know, Bird Alyn, if you want to learn to play. Maybe the plants miss it."

Bird Alyn folded her arms. "I— I don't think I have enough fingers. . . ."

The captain's face froze with a

second's embarrassed awkwardness. "Oh. Well, I think I can reverse the strings for you; I've seen a guitar played left-handed before. If you'd like me to—?" She smiled again.

"Oh, yes. . . !" Bird Alyn slipped down off of the shelf, left the dipstick hanging absently in the air. It slid through her nerveless fingers and clattered to the floor. Instinctively a long bare foot stretched to pick it up; she lost her balance, and fell. "Lousy luck—!" Sprawled on the floor she fumbled after the rod, shook it and checked the readings, while a familiar hot flush crept up her face.

The captain came to her, caught her arms and lifted her effortlessly to her feet. "Are you all right?" Betha's hand brushed her arm reassuringly; as a mother might have touched her. "It takes a while, doesn't it, to break the habits of a lifetime."

Bird Alyn looked down, confused by her solicitude. "Does anybody ever get used to this? If you're not born used to it, I mean. . . ."

Betha stepped back. "In time. Morningside's pull is less than one gee, but we've been at one gee on the ship for three years, and we don't even notice the difference any more. I've read some Old World studies on one-gee adaptations from low gravity. It's possible, but it takes about a year—thirty or forty megaseconds—to get back to the minimum endurance you had at zero gee. And there are long-term stress effects on the body. But they decided that you'd last, with good medical care, if you wanted to go

through with it. But it's hard."

"I think I'd rather go home . . ." Bird Alyn said.

"Me too." Betha nodded.

But you can't. Bird Alyn glanced down at her, blushing again, "I mean . . . I always say the wrong thing!"

"No. It's all any of us want, Bird Alyn. And we're going to do it—" Betha studied the pattern of gleaming rings on her hands; they tightened suddenly.

Bird Alyn listened to water dripping somewhere, thought of tears. She heard someone else enter the lab; recognized Shadow Jack this time.

Betha smiled, a pleased, private smile, following her glance. She turned back to the bench, picked up the guitar. "I'll change the strings for you, when I get the chance. But now I'd better get back to work. We're almost into Demarchy space; you won't have to put up with gravity much longer." She started away toward the door, spoke to Shadow Jack as she passed him. Bird Alyn watched his own gaze fix on her, follow her, with admiration that was almost adoration. Bird Alyn felt envy stir, turned it inward habitually. Her mouth tightened with pain as though she had turned a knife.

But Rusty struggled in Shadow Jack's arms, meowing with sudden impatience as they caught sight of her. Shadow Jack let the cat drop, still half afraid of its strangeness. Rusty trotted ahead to butt against Bird Alyn's bare ankles; Bird Alyn leaned over and picked the cat up, and a pink

tongue sandpapered her chin joyfully. Rusty settled, purring, onto her shoulder. She thought of the embroidered hanging in the room that was hers now: a cross-stitched portrait of Rusty, and the words, A HOME WITHOUT A CAT MAY BE A PERFECT HOME, PERHAPS—BUT HOW CAN IT PROVE ITS TITLE?

Bird Alyn let herself imagine an entire world filled with living creatures, and music; not a fruitless dream, but reality. The kind of world Lansing must have been, in the time she had never known; the kind of world it could never be again.

"I thought Rusty was looking for you," Shadow Jack murmured, self-conscious. "I'll bet if there were ten animals on this ship, every one would want to be with you."

She met his eyes hesitantly, forgetting everything in the miracle of his smile.

Flagship *Unity* (Discan Space)

+ 300 Kiloseconds

Raul Nakamore, Hand of Harmony, settled back into the padded acceleration couch, weightless, held down by straps. He wedged the light wire headset into a slot on the panel, through with the radio, through arguing with his half-brother Djem. So he was wasting the Grand Harmony's resources . . . risking his life . . . risking the crews of three ships, to pursue a phantom. So he was leaving Snows-of-Salvation unprotected from a Demarchy attack to chase a ship that could run rings around the ships

of the Grand Harmony, even this high delta-vee strike force. A ship from Outside . . . a crippled starship, that had left behind a tiny spreading cloud of debris and human remains. A ship that had eluded their grasp once—but that might not be able to do it again. It was worth the gamble. *But poor Djem; he never could see beyond the end of his own nose.* Raul half-smiled.

Somewhere five thousand kilometers below him, silhouetted against the silvered detritus of the Discan rings, the lump of frozen gases that was Snows-of-Salvation held the Grand Harmony's chief distillery. It had been constructed with Demarchy aid, and it was crucial to the Harmony's survival, and the Demarchy's. His brother was in charge of Snows-of-Salvation, would do anything to maintain its safety. But if the Demarchy decided to attack here in the Rings, even this "secret weapon" couldn't stop them from doing fatal damage. And in spite of what too many in the Navy believed, the Demarchy would never try it, anyway. Djem would never be able to see that, but Raul would stake his career on it—*had* staked his career on it. The Demarchy would never attack them . . . unless it had that starship. But if the Grand Harmony took it first—

"Sir." Sandoval, the balding ship's captain, interrupted his pattern of thought diffidently. "Everything's secure for ignition. At your command—"

Raul nodded, unbuttoning his

heavy jacket in the unaccustomed warmth of the control room. *Been underground too long . . .* He sighed. "Proceed."

Sandoval settled back into his own seat, spoke orders into his headset that would coordinate with the crews of two other ships. There was no video communication; video was used only to impress the enemy. Raul studied the unaccustomed complexity of the control board, banks of indicators spreading up the walls in the cramped space around them. Most of it was prewar artifact computing equipment, installed to give these ships superior maneuverability in combat. They were one segment of the Grand Harmony's high delta-vee defense force, specially designed, specially equipped with a fuel-to-mass ratio of one thousand to one. Although Raul Nakamore ranked in the highest echelons of the Harmony navy, he had always maintained that their existence was a pointless waste of desperately needed resources; and for that reason he had never been on board one of these ships before. But now the starship had changed his mind; as it could change the very future.

He sank heavily into the padded seat as the ship's liquid-fuel boosters ignited and thrust grew to a steady two gravities, more than slightly painful on his Belter's frame. He checked the chronometer on the panel. Thrust would continue for 1300 seconds, boosting them to 16 kilometers per second . . . and in that time, expend 7000 tons of fuel: the outer stages of

the three ships themselves, and of seven drones. And still it would take them over two megaseconds to reach Lansing—and their quarry might not even be there. Raul settled down to wait, trying not to imagine the waste, but rather to remember what had made him so certain it was worth it . . .

He had been sitting in his office, studying endless shipping schedules, when the confidential report had reached him: that a ram-scoop starship, origin unknown, had crossed the path of a naval patrol . . . and had destroyed one of their ships before escaping. He had studied the report for a long time, with the warmth of the methane stove at his back and the chill silence of Heaven's future ahead of him. And then he had noticed that a meeting was announced, his presence was required.

He left his office and made his way along the endless dank, slightly smoky corridors from the Merchant Marine wing. The government complex made up the greater part of the tunnel-and-vacuole system that honeycombed the subsurface of the asteroid Harmony, that had been the asteroid Perth in the time before the Civil War, before the founding of the Grand Harmony. The chill began to eat its way through his heavy brown uniform jacket; he pushed one hand into his pocket, using the other to push himself along the wall. He was a short man, barely 1.9 meters, and stocky, for a Belter. There was a quality of inevitability about

him, and there had been a time when he had endured the cold better than most. But he was a career navy man, and he had spent most of his adult life on ships in space, where adequate heat was the least of their problems. But for the past sixty megaseconds since his promotion he had been an administrator, and learned that the only special privilege granted to an administrator was the privilege of managing a double work load.

He passed through large open chambers filled with government workers, into more hallways identical to the ones he had just left, into more chambers—as always experiencing the feeling that he was actually traveling in circles. Unconsciously he chose a route that took him through the computing center, guided by past habit while he considered the future. The past and the present surprised him as he became aware of his surroundings: of the crowded rows of young faces intent on calculation, or gazing up at his passage.

He looked toward the far corner of the chamber, almost expecting to find his own face still bent over a slate of scribbled figures. He had worked in this room, 1200-odd megaseconds ago, starting his career while still a boy as a computer fourth class. A computer in the oldest sense, because the sophisticated machinery that had borne the Discans' burden of endless computations had been lost during the Civil War. After the war, the Grand Harmony had learned the hard way that it would never survive without

precise data about the constantly changing interrelationships of the major planetoids. And so they had fallen back on human computation, using the inefficient and plentiful to replace the efficient but nonexistent, as they had had to do so many times.

A bright child could learn to do the simpler calculations, and so bright children were used, freeing stronger backs for heavier labor. Raul remembered sitting squeezed onto a bench with another boy and a girl, huddled together for warmth. His nose had dripped and his lips were chapped, and he had stared enviously at the back of his half-brother Djem, who was 150 megasecs older and a computer second class. The higher your rank, the closer you sat to the stove in the center of the room. . . . By the time Djem made first class Raul had joined him, and been rewarded with warmth and one of the few hand calculators that still worked.

Their common grandfather had proved Riemann's Conjecture, and become the best-known mathematician—and perhaps the best-known human being—to come from the Heaven Belt; but then the war had come, and made him only one more refugee. He had been on vacation in the Discan rings when the war began, and his loyalties had been suspect. But his mathematical skill had been undeniable—and now, two generations later, the residue of his genius had put his grandsons on the path to success in a new regime.

“Only through obedience do we

earn the right to command . . .” Raul left the computer room, and his youth, behind; the universally colorless moral admonitions from the inescapable wall speakers crept back into his consciousness along with the cold. He wondered how long it would be before the news of the alien starship worked its way into the communal broadcasts, between the Thoughts from the Heart and the lectures on Demarchy decadence—and what form it would take when it did. He did not object to the constant intrusion into his life. He was used to it, it was as much a part of the life he knew as the cold. He realized that it served a purpose, distracting the people from the cold and the endless dreary labor of their daily lives, reinforcing their sense of unity and dedication to the group.

But if he felt no resentment toward the broadcasts, neither did he take them seriously, any more. He had realized long ago that they were just as much propaganda as the Demarchy's own lurid displays of unharmonious advertising. . . . The Demarchy, that still lived in warmth and comfort—thanks to the distilleries of the Grand Harmony—but which kept the people of the Grand Harmony from sharing that comfort. It refused to sell them the atomic fission batteries that were still the Demarchy's major source of power, for heat, for light, for shipping, for the few factories that still operated. No existing factories operated at more than one percent efficiency in the Grand Harmony—except for the distilleries—and vir-

tually their only source of heat and light came from the inefficient burning of methane (because the Rings had a surplus of volatiles, but that was all they had).

Raul pushed the thought out of his mind, as he pushed aside the more painful truth that his people, all the people in Heaven Belt, were doomed. Regret was useless. Hatred was counterproductive. Raul faced the truth, and faced it down. He saw the road ahead clearly, saw it grow steeper and more difficult until at last it became impossible. But he moved ahead, one step at a time, strengthened by the knowledge that he had done all that was humanly possible.

There had been a time when he had absorbed every word of the broadcasts, and believed every word. He had hated the Demarchy then, with the blind passion of youth; and because he was young and competent and expendible, he had been sent on a mission of sabotage into Demarchy space. And he had failed in his mission. But to his intense humiliation, the perversity of the Demarchy's media-ruled mobocracy had transformed him into a popular hero, taking his impassioned last enunciation of their own aggression to heart . . . and the Demarchy had sent him home, a shame-faced messenger of good will, to open negotiations for the construction of a distillery that would benefit both the Demarchy and the Grand Harmony.

But relations between the Harmony and the Demarchists had never im-

proved past that one act of cooperation, the real purpose of which lay in their shared needs: Independent Demarchy corporations still violated Discan space, and only their overall economic weakness kept them from outright seizure of the Harmony's vital resources. The Grand Harmony still denounced the Demarchy, and blamed it for their own marginal existence.

But because of his experience in the Demarchy, the conviction that good and evil were as easily marked as black and white, that every question had a simple answer, had been lost to him forever. And as he came to see that the Demarchy was not totally evil, he had realized that it was not totally to blame for the Harmony's precarious survival, either. He had come to see the greater, totally amoral and totally inevitable fate that drew the Grand Harmony, and the Demarchy as well, down the road of no return.

And when he had seen that there was no turning back, no turning aside, he had transferred from Defense to the Merchant Marine; to serve where he believed he could function most effectively, and make the Harmony's passage down that road as easy for them as possible.

Raul reached the hub of the government complex at last, felt the eddies of cold draft catch him as he moved out into the suddenness of open space. Overhead the ceiling was dark and amorphous, but he knew that its vault was a surface of clear plastic, not solid

stone. Once it had opened on the stars, and the magnificence of Discus—when the Rings of Discus had been the water-well for the entire Heaven Belt. But now the clear dome was blocked beneath an insulating pack of snow; the dome had become too great a source of heat loss.

He made his way across the multiple trajectories of other drifting government workers, most of them Navy men like himself; he returned their raised-hand salutes automatically, his mind reaching ahead of him into the restricted meeting room where his fellow Hands sat in a private conference with the Heart.

Raul settled quietly into his seat, waiting for the meeting to be called to order. He sat at the end of the long table farthest from the position of the Heart, as the newest officer to achieve the rank of Hand. He nodded to Lobachevsky on his right, looked past, identifying the faces of officers and advisors down the table. He noted without surprise that they had split into opposing factions, as usual—the defense faction on one side, the trade faction on the other. He had settled with the trade faction, as usual. Seeing the bare, shining tabletop as a kind of no-man's-land between them, he smiled faintly.

A single word silenced the muttered speculation; Raul turned his attention to the head of the table, rose with the rest, acknowledging the arrival of the Heart—the triumvirate that controlled power's ebb and flow in the Grand Harmony. Chatichai, Khura-

ma, and Gulamhusein: like a many-faceted Hindu deity, indistinguishable from one another, or from their staff, in the drab sameness of their bulky clothing . . . but unmistakably set apart by an indefinable self-satisfaction—and the unharmonious ambition that had taken them to the top, and made them struggle to stay there. Raul knew the kinds of stress that worked on them, and was grateful that he had already risen above the level of his own ambitions.

The three men at the head of the long table settled slowly onto the seat, a sign for the officers to do the same.

"I assume you all read the communications that brought you here—" Chatichai spoke, taking the initiative as usual, "—and so I assume that you all know that fifty kiloseconds ago our Navy encountered a ship like nothin' that exists anywhere in this system . . ." He paused, looking down; Raul recognized a tape recorder on the table before him. "This is a report from Captain Smith, who was in charge of the patrol fleet that encountered the craft—" He pressed a button.

Raul drifted against the table, listening, and watching expressions change along the table's length. They had taken the intruder for a Demarchy fusion ship violating Discan space, at first. Then, as they began to close and a woman's voice answered their challenge, they realized that what they had come upon was something totally unexpected. The ship had broken away from them, accelerating

at an impossible sustained ten meters per second squared; it had destroyed one of their own closing craft almost casually, with nothing more than the deadly effluence of its exhaust. But they had fired on the escaping ship, and they had recorded a small, expanding cloud of debris. . . .

An undercurrent of irritation and excitement spread along the table. "Why the hell didn't Smith give that woman port coordinates, when she asked for 'em?" Lobachevsky muttered beside him. "Damn sight more reasonable than tryin' to take the ship by force. Losin' a ship—serves him right." He glared across no-man's-land at the opposition. Raul kept his own face expressionless.

Chatichai raised his eyes, and his voice. "The question before us now, gentlemen, is not whether Captain Smith acted in the best interests of the Grand Harmony—but what further action should be taken concernin' that ship. I don't think anybody here will disagree that the ship had to come from outside the system—" He paused; no one did. "And I don't think we have to detail for anybody here what a ship like that could mean to our economy . . . or to the Demarchy's, if they get hold of it instead." Another pause. "But is it feasible, or even possible, for us to get our hands on that ship? And in any case, what action should be taken to ensure that it doesn't fall into the Demarchy's hands instead?"

Raul studied the dull sheen of the table's scarred plastic surface, seeing

beyond it as he listened with half-attention to the debate progressing along the table's length: The ship was damaged . . . the ship could still outrun anything that Heaven Belt could send after it. The ship might seek out the Demarchy because of the attack . . . there was no reason to believe its crew would trust anyone in the Belt, now. The ship was the answer to the Harmony's survival . . . the ship was a phantom, and pursuing it would only waste more resources they couldn't afford to lose—

Raul glanced up, pushing his own thoughts into order. He rarely spoke out unless he had been able to consider all sides of a question; he had learned long ago that selective silence was a more effective tool than a loud voice. Since his promotion to Hand, he had used it to good effect to earn himself a reputation for getting what he wanted, for building up the efficiency of the Merchant Marine and the influence of the trade faction. Finding a lull, he broke into the discussion, "As you all know, I've been opposed to the development and support of our high delta-vee force from the beginnin' . . ." He searched the faces along the table, seeing resentment glance along the far side, feeling the gratification that spread from Lobachevsky along his own side. He had believed, along with the minority of others, that the Demarchy posed no realistic threat to the safety of the Grand Harmony, that the resources used to maintain a defense fleet would serve the Harmony's in-

terest better employed to bolster trade within the Rings, and even with the Demarchy itself. Because he understood that the status quo was deterioration, and that nothing could overthrow that order . . ." But this 's a situation I never foresaw. In this situation, I have to admit I'm glad we have a high delta-vee force available . . . and I am in favor of usin' it to pursue that ship—" Voices indignant with betrayal cut him off; he saw the hostility reform into surprise across the table. "I know it's a gamble. I know it's probably a futile one, the odds against us capturin' that ship are damned high. But they're not astronomical: the ship's damaged, we don't know how severely. It may be that they'll lie low at Lansing, if Lansing's still alive; it's worth the loss, worth the gamble, to find out. We've got this damned high delta-vee force whether we want it or not—let's put it to some rational use! . . . If we know this much about the starship, you can count on the Demarchy knowin' just as much—and bein' just as interested. I don't believe they're any threat without that ship; but if we don't get the ship, and they do, anything we do is goin' to be academic from then on.

"I propose that the closest available high delta-vee force be readied as soon as possible, to pursue the starship toward Lansing. And I request that I be given command. . . ."

The acrimony of the final debate faded from his mind as acceleration's false gravity abruptly ceased, leaving

his body free in a sudden release from tension. He had won, in the end, because there was no one in the room who could question his sincerity, or his determination to achieve whatever goal he set himself. And so these ships would continue in a drifting fall toward Lansing. And if the life support systems held out, they would find—something; or nothing. The cards had been laid down; the Grand Harmony had gambled on its last chance.

Ranger (Demarchy Space)

+ 553 Kiloseconds

"No, that won't work either. They could see this isn't a prewar ship." Bird Alyn shook her head; her hair, caught into two stubby pony tails, stood out from her head like sea-foam.

"Then there's nothing more I can suggest, offhand—" Betha glanced from face to face, questioning. Clewell sat firmly belted into a seat; Bird Alyn and Shadow Jack sprawled in the air, totally secure in the absence of gravity. The five-day journey along sixty degrees of Discus's orbit had transformed them, superficially: Their skin and hair were shining clean, their long, gangly bodies forced into dungarees and soft pullover shirts. But the start of one-gee acceleration had left them crushed on the floor like reedflies, and they still winced with the stiffness of wrenched muscles, and the memory. And there were other memories, that shone darkly in their hungry eyes and quick, nervous words; memories out of a past

that Betha was afraid to imagine, and glad she would never know.

"I still say you should leave the Demarchy alone." Shadow Jack stuck out a thin bronze foot, stroked Rusty gingerly as she drifted past. "We should've gone for the Rings, it's a lot safer to steal it from them. If you ask me—"

"I wasn't asking—that." Betha smiled faintly. "I want to trade, not steal. . . . I already know how 'safe' it is in the rings of Discus, Shadow Jack."

"But the Demarchy's worse. They've got a higher technology."

"How much higher? You don't really know. And they aren't looking for us, either. With your ship to ferry us in, we can slip in an' out of a distillery before they even think about it. But—what do we trade for hydrogen?" She repeated the inventory again in her mind, struggling with the knowledge that only Eric would know what was right, what to offer, what to say. Only Eric had been trained to know. . . . *Oh, Eric—*

Shadow Jack frowned, pulling at his toes. Bird Alyn caught Rusty, set her spinning slowly head over paws in the air. Rusty caught her own tail and began to wash it. Bird Alyn laughed, inaudible.

"The cat," Shadow Jack said. "We could give them the cat!"

"What?" Clewell straightened indignantly.

"Sure. Nobody's got a cat anymore. But nobody in the Demarchy could know we didn't; Lansing had a

lot of animals, once. And it's just what the Demarchists go for: somethin' really rare. The owner of a distillery, he'd probably give you half his stock to own Rusty."

"That's ridiculous," Clewell said.

"No . . . maybe it's not, Pappy." Betha spread her hands, and Rusty pushed off toward her. "I think he's got a point. Rusty, would you like to live like a queen?" She gathered Rusty into her arms, gathered in the precious memories of her children's faces, as they handed her the gifts of love. She felt her throat tighten against more words, wondering what payment would be demanded next of them; knowing that whatever the emotional price was, they must pay it, if it would buy this ship's passage home to Morningside. She saw sharp sorrow on Bird Alyn's face; saw Bird Alyn struggle to hide it, as she hid her own. "Besides . . . we haven't been able to think of anything else that wouldn't give us away. Any equipment we tried to trade would be obvious as coming from outside the system. We'll be taking enough of a risk as it is."

"I know." Clewell looked down. "You're the captain."

"Yes, I am." Betha pulled herself down to the control panel, tired of arguing, tired of postponing the inevitable. There was no choice; there was only one thing that mattered—saving this ship—and she must never forget it. . . . She watched the latest surveillance readouts, not seeing them. The *Ranger* was well within Demar-

chy space now. They had detected dozens of asteroids and heavy radio traffic. They had identified Mecca, the largest distillery, eight million kilometers away, with a closing velocity of ten kilometers per second—only hours of flight time for the *Ranger*. But it would take the *Lansing 04* two weeks, decelerating every meter of the way, to close the distance-and-velocity gap between them and Mecca. Her stomach tightened at the prospect; the extra shielding they had put on board the Lansing ship cut the radiation levels to one sixth of what they had been, but the readings were still too high. And yet if the *Ranger* came any closer to an inhabited area, the risk of detection would be too great.

The road to Morning
Is cut from mourning,
And paved with broken
dreams . . .

"I'm going to Mecca, Pappy," she said at last. "I'm going to get us our ticket home."

Clewell sat firmly in his seat as Bird Alyn floated free above his head. They watched together while the *Lansing 04*, a battered tin can with a reactor tied to its tail, fell away into the bottomless night. He looked back from the darkness to Bird Alyn's face, her own dark eyes still fixed on the screen. "I'm glad you're here. There's too much—emptiness on this ship, alone."

She blinked self-consciously, her arms moving like birdwings as she

Clewell Welkin



turned toward him in the air. Her eyes rarely met his, or anyone's; as if she was afraid of seeing her own image reflected there. "I wish—I wish she hadn't taken Rusty."

He had to strain to hear her, wondered again if he was getting a little deaf. "So do I. She did what she thought was best. . . . And you wish she hadn't taken Shadow Jack."

She still looked down; her head twitched slightly.

"She did what she thought was best." He thought of Eric, who had been trained to know what was best; remembered Betha's anguished doubt, in the private darkness of their room. "She means everything to me, too."

Bird Alyn looked up at him at last. "Are—are you Betha's father?"

He laughed. "No, child, I'm her husband. One of her husbands."

"Her—husband?" He almost thought he could see her blush. "One of her husbands? How many does she have. . . ?"

"There were seven of us, three women and four men." He smiled. "I take it that's not so common here."

"No." Almost a protest. "Are . . . the rest of them back on your—planet?"

"They were the crew of the *Ranger*."

She jerked suddenly. "Then—they're all dead, now."

"Yes, All. . . ." He stopped, forcing his mind away from the empty room on the next level below, where a gaping wound opened on the stars.

Deliberately he looked back at Bird Alyn, saw her embarrassment. "It's possible to be in love with more than one person, you know."

"I always thought that meant somebody had to be unhappy."

He shook his head, smiling, wondering what strange beliefs must be a part of the Lansing culture. And he wondered how those beliefs could survive, when a people were struggling for their own survival.

On Morningside the first colonists had struggled to survive, expatriates and exiles fleeing an Earth where the political world had turned upside down. They had arrived in a Promised Land that they discovered, too late, was not the haven they were promised—discovering at last the lyrical irony in the name Morningside: Tidally locked with its red dwarf star, Morningside turned one face forever toward the bloody sun, held one side forever frozen into night. Between the subsolar desert and the darkside ice lay a bleak ring of marginally habitable land, the Wedding Band . . . until death did them part. The fear of death, the need to enlarge a small and suddenly vulnerable population, had broken down the rigid customs of their European and North American past. They were no longer the people they had once been, and now, looking back across two hundred years of multiple marriage and the freedom-in-security of extended family kinship, few Morningsiders saw reason in their own past, or any reason to change back again.

Bird Alyn folded her arms, hiding her misshapen hand. And Clewell realized that perhaps the people of Lansing had had no choice in their customs either. If the radiation levels were as high as those on the *Lansing 04*, even one percent as high, then the threat of genetic damage could force them into breeding customs that seemed strange or even suicidal anywhere else. The whole of Heaven Belt was a trap and a betrayal in a way that Morningside had never been: Because Heaven had promised a life of ease and beauty in return for a high technology, but it damned human weakness without pity.

Clewell was silent with the realization that whatever Morningside lacked in comfort, it made up for in a grudging constancy, and that even beauty became meaningless, without that. . . .

"How did you and Shadow Jack end up out here?"

She shrugged, a tiny waver of her weightless body. "I can work the computer; my parents programmed the recon unit. And Shadow Jack wanted to be a pilot, and do something to help Lansing; he won a lottery."

"Your parents let you go, instead of going themselves?" He saw Betha suddenly, in his mind: a gangly, earnest teenage girl, helping him take the measure of the immeasurable universe . . . saw his own children, waiting for him across that universal sea. He covered a sudden anger against whoever had sent their half-grown daughter out in a contaminated ship

before they would go themselves.

Bird Alyn looked down at her crippled hand. "Well, you can only go if you work outside . . ."

"Outside?"

"Lansing's a tent world . . . we have surface gardens, an' a plastic tent to keep in an atmosphere." She ran her hand through her hair, her mouth twitching. "You work outside if you can't have children." For a moment her eyes touched him, envious, almost accusing; she turned back to the viewscreen, looking out over isolation, withdrawing into herself. "I think I'll take a shower."

He laughed carefully. "If you take too many showers, girl, you'll wrinkle up for good."

"Maybe it would help . . ." Not smiling, she pushed off from the panel.

He looked out at the barren night, where all their hopes lay, and where all the dreams of their separate worlds lay ruined. Pain caught in his chest, and made him afraid. *Help me, God, I'm an old man. Don't let me be too old. . . .* He pressed his hands against the pain, heard the sprayer go on and Bird Alyn's voice rise like warbling birdsong, beginning a Morningside lullaby:

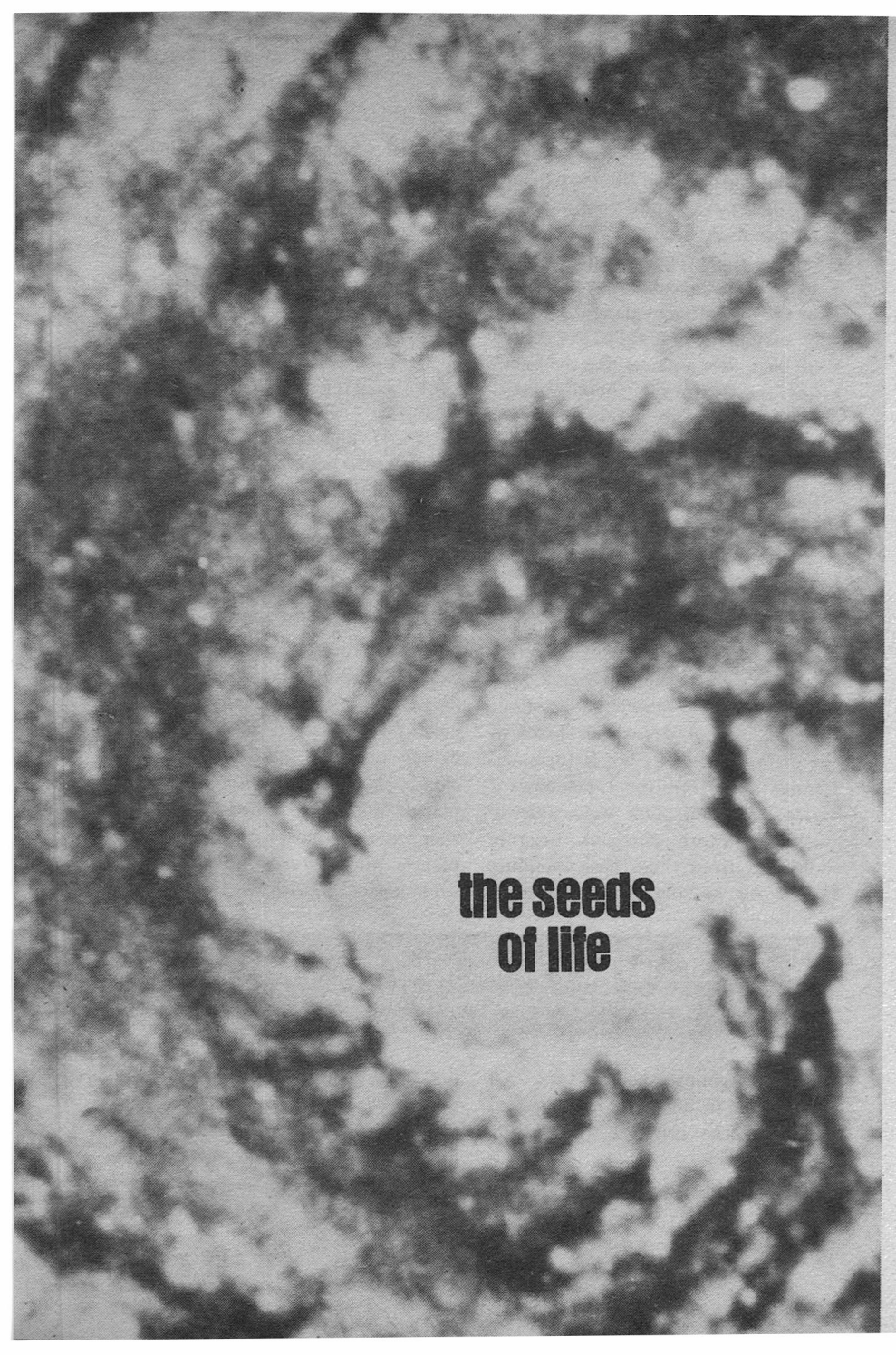
"There's never joy but leads
to sorrow,

Never sorrow without joy.

Yesterday becomes tomorrow;

I can't stop it, little boy . . ."

[TO BE CONTINUED]

A black and white photograph showing a close-up of a large, light-colored, roughly spherical seed or fruit. The seed is positioned in the lower right quadrant of the frame. The background is a dark, highly textured surface, possibly soil or a rock face, with intricate patterns of light and shadow. The overall composition is abstract and emphasizes the organic form of the seed against the rugged terrain.

**the seeds
of life**

In astronomical circles, the "classic" theory of the origin of life (any theory which holds sway in astronomy for a decade or more becomes a classic) has long seen this crucial development as something that occurred, by and large, after the formation of planets. Reasonably enough, at first sight, the theory holds that after a planet like the Earth forms, the mixture of chemical compounds stewing up in the planetary oceans and atmosphere, energized by the sparking of lightning from thunderstorms, eventually builds complex organic molecules, including those which can reproduce themselves—the precursors of life as we know it. We know what kind of compounds must have been around in large quantities in the primeval atmosphere of our planet—mainly methane, ammonia, and other "reducing" compounds, rather like the present day atmospheres of the giant planets Jupiter, Saturn, and Uranus—and from the 1950s onward various experimenters were able to build up more complex organic molecules from these basic building blocks by passing sparks through

occurred which bypass this standard theory almost entirely. Radio astronomers using microwave techniques have found a whole slew of complex molecules in cool clouds of gas and dust *between* the stars. At the latest count, more than two dozen such molecules are known—it might be thirty by the time you read this—including such exotica as formaldehyde (CH_2O), H_2CNH , HCCCN , H_3CCOH , and others. So, while the theorists still believe that a mixture of water, methane, and ammonia, activated by lightning, *could* produce a buildup of ever more complex molecules until precursors of life emerge from the primordial soup, there is no longer any need to invoke this slow, laborious process. Molecules only one step away from amino acids—the fundamental constituent of the 'life molecule' DNA—are already present in clouds between the stars. If these clouds play a part in the formation of planets and solar systems, then the rich organic atmospheres of the early planets must already be laced with such molecules, with life already wait-

**Spiral galaxies such as our Milky Way may be
"ideal engines for producing intelligent life!"**

flasks containing the mixture. All this helped to establish the standard theory of the origin of life in its classic form.

But through the late 1960s and up to the present day developments have

ing in the wings to be called upon to play its part on the planetary stage.

During 1977, a combination of new observations of even more complex molecules in space, plus a new theory of how life molecules could form

between the stars, combined to provide the biggest boost yet to this new version of the origin of life, taking it for the first time ahead of the classic theory as the best understanding we have yet developed of where, ultimately, we came from.

The observations were made by a joint Anglo-Canadian team, using Canadian radio telescopes and detectors developed by the University of Sussex in England, and revealed the presence of cyanotriacetylene [H-C-C-C-C-C-C-C-N], the biggest organic chemical molecule yet found in a dust cloud in space, in a cloud near the constellation Taurus. This large organic molecule requires only slight modification to produce one of the amino acids from which, in turn, proteins, nucleic acids, and genes are composed. The theory comes from the prolific Sir Fred Hoyle, working with his longtime colleague Professor Chandra Wickramasinghe to explain how such complex molecules may have formed in the seemingly harsh conditions in interstellar space.

There's a nice touch of irony here,

by JOHN GRIBBIN

as anyone who has read Hoyle's science fiction novel *The Black Cloud* will appreciate. That novel was first published just 20 years ago, in 1957, and concerned the effects on the Earth and humanity of the arrival of a living,

intelligent cloud from space in the Solar System! Hoyle's scientific theorizing, twenty years on, hasn't yet quite caught up with his science fiction imaginings of two decades ago—but he is getting close.

In the 1977 science fact version of the story we start from the assumption that grains of dust in clouds in interstellar space—mainly carbon grains, perhaps with icy coatings—stick together in clumps about 100 Ångstroms across. There is more than just theory and supposition to go on here, since grains made up of clumps of this kind have been identified in meteorites—those same meteorites that have also been found to contain organic molecules. These tiny dust grains must provide an almost ideal surface for the slow buildup of complex molecules. Once one atom comes along and sticks to the surface, it is held in place so that other atoms which collide with the same grain can also stick, combining with it to form a molecule; eventually, the molecule may be liberated to wander in the dust cloud when a cosmic ray strikes the grain with sufficient force. And then, of course, relatively simple molecules are able to get together to build up the more complicated seeds of life.

Even if all this went on entirely at random, it would still be sufficient to start the climb up the ladder of life even before planets form from the cloud. But Hoyle and Wickramasinghe go farther. They point out, in an article published in the science journal *Nature* in March 1977 (vol.

266 p. 241), that these prebiotic molecules would be susceptible to disruption, for example by ultraviolet light reaching them from nearby stars; in addition, a form of natural selection would operate in favor of the molecules that were best suited to “stick” to carbon grains. The first problem might be overcome by the buildup of some kind of protective barrier, akin to a cell wall, so that, in their own words,

There seem to be two somewhat different types of selective process which could be operative under interstellar conditions. First, a competition for clump growth in the absence of disruptive agencies, for example, within a prestellar cloud; and second, a competition for organic molecules (or even for sticking) in a more hostile environment in the presence of disruptive agencies. With the development of a cell wall, the last step could presumably be to 'split out' the inorganic grains which started off the whole process.

So we would be left with a little bag of organic material inside its own protective cell wall, with the original grain ejected and free to catalyze the growth of the next life seed. The questions this theory raises are twofold: must the molecules formed in this way always be carbon based—precursors of life like that on Earth; and how do the molecules get from interstellar space down into the oceans and atmosphere of a young planet?

The first question seems now almost certain to be answered in the affirma-

tive. Formaldehyde, for example, has even been found in other galaxies by its characteristic microwave radio spectrum, and all the complex molecules found in our own Galaxy seem to be carbon based. The importance of carbon in these molecules is probably due to two effects. First, it bonds very strongly to other atoms, so molecules containing carbon are less likely than others to be knocked apart by cosmic rays once they do form. Secondly, because carbon has four “active bonds”—it can bond with as many as four other atoms at a time—it is able to build up many families of molecules based on groupings like CN, CS, CC, and CO. In the phraseology of Hoyle and Narlikar, carbon based molecules are simply stickier than others.

And, as for the ultimate fate of these cool clouds, rich in organic molecules, that we now know are scattered through the Galaxy—and other galaxies—there is also very little room for doubt. Cold clouds of dust and gas in space are relatively short-lived, on the scale of a galaxy’s history, and sooner rather than later they collapse, or get squeezed down, to form stars and planets.

Once again, this is an idea that has been around in a vague form for decades, but has been dramatically updated and improved in the past couple of years. This time, the impetus has come from the Grand Old Man of British astronomy, Professor Bill McCrea, who after several years of official retirement has come up with a

theory that covers the origin of planets and solar systems, the occurrence of Ice Ages, and the development of life on Earth (and elsewhere). Not bad for a septuagenarian. Some of these ideas were outlined briefly in connection with the puzzle of the solar neutrinos in an earlier article in *Analog* ("Is the Sun a Normal Star?", February 1977); now we can see how they apply in more general terms.

Our own Galaxy is a spiral, rather like M51 pictured here, but without the small companion. Like all spirals, the characteristic pattern of stars in our Galaxy marks out two bright "arms", twisting out from the galactic center and edged by dark clouds of dust and gas—just those dark clouds in which we now believe the seeds of life originate. Depending on your point of view, you can either imagine this spiral pattern sweeping around each galaxy and passing individual stars, like a wave passing across the sea and past individual water molecules, or you can treat the wave as a stationary, standing shock through which all the stars, solar systems, gas and dust of the disc of the galaxy must move as it orbits around the center of the galaxy. Either way, the result is the same, and I shall choose the second picture since I find it simplest to follow. The reason why we see bright spiral arms edged by dark clouds now becomes clear. As the material moving around the disc reaches the position of the shock wave, it becomes squeezed and compressed, building up as a dark spiral

lane like flotsam swept along by an ocean wave. Once through the shock, if it has not been squeezed too much, the dark material can continue on its way, as a slightly more compact cloud, until it meets the next spiral arm, halfway around the galaxy. After a few of these regular encounters, each squeezing the cloud ever smaller, the inevitable happens. Gravity takes over and the cloud collapses, breaking up to form a star (or stars) and planets.

Now, freshly formed young stars are particularly hot and bright—and the place where they congregate, on McCrea's model, is just "downstream" of the dark compression lines—right where we do see bright spiral arms marking out the characteristic structure of a spiral galaxy. Individual solar systems formed from the same compressed cloud will soon spread out from one another as they continue orbiting their parent galaxy, and the hot young stars will soon cool off from their initial blaze of glory. All these timescales are, of course, compared with a galaxy's life; it takes our Solar System two or three hundred million years to orbit the Galaxy once, so that spiral arms are encountered at about 100 million year intervals, and the time taken to cross a spiral arm is about 10 million years—long enough by human standards.

It's far from being the least intriguing aspect of these ideas that our Solar System is today just on the edge of a major spiral arm of our Galaxy, the Orion Arm, having just crossed

the associated compression lane. Our present family of comets, says McCrea, may be debris from that crossing, picked up en route and destined to be lost again in a few million years. And the possibility of all that dust disturbing the Sun's natural balance—again for a few million years—is now seen as one resolution of the dilemma resulting from various tests that suggest that our Sun may not be,

Dynamic structure of a spiral galaxy: (1) bright young stars are concentrated in spiral arms, just past compression zone; (2) dark compression zone, where spiral shock wave stands; (3) galactic nucleus, rich with old red giant stars; (4) orbit of a typical gas cloud near the nucleus; (5) orbit of a gas cloud out among the spiral arms; (6) fainter background of older stars. Gas clouds orbiting through the spiral arms are squeezed as they pass through the shock wave compression zones, eventually forming stars and—probably—planets. (Photograph from the Mt. Wilson and Mt. Palomar Observatories)

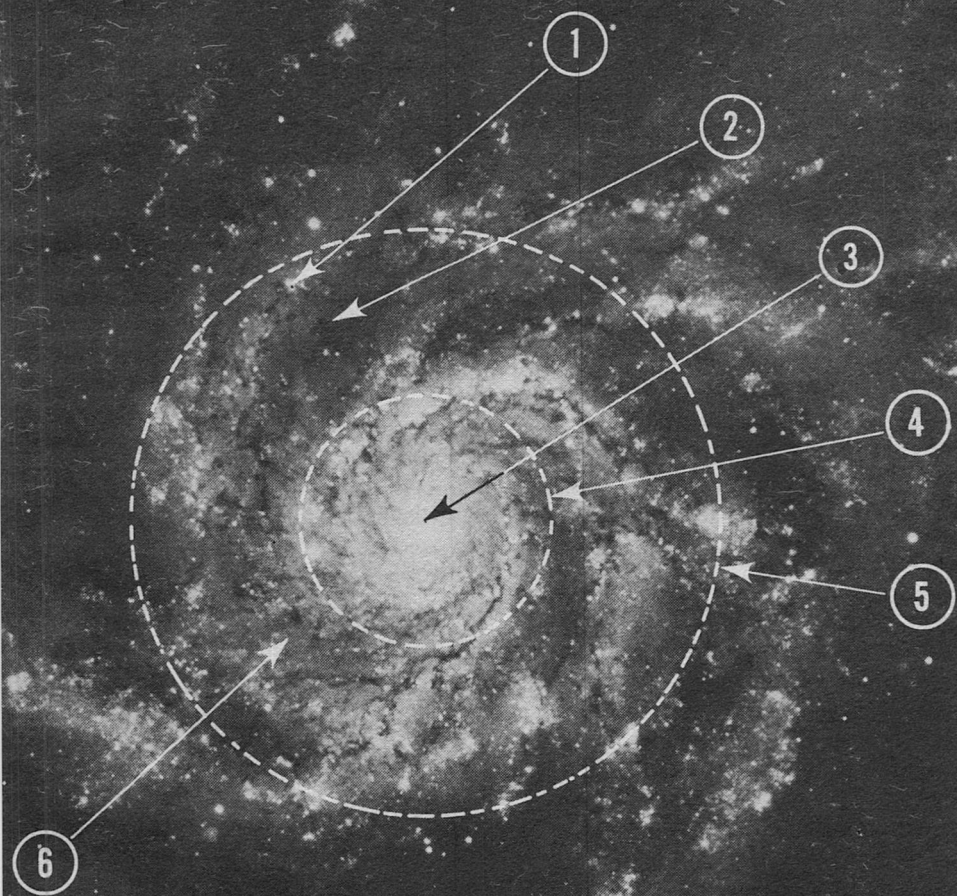
by galactic standards, a “normal” star just now.

One aspect of this abnormality, so the argument runs, is the recent spate of Ice Ages which have hit our planet over the past ten million years or so. A cold climate, beset by erratic Ice Ages, may have been instrumental in producing conditions which favored the development of versatile, adaptable lifeforms with the intelligence to cope with changing conditions. There certainly is some evidence that biolog-

ical catastrophes, in which the ecology of our planet is overturned and rebuilt in a new pattern, recur on about the same timescale as the interval between crossings of spiral arm compression lanes; and if you don't like the Ice Age link then McCrea put forward a new version of the theory in 1977, linking the position of the Solar System in its long orbit around the Galaxy with the occurrence of catastrophic supernova explosions in nearby stars.

In this refinement of the theory, McCrea points out that a star with a mass of ten Suns or more would evolve very rapidly, within ten million years or so, and explode as a supernova just downstream of the compression shock. In other words, the region from the dark dust lane to the bright spiral arm would be a supernova danger zone, with many such explosions occurring there compared with the rest of the Galaxy. What the effects of a nearby supernova would be for life on Earth are still speculative (for a good piece of speculation along these lines see Poul Anderson's story “Supernova” in the January 1967 *Analog*), but a stripping away of the ozone layer, letting through floods of ultraviolet radiation from the Sun to damage surface dwelling life forms seems likely to be the least of the resulting problems.

The pieces hang together nicely. The seeds of life form in cold clouds between the stars, clouds which are then squeezed into a state of collapse by the spiral blast wave and form solar



systems. With planets now available to them, the seeds can develop and proliferate, building up ever more complex forms of life (although all based on the basic carbon chemistry) but suffering repeated setbacks through repeated encounters with the spiral blast wave. This addition to the life pattern produces conditions favoring adaptability and, ultimately, ingenuity—so that a spiral galaxy is now seen as an almost ideal engine for producing intelligent life as we know it. Hoyle's intelligent Black Cloud is now seen as less likely than planet based life, since it is the fate of such clouds to be squeezed down after a lifetime much less than the lifetime of a planet. Overall, this is, perhaps, the most optimistic scenario yet for the prospects of finding intelligent life in space—with some provisos about just where that life might be.

The first proviso has been clear for some time, but can now be updated. The oldest, "first generation" stars in our own and other galaxies cannot possess inhabited planets. The first stars forming in a young galaxy contain only hydrogen and helium; only after some stars have evolved, built up heavy elements by nuclear fusion and scattered them into space in stellar explosions will there be any heavy elements around, including carbon as a basis for life and metals which might provide the tools for developing intelligence. Indeed, we can go further—the oldest stars cannot even possess planets. Much of this argument was summed up succinctly by Ben Bova in

his article "Galactic Geopolitics" in the January 1972 Analog; but you might be surprised to learn that many professional astronomers can still be surprised by the argument in their turn. Now, with the intimate link between spiral structure and the formation of planetary systems becoming clear, we can take things a stage farther by forecasting that life—intelligent life—can only develop on planets circling in the disc of spiral galaxies. On this picture outlined here, the other kind of galaxy, the ellipticals with their regular shape and no spiral structure, must be devoid of planets and therefore of life-as-we-know-it (but *there*, perhaps, is the ideal place for a Black Cloud to develop from the debris of old stellar explosions, building up a complex molecular structure free from the buffeting of any spiral shock pattern, until one day intelligence and self-awareness is triggered . . .).

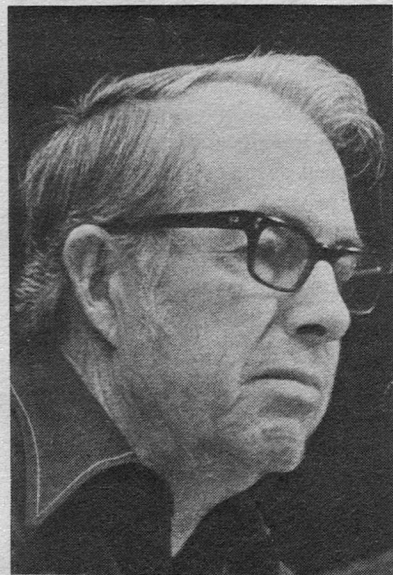
What kind of planets should we look for, and what kind of life? Basically, there is no reason to expect our Solar System to be anything out of the ordinary, and we probably have a representative collection of the two kinds of planet likely to be found orbiting Sol type stars—the inner, rocky planets (terrestrials) and the outer gas giants. Don't jump to any conclusions from this, though. Of those two choices, the most likely place for the seeds of life to get a grip would seem to be where they have an abundant supply of organic molecules, plus a reasonable amount of light and heat.

BIOLOG

● Jack Williamson

Many of *Analog's* authors are remarkable people, and none more so than John Stewart Williamson, born 70 years ago in a poverty stricken farming area of the southwest, who discovered his way out through science fiction, first as a reader, then as a writer. Thinking an extensive academic background irrelevant or even inimical to science fiction writing, he left a Texas teachers college after two years. His first sale to *Analog* (*Astounding Stories* then) came shortly after, appearing in the March, 1931 issue.

The remarkable part is not the beginning itself, but the continuation over the next half century. He kept pace with the rise in levels of story and character sophistication as science fiction matured from its early beginnings. After



most of the writers of the '20s dropped out, Jack reached a pinnacle of fame and popularity with the *Legion of Space* in the April, 1934 issue. In the July, 1942 issue he became a "new" major discovery as *Will Stewart* with the first of a series of antimatter stories. Five years later *With Folded Hands . . .* led to the immensely popular *The Humanoids*.

For his early successes, he received the *First Fandom Hall of Fame Award* in 1968. Fellow science fiction writers recognized his all-time status with a *Grand Master Nebula* in 1976. And his continuing popularity as a contemporary great was confirmed at last year's world science fiction convention in Miami as *Guest of Honor*.

After several years during WWII as an air force weather forecaster, he went back to school intending to improve his grasp of science. Receiving a BA and MA from Eastern New Mexico University, he went for a PhD in English Literature at the University of Colorado. He taught in Eastern New Mexico's English department from 1960 until a year ago, retiring as a full professor.

Not the least remarkable of Jack's many successes is discovering and marrying his high school sweetheart after a separation of twenty years. Now headed toward three million words of published science fiction, Jack has a new novel under way to be called *Brother to Demons, Brother to Gods*. And after this, a *Humanoids* sequel.

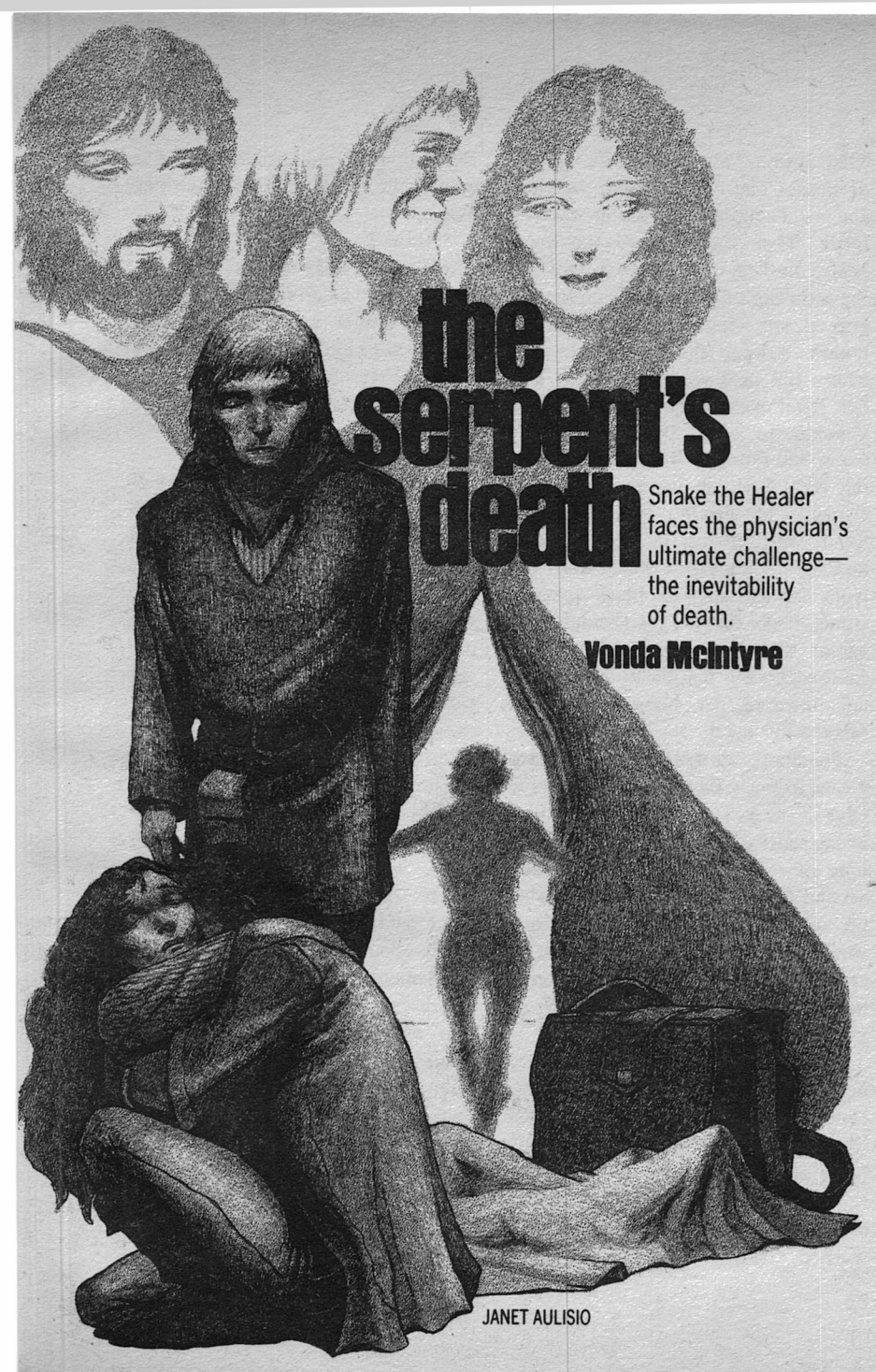
by Jay Kay Klein

In the whole Solar System, those conditions are best met in the upper atmosphere of Jupiter, rich in methane and ammonia, warmed from within by the internal heat of the planet and lit from above by the Sun. Maybe Jupiter is a little weak on sunlight, but in all other respects it is certainly the most likely site for life of some form elsewhere in the Solar System—far better than either Mars or Venus. The kind of life we might find there would be adapted to a dense atmosphere—floating life more like that in our oceans than on the Earth's land surface (and probably more like jellyfish and seaweed than sharks and whales).

But it's further afield, beyond the Solar System, that we still have to look for other likely sites of intelligence in our Galaxy—and beyond. What the new picture of the origin of life tells us is that when we do make contact with other intelligent life forms, they may not be so different from us after all. We have seen that the process in which an interstellar gas cloud gives birth to a solar system *automatically* leads to conditions on the planets of the resulting system which are suitable, in some cases, for life to develop. We have seen that the seeds of that life are already present in the material from which planets form, and we have seen that kind of organic molecules which form the basis of life on Earth are exactly the same organic molecules as those found everywhere in clouds of dust and gas in space. Carbon is the key to

the buildup of complex molecules, for reasons which are now well understood. And that means that chemical evolution, eventually leading to biological evolution, begins on any new terrestrial planet (or in the cloud from which a planet forms) always from the same molecules and under the same conditions as those which produced the life we know on Earth. Of course, evolution can take many curious branches, as the diversity of life on Earth testifies. But it looks very much as if any life "out there" is not the kind of silicon-based, ammonia breathing BEM familiar from certain tales of science fiction, but must be very much like us, at a chemical level at least.

Amino acids, DNA, and so on are probably basic to all life in our Galaxy, which makes us brothers under the skin, however our outward forms may differ. And even our own Galaxy is unlikely to be unique in this respect. The discovery of formaldehyde in other galaxies, such as NGC253, suggests that life basically as-we-know-it, including intelligent life, may be a truly universal phenomenon. It is a curious and, to me, comforting thought that somewhere in the galaxy NGC253 there may well be carbon-based life-forms with DNA in their cells, studying the heavens with their radio telescopes, and that they may be speculating on the significance of the discovery of formaldehyde emission lines from the rather unspectacular collection of stars it pleases us to call "our" Galaxy. ■



the serpent's death

Snake the Healer
faces the physician's
ultimate challenge—
the inevitability
of death.

Vonda McIntyre

JANET AULISIO

Mist rose in a white streak against darkness. The cobra hissed, swaying, and Sand echoed her with his warning rattle. Then Snake heard the hoofbeats, muffled by the desert, and felt them through her palms. Slapping the ground, she winced and sucked in her breath. Around the double puncture where the sand viper had bitten her, her hand was black and blue from knuckles to wrist. Only the bruise's edges had faded. She cradled her aching right hand in her lap and twice slapped the ground with her left. Sand's rattling lost its frantic sound and the diamondback slid toward her from a warm shelf of black volcanic stone. Snake slapped the ground twice again. Mist, sensing the vibrations, soothed by the familiarity of the signal, lowered her body slowly and relaxed her hood.

The hoofbeats stopped. Snake heard voices from the camp farther along the edge of the oasis, a cluster of black-on-black tents obscured by an outcropping of rock. Sand wrapped himself around her forearm and Mist crawled up and across her shoulders. Grass should be coiled around her wrist or around her throat like an emerald necklace, but Grass was gone. Grass was dead.

The rider urged the horse toward her. Meager light from bioluminescent lanterns and the cloud-covered Moon glistened on droplets as the bay horse splashed through the shallows. It breathed in heavy snorts through distended nostrils. The reins had worked sweat to foam on its neck.

Firelight flickered scarlet against the gold bridle and highlighted the rider's face.

"Healer?"

She rose. "My name is Snake." Perhaps she had no right to call herself that any longer, but she would not go back to her child-name.

"I am Merideth." The rider swung down and approached, but stopped when Mist raised her head.

"She won't strike," Snake said.

Merideth came closer. "One of my partners is injured. Will you come?"

Snake had to put effort into answering without hesitation. "Yes, of course." Her fear of being asked to aid someone who was dying and of being unable to do anything to help at all was very strong. She knelt to put Mist and Sand into the leather case. They slid against her hands, their cool scales forming intricate flowing patterns on her fingertips.

"My pony's lame, I'll have to borrow a horse—" Squirrel, her tiger-pony, was corralled at the damp where Merideth had stopped a moment before. Snake did not need to worry about her pony, for Grum the caravannaire took good care of him; her grandchildren fed and brushed him royally. Grum would see to Squirrel's reshoeing if a blacksmith came while Snake was gone, and Snake thought Grum would lend her a horse.

"There's no time," Merideth said. "Those desert nags are no good for speed. My mare will carry us both."

Merideth's mare was breathing nor-

mally, despite the sweat drying on her shoulders. She stood with her head up, ears pricked, neck arched. She was, indeed, an impressive animal, of higher breeding than the caravan ponies, much taller than Snake's pony Squirrel. While the rider's clothes were plain, the horse's equipment was heavily ornamented.

Snake closed the leather case and put on the new robes and head-cloth Arevin's people had given her. She was grateful to them for the clothes, at least, for the strong delicate material was excellent protection against the heat and sand and dust.

Merideth mounted, freed the stirrup, reached for Snake's hand. But when Snake approached the horse flared her nostrils and shied at the musky smell of serpents. Beneath Merideth's gentle hands she quieted but did not calm. Snake swung up behind the saddle. The horse's muscles bunched and the mare sprang into a gallop, splashing through the water. Spray touched Snake's face and she tightened her legs against the mare's damp flanks. The horse leaped across the shore and passed between delicate summertrees, shadows and delicate fronds flicking past, until suddenly the desert opened out to the horizon.

Snake held the case in her left hand; the right could not yet grasp tightly enough. Away from the fires and the water's reflections, Snake could barely see. The black sand sucked up light and released it as heat. The mare galloped on. The intricate decorations on her bridle jingled faintly above the

crunch of hooves in sand. Her sweat soaked into Snake's pants, hot and sticky against her knees and thighs. Beyond the oasis and its protection of trees, Snake felt the sting of wind-blown sand. She let go of Merideth's waist long enough to pull the end of her head-cloth across her nose and mouth.

Soon the sand gave way to a slope of stones. The mare clambered up it, onto solid rock. Merideth held her to a walk. "It's too dangerous to run. We'd be in a crevasse before we saw it." Merideth's voice was tense with urgency.

They moved perpendicular to great cracks and fissures where molten rock had flowed and separated and cooled to basalt. Grains of sand sighed across the barren, undulating surface. The mare's iron shoes rang against it as if it were hollow. When she had to leap a chasm, the stone reverberated.

More than once Snake started to ask what had happened to Merideth's friend, but she remained silent. The plain of stone forbade conversation, forbade concentration on anything but traversing it.

And Snake was afraid to ask, afraid to know.

The case lay heavy against her leg, rocking in rhythm to the mare's long stride. Snake could feel Sand shifting inside his compartment; she hoped he would not rattle and frighten the horse again.

The lava flow did not appear on the map Snake had in her camp, which ended, to the south, at the oasis. The

trade routes avoided the lava flows, for they were hard on people and animals alike. Snake wondered if they would reach their destination before morning. Here on the black rock the heat would build rapidly.

Finally the mare's gait began to slow, despite Merideth's constant urging.

The smoothly rocking pace across the wide stone river lulled Snake half to sleep. She jerked awake when the mare slid, pulling her haunches under her, scrabbling with her hooves, throwing the riders back, then forward, as they came down the long slope of lava. Snake clutched her bag and Merideth, and clamped the horse between her knees.

The broken stone at the foot of the cliff thinned out, no longer holding them to a walk. Snake felt Merideth's legs tighten against the mare, forcing the exhausted horse into a heavy canter. They were in a deep, narrow canyon, its high walls formed by two separate tongues of lava.

Spots of light hovered against ebony: for a moment Snake thought sleepily of fireflies. Then a horse neighed from a long distance and the lights leaped into perspective: the camp's lanterns. Merideth leaned forward, speaking words of encouragement to the mare. The horse labored, struggling through the deep sand, stumbling once and throwing Snake hard against Merideth's back. Jolted, Sand rattled. The hollow space around him amplified the sound. The mare

bolted in terror. Merideth let her run, and when she finally slowed, foam dripping down her neck and blood spattering from her nostrils, Merideth forced her on.

The camp seemed to recede, miragelike. Every breath Snake took hurt her as if she were the mare. The horse floundered through deep sand like an exhausted swimmer, gasping at the height of every plunge.

They reached the tent. The mare staggered and stopped, spraddle-legged, head down. Snake slipped from her back, soaked with sweat, her own knees shaky. Merideth dismounted and led the way into the tent. The flaps were propped open, and the lanterns within suffused it with a pale blue glow.

The light inside seemed very bright. Merideth's injured friend lay near the tent wall, her face flushed and sweat-shiny, her long curly brick-red hair loose and tangled. The thin cloth covering her was stained in dark patches, but with sweat, not blood. Her companion, sitting on the floor beside her, raised his head groggily. His pleasant, ugly face was set in lines of strain, heavy eyebrows drawn together over his small dark eyes. His shaggy brown hair was tousled and matted.

Merideth knelt beside him. "How is she?"

"She finally went to sleep. She's been just the same. At least she doesn't hurt. . . ."

Merideth took the young man's hand and bent to kiss the sleeping woman lightly. She did not stir. Snake

put down the leather case and moved closer; Merideth and the young man looked at each other with blank expressions as they became aware of the exhaustion overtaking both. The young man suddenly leaned toward Merideth and they embraced silently, close and long.

Merideth straightened, drawing back with reluctance. "Healer, these are my partners, Alex," a nod toward the young man, "and Jesse."

Snake took the sleeping woman's wrist. Her pulse was light, slightly irregular. She had a deep bruise on her forehead, but neither pupil was dilated so perhaps she was lucky and had only a mild concussion. Snake pulled aside the sheet. The bruises were those of a bad fall: point of shoulder, palm of hand, hip, knee.

"You said she fell asleep—she's been fully conscious since she fell?"

"She was unconscious when we found her but she came to."

Snake nodded. There was a deep scrape down Jesse's side and a bandage on her thigh. Snake pulled the cloth away as gently as possible, but the dressing stuck with dry blood.

Jesse did not move when Snake touched the long gash in her leg, even as one shifts in sleep to avoid annoyance. She did not wake from pain. Snake stroked the bottom of her foot, with no result. The reflexes were gone.

"She fell off her horse," Alex said.

"She never falls," Merideth snapped. "The colt fell on her."

Snake sought the courage that had

seeped slowly away since Grass was killed. It seemed irretrievable. She knew how Jesse was hurt; all that remained was to find out how badly. But she did not say anything. Resting one forearm on her knee, head down, Snake felt Jesse's forehead. The tall woman was sweating coldly, still in shock.

If she has internal injuries, Snake thought, If she is dying. . . .

Jesse turned her head away, moaning softly in her sleep.

She needs whatever help you can give her, Snake thought angrily. And the longer you swim in self-pity, the more likely you are to hurt her instead.

She felt as if two completely different people, neither of them herself, were holding a dialogue in her mind. She watched and waited and was vaguely grateful when the duty-bound self won the argument over the part of her that was afraid.

"I need help to turn her over," she said.

Merideth at Jesse's shoulders and Alex at her hips, they eased her up and held her on her side, following Snake's instructions to keep from twisting her spine. A black bruise spread across the small of her back, radiating both ways from the vertebrae. Where the color was darkest, the bone was crushed.

The force of the fall had almost sheared the spine's smooth column. Snake could feel shattered chips of bone that had been pushed out into muscle.

"Let her down," Snake said, with deep, dull regret. They obeyed and waited in silence, watching her. She sat on her heels.

If Jesse dies, she thought, she will not feel much pain. If she dies, or if she lives, Grass could not have helped her.

"Healer . . . ?" Alex—he could hardly be twenty, too young to be burdened with grief, even in this harsh land. Merideth seemed ageless. Deep-tanned, dark-eyed, old, young, understanding, bitter. Snake looked at Merideth, glanced at Alex, spoke more to the older partner. "Her spine is broken."

Merideth sat back, shoulders slumped, stunned.

"But she's alive!" Alex cried. "If she's alive, how—"

"Is there any chance you're wrong?" Merideth asked. "Can you do anything?"

"I wish I could. Merideth, Alex, she's lucky to be alive. There's no chance the nerves aren't cut. The bone isn't just broken, it's crushed and twisted. I wish I could say something else, that maybe the bones would heal, maybe the nerves were whole, but I'd be lying to you."

"She's crippled."

"Yes," Snake said.

"No!" Alex grabbed her arm. "Not Jesse—I won't—"

"Hush, Alex," Merideth whispered.

"I'm sorry," Snake said. "I could have hidden this from you, but not for very long."

Merideth brushed a lock of brick-red hair from Jesse's forehead. "No, it's better to know all this at once . . . to learn to live with it."

"Jesse won't thank us for this kind of life."

"Be quiet, Alex! Would you rather the fall had killed her instead of the colt?"

"No!" Looking down at the tent floor, he said softly, "But she might. And you know it."

Merideth stared at Jesse, saying nothing at first. "You're right." Snake could see Merideth's left hand, clenched in a fist, shaking.

"Alex, would you see to my mare? We used her badly."

Alex hesitated, not, Snake thought, from reluctance to do as Merideth asked. "All right, Merry." He left them alone. Snake waited. They heard Alex's boots in the sand, then the horse's slow steps.

Jesse moved in her sleep, sighing. Merideth winced at the sound, sucked in a long breath, tried and failed to hold back the sudden deep sobs. Tears glistened in the lamplight, moving like strung diamonds. Snake slid closer and took Merideth's hand, offering comfort until the clenched fist relaxed.

"I didn't want Alex to see. . . ."

"I know," Snake said. And so did Alex, she thought. These people guard each other well. "Merideth, can Jesse bear to hear this? I hate to keep secrets, but—"

"She's strong," Merideth said. "Whatever we hid, she'd know."

"All right. I've got to wake her. She shouldn't sleep more than a few hours at a time with that head wound. And she has to be turned over every two hours or her skin will ulcerate."

"I'll wake her." Merideth leaned over Jesse and kissed her lips, held her hand, whispered her name. She took a long time to awaken, muttering and pushing Merideth's hands away.

"Can't she sleep any longer?"

"It's safer to wake her for a while."

Jesse moaned, cursed softly, and opened her eyes. For a moment she stared up at the tent, then turned her head and saw Merideth.

"Merry . . . I'm glad you're back."

Her eyes were very dark brown, almost black, strange with her red hair and high complexion. "Poor Alex—"

"I know."

Jesse saw Snake. "Healer?"

"Yes."

Jesse gazed at her calmly, and her voice was steady. "Is my back broken?"

Merideth started. Snake hesitated, but she could not evade the directness of the question even for a short time. Reluctantly, she nodded.

Jesse relaxed all at once, letting her head fall back, staring upward.

Merideth leaned down, embracing her. "Jesse, Jesse, love, it's . . ." But there were no more words, and Merideth leaned silently against Jesse's shoulder, holding her close.

Jesse looked at Snake. "I'm paralyzed. I won't heal."

"I'm sorry," Snake said. "No. I

can't see any chance."

Jesse's expression did not change; if she had hoped for reassurance, she did not reveal disappointment. "I knew it was bad when we fell," she said. "I heard bone break." She raised Merideth gently. "The colt?"

"He was dead when we found you. He broke his neck."

Jesse's voice mingled relief, regret, fear. "It was quick," she said. "For him."

The pungent odor of urine spread through the tent. Jesse smelled it and turned scarlet with shame. "I can't live like this!" she cried.

"It's all right, never mind," Merideth said, and went to get a cloth.

While Merideth and Snake cleaned her, Jesse looked away and would not speak.

Alex returned warily. "The mare's all right." But his mind was not on the mare. He looked at Jesse, who still lay with her head turned toward the wall, one arm flung across her eyes.

"Jesse knows how to pick a good horse," Merideth said, attempting cheerfulness. The tension was brittle as glass. Both partners stared at Jesse, but she did not move.

"Let her sleep," Snake said, whether Jesse was asleep or not. "She'll be hungry when she wakes up. I hope you have something she can eat."

Their frozen attention broke in relieved if slightly frantic activity. Merideth rummaged in sacks and pouches and brought out dried meat, dried fruit, a leather flask. "This is wine—can she have that?"

"She hasn't got a serious concussion," Snake said. "The wine should be all right." It might even help, she thought, unless alcohol makes her morose. "But that jerky—"

"I'll make broth," Alex said. He pulled a metal pot from a jumble of equipment, drew his knife from his belt, and began to cut a chunk of jerky into bits. Merideth poured wine over shriveled sections of fruit. The sharp sweet fragrance rose and Snake realized she was both thirsty and ravenous. The desert people seemed to skip meals without noticing, but Snake had reached the oasis either two or three days before, and she had not eaten much while sleeping off the venom reaction. It was not good manners to ask for food or water in this region, because it was worse manners not to offer. Manners hardly seemed important right now. She was shaky with hunger.

"Gods, I'm hungry," Merideth said in astonishment, as if reading Snake's feelings. "Aren't you?"

"Well, yes," Alex said reluctantly.

"And as hosts—" Apologetically, Merideth handed Snake the flask and found more bowls, more fruit. Snake drank cool-hot spicy wine, the first gulp too deep. She coughed; it was powerful stuff. She drank again and handed the flask back. Merideth drank; Alex took the leather bottle and poured a generous portion into the cooking pot. Only then did he sip the wine himself, quickly, before taking the broth outside to the tiny paraffin stove. The desert heat was so oppres-

sive that they could not even feel the heat of the flame. It flickered like a transparent mirage against the black sand, and Snake felt fresh perspiration sliding down her temples, between her breasts. She wiped her sleeve across her forehead.

They breakfasted on jerky and fruit, and the wine, which struck quickly and hard. Alex began to yawn almost immediately, but every time he nodded, he staggered to his feet and outside to stir Jesse's broth.

"Alex, go to sleep," Merideth finally said.

"No, I'm not tired." He stirred, tasted, took the pot off the fire, set it inside to cool.

"Alex—" Merideth took his hand and drew him to the patterned rug. "If she calls us, we'll hear her. If she moves, we'll go to her. We can't help her if we're falling over our own feet from weariness."

"But I . . . I . . ." Alex shook his head, but fatigue and the wine stayed with him. "What about you?"

"Your night was harder than my ride. I need to relax a few more minutes, but then I'll come to bed."

Reluctantly, gratefully, Alex lay down nearby. Merideth stroked his hair until, in a few moments, Alex began to snore. Merideth glanced at Snake and smiled. "When he first came with us, Jesse and I wondered how we could ever sleep with such a noise. Now we can hardly sleep without it."

Alex's snore was loud and low, and every so often he caught his breath

and snuffled. Snake smiled. "You can get used to nearly anything, I guess." She took one last sip of wine and returned the flask. Merideth, reaching for it, suddenly hiccuped, then blushing, stoppered the bottle instead of drinking.

"Wine affects me too easily. I should never use it."

"At least you know. You probably never make a fool of yourself."

"When I was younger—" Merideth laughed at memories. "I was foolish then, and poor as well. A bad combination."

"I can think of better."

"Now we're rich, and I'm perhaps a little less foolish. . . . And what good is it all, healer? Money can't help Jesse. Nor wisdom."

"You're right," Snake said. "They can't help her, and neither can I. Only you and Alex can."

"I know it." Merideth's voice was soft and sad. "But it will take Jesse a long time to get used to that."

"She's *alive*, Merideth. The accident came so close to killing her—isn't it enough to be grateful for, that she's alive?"

"It is . . . to me." The words had begun to slur. "But you don't know Jesse. Where she's from, why she's here . . ." Merideth stared groggily at Snake, hesitating, then plunging ahead. "She's here because she can't stand to be trapped. Before we were together, she was rich and powerful and safe . . . but her whole life and all her work were planned out for her. She would have been one of the rulers

of Center—there she would . . ."

"The city!"

"Yes, it was all hers, if she wanted it. But she didn't want to live under a stone sky. She came outside with nothing. To make her own destiny. To be free. Now—the things she enjoys most will be beyond her. How can I tell her to be glad she's alive, when she knows she'll never walk on the desert again, or find me a diamond for some patron's earring, never gentle another horse, never make love?"

"I don't know," Snake said. "But if you and Alex see her life as a tragedy, that's what it will be."

Just before dawn the heat eased slightly, but as soon as it grew light the temperature rose again. The camp was in deep shade, but even in the protection of the rock walls the heat was like a pressure.

Alex snored and Merideth slept peacefully near him, oblivious to the sound, one strong hand curled over Alex's back. Snake lay half-asleep on the tent floor, facedown, arms outstretched. The fine fibers in the pile of the rug prickled softly against her cheek, damp with her sweat. Her hand throbbed but she could not sleep, and she did not have the energy to wake.

She drifted into a dream, in which Arevin appeared. She could see him more clearly than she could remember him when she was awake. It was a curious dream, childishly chaste. She barely touched Arevin's fingertips, and then he began to fade away. Snake

reached for him desperately. She woke up throbbing with sexual tension, her heart racing.

Jesse stirred. For a moment Snake did not move, then reluctantly, she raised herself. She glanced at the other two partners. Alex slept soundly with the momentary forgetfulness of youth, but sheer weariness lined Merideth's face and sweat plastered down the shiny black curls. Snake left Merideth and Alex alone and knelt by Jesse, who lay facedown as they had turned her, her cheek resting on one hand, her other hand shielding her eyes.

She's feigning sleep, Snake thought, for the line of her arm, the curl of her fingers, showed not relaxation but tension. Or wishing it, like me. Both of us would like to sleep, sleep and ignore reality.

"Jesse," she said softly, and again, "Jesse, please."

Jesse sighed and let her hand fall to the sheet.

"There's broth here when you feel strong enough to drink it. And wine, if you'd like."

A barely perceptible shake of the head, though Jesse's lips were dry. Snake would not allow her to become dehydrated, but she did not want to have to argue her into eating, either.

"It's no good," Jesse said.

"Jesse—"

Jesse reached out and laid her hand over Snake's. "No, it's all right. I've thought about what's happened. I've dreamed about it." Snake noticed that her dark brown eyes were flecked with

gold. The pupils were very small. "I can't live like this. Neither can they. They'd try—they'd destroy themselves trying. Healer—"

"Please . . ." Snake whispered, afraid again, more afraid than she had ever been in her life. "Please don't—"

"Can't you help me?"

"Not to die," Snake said. "Don't ask me to help you die!"

She bolted to her feet and outside. The heat slammed against her, but there was nowhere to go to escape it. The canyon walls and tumbled piles of broken rock rose up around her.

Head down, trembling, with sweat stinging her eyes, Snake stopped and collected herself. She had acted foolishly and she was ashamed of her panic. She must have frightened Jesse, but she could not yet make herself return and face her. She walked farther from the tent, not toward the desert where the sun and sand would waver like a fantasy, but toward a pocket in the canyon wall that was fenced off as a corral.

It seemed to Snake hardly necessary to pen the horses at all, for they stood in a motionless group, heads down, dusty, lop-eared. They did not even flick their tails; no insects existed in the black desert. Snake wondered where Merideth's handsome bay mare was. These are a sorry lot of beasts, she thought. Hanging on the fence or lying in careless heaps, their tack shone with precious metal and jewels. Snake put her hands on one of the roped wooden stakes and rested her chin on her fists.

At the sound of falling water she turned, startled. At the other end of the corral's rope section, Merideth filled a leather trough held up by a wooden frame. The horses came alive, raising their heads, pricking their ears. They started across the sand, trotting, then cantering, all in a turmoil, squealing and nipping and kicking up their heels at each other. They were transformed. They were beautiful.

Merideth stopped nearby, holding the limp empty waterskin, looking at the small herd rather than at Snake. "Jesse has a gift with horses. Choosing them, training them. . . . What's wrong?"

"I'm sorry. I must have upset her. I had no right—"

"To tell her to live? Maybe you don't, but I'm glad you did."

"It doesn't matter what I tell her," Snake said. "She has to want to live herself."

Merideth waved and yelled. The horses nearest the water shied away, giving the others a chance to drink. They jostled each other, draining the trough dry, then standing near it and waiting expectantly for more. "I'm sorry," Merideth said. "That's all for now."

"You must have to carry a great deal of water for them."

"Yes, but we need all of them. We come in with water and we go out with the ore and the stones Jesse finds." The bay mare put her head over the rope fence and nuzzled Merideth's sleeve, stretching to be scratched be-

hind the ears and under the jaw. "Since Alex came with us we travel with more . . . *things*. Luxuries. Alex said we'd impress people that way, so they'd want to buy from us."

"Does it work?"

"It seems to. We live very well now. I can choose my commissions."

Snake stared at the horses, who wandered one by one back into the canyon. The vague glow of the sun had crept up over the edge of the wall, and Snake could feel the heat on her face.

"What are you thinking?"

"How to make Jesse want to live."

"She won't live uselessly. Alex and I love her. We'd take care of her no matter what. But that isn't enough for her."

"Does she have to walk to be useful?"

"Healer, she's our prospector." Merideth looked at Snake sadly. "She's tried to teach me how to look, where to look . . . I understand what she tells me, but when I go out I'm as likely as not to find nothing but fused glass and fool's gold."

"Have you showed her your job?"

"Of course. We can each do a little of the other's work. But we each have a talent. She's better at my job than I am at hers—I'm better at hers than either of us is at Alex's—but people don't understand her designs. No one will buy them. They're too strange. They're beautiful." Merideth sighed, holding out a bracelet for Snake to see, the only ornament Merideth wore. It was silver, without stones,

geometric and multilayered without being bulky. Merideth was right: it was beautiful, but it was strange. "She knows all that. I'd do anything—I'd lie to her, if it would help. But she'd know. Healer—" Merideth flung the waterskin to the sand. "Isn't there anything you can do?"

"I can deal with infections and diseases and tumors. I can even do surgery that isn't beyond my tools. But I can't force the body to heal itself."

"Can anyone?"

"Not . . . not anyone that I know of, on this earth."

"You're not a mystic," Merideth said. "You don't mean some spirit might cause a miracle. You mean off the Earth the people might be able to help."

"They might," Snake said slowly, sorry she had spoken as she had. She had not expected Merideth to sense her resentment, though she should have. The city affected all the people around it; it was like the center of a whirlpool, mysterious and fascinating. And it was the place the offworlders sometimes landed. Because of Jesse, Merideth probably knew more about them and the city than Snake did. Snake had always had to take the stories about Center on faith alone; the idea of offworlders was hard to accept for someone who lived in a land where the stars were seldom visible.

"They might even be able to heal her in the city," Snake said. "How should I know? The people who live there won't talk to us. They keep us

cut off out here—and as for offworlders, I've never even met anyone who claims to have seen one."

"Jesse has."

"Would they help her?"

"Her family is powerful—it might be able to make them take her where she could be healed."

"The Center people and the offworlders are jealous of their knowledge, Merideth," Snake said. "At least they've never offered to share any of it."

Merideth scowled and turned away.

"I'm not saying we shouldn't try. It could give her hope—"

"And if they refuse, her hope is broken again."

"She needs the time."

Merideth thought, and finally replied. "And you'll come, to help us?"

It was Snake who hesitated this time. She had already set herself to return to the healers' station and accept the verdict of her teachers when she told them of her errors. She had prepared herself to go to the valley. Now she put her mind to a different journey, and realized what a difficult task Merideth proposed. They would badly need someone who knew what care Jesse required.

"Healer?"

"All right. I'll come."

"Then let's ask Jesse."

They returned to the tent. Snake was surprised to find herself feeling optimistic; she was smiling, truly encouraged, for what seemed the first time in a long while.

Inside, Alex sat beside Jesse. He glared at Snake when she entered.

"Jesse," Merideth said, "we have a plan."

They had turned her again, carefully following Snake's orders. Jesse looked up tiredly, aged by deep lines in her forehead and around her mouth.

Merideth explained with excited gestures. Jesse listened impassively. Alex's expression hardened into disbelief.

"You're out of your mind," he said when Merideth had finished.

"I'm not! Why do you say that when it's a chance?"

Snake looked at Jesse. "Are we?"

"I think so," Jesse said, but she spoke very slowly, very thoughtfully.

"If we got you to Center," Snake said, "could your people help you?"

Jesse hesitated. "My cousins have some techniques. They could cure very bad wounds. But the spine? Maybe. I don't know. And there's no reason for them to help me. Not anymore."

"You always told me how important blood ties are among the city's families," Merideth said. "You're their kin—"

"I left them," Jesse said. "I broke the ties. Why should they take me back? Do you want me to go and beg them?"

"Yes."

Jesse looked down at her long, strong, useless legs. Alex glared, first at Merideth, then at Snake.

"Jesse, I can't stand to see you as

you've been, I can't bear watching you want to die."

"They're very proud," Jesse said. "I hurt my family's pride by renouncing them."

"Then they'd understand what it took you to ask for their help."

"We'd be crazy to try it," Jesse said.

They planned to break camp that evening and cross the lava flow in darkness. Snake would have preferred to wait a few more days before moving Jesse at all, but there was no other choice. Jesse's spirits were too readily changeable to keep her here any longer. She knew the partnership had already overstayed its time in the desert. Alex and Merideth could not hide the fact that the water was running low, that they and the horses were going thirsty so she could be cleaned and bathed. A few more days in the canyon, living in the sour stench that would collect because nothing could be properly washed, would push her down into depression and disgust.

And they had no time to waste. Once the storms of winter began, no one could cross the desert; the city was isolated. Already the summer was fading in stinging dust-devils and wind-blown eddies of sand.

They would not take down the tent or load the horses until twilight, but they packed all they could before it became too hot to work, stacking the baggage beside Jesse's sacks of ore. Snake's hand limbered up with the heavy work. The bruise was finally

fading and the punctures had healed to bright pink scars. Soon the sand-viper bite would match all the other scars on her hands, and she would half-forget which one it was. She wished now that she had captured one of the ugly serpents to take home with her. It was a species she had never seen before. Even if it had turned out not to be useful to the healers, she could have made an antidote to its venom for Arevin's people. If she ever saw Arevin's people again.

Snake wrestled the last pack into the pile and wiped her hands on her pants and her face on her sleeve. Nearby, Merideth and Alex hoisted the stretcher they had built and adjusted the makeshift harnesses until it rode level between a tandem pair of horses. Snake went over to watch.

It was the most peculiar conveyance she had ever seen, but it looked like it would work. In the desert everything had to be carried or dragged; wheeled carts would bog down in the sand or break in rocky country. As long as the horses did not shy or bolt, the stretcher would give Jesse a more tolerable ride than a travois. The big gray between the front shafts stood calm and steady as a stone; apart from a sidelong glance as it was led between the back shafts, the second horse, a piebald, showed no fear.

Jesse must be a marvel, Snake thought, *if she can train horses to put up with such contraptions.*

"Jesse says we'll start a fashion among rich merchants wherever we go," Merideth said.

"She's right," Alex said. He unfastened a strap and they let the stretcher fall to the ground. "But they'll be lucky not to get kicked apart, the way most of them break horses." He slapped the placid gray's neck fondly and led both horses back to the corral.

"I wish she'd been riding one of them before," Snake said to Merideth.

"They weren't like that when she got them. She buys crazy horses. She can't bear to see them mistreated. The colt was one of her strays—she had him calmed but he hadn't found his balance yet."

They started back toward the tent to get out of the sun as it crept across the afternoon. The tent sagged on one side where two poles had been removed for the stretcher. Merideth yawned widely. "Best to sleep while we have the chance. We can't afford to still be on the lava when the sun comes up."

But Snake was filled with a restless uncertain energy; she sat in the tent, grateful for the shade, but wide awake, wondering how the whole mad plan could work. She reached for the leather case to check on her serpents, but Jesse woke as she opened Sand's compartment. She closed the catch again and moved closer to the pallet. Jesse looked up at her.

"Jesse . . . about what I said . . ." She wanted to explain but could not think how to start.

"What upset you so? Am I the first you've helped who might have died?"

"No. I've seen people die . . . I've

helped them die . . . It's so . . .”

“Everything was so hopeless just a little while ago,” Jesse said. “A pleasant end would have been easy. You must always have to guard against . . . the simplicity of death.”

“Death can be a gift,” Snake said. “But in one way or another it always means failure. That's the guard against it. It's enough.”

A faint breeze whispered through the heat, making Snake feel almost cool.

“What's wrong, healer?”

“I was afraid,” Snake said. “I was afraid you might be dying. If you were you had the right to ask my help. I have the obligation to give it. But I can't.”

“I don't understand.”

“When my training ended my teachers gave me my own serpents. Two of them can be drugged for medicines. The third was the dream-giver. He was killed.”

Jesse reached out instinctively and took Snake's hand, a reaction to her sadness. Snake accepted Jesse's quiet sympathy gratefully, taking comfort in the sturdy touch.

“You're crippled too,” Jesse said abruptly. “As crippled in your work as I.”

Jesse's generosity in comparing them that way embarrassed Snake. Jesse was in pain, helpless, her only chance of recovery so small that Snake stood in awe of her spirits and her renewed grasp on life. “Thank you for saying that.”

“So I'm going back to my family to

ask for help—and you're going back to yours?”

“Yes.”

“They'll give you another,” Jesse said with certainty.

“I hope so.”

“Is there any question?”

“Dreamsnakes don't breed well,” Snake said. “We don't know enough about them. Every few years a few new ones are born, or one of us manages to clone some, but—” Snake shrugged.

“Catch one!”

The suggestion had never occurred to Snake because she knew it was impossible. She had never considered any other possibility besides returning to the healers' station and asking her teachers to pardon her. She smiled sadly. “My reach isn't that long. They don't come from here.”

“Where?”

Snake shrugged again. “Some other world . . .” Her voice trailed off as she realized what she was saying.

“Then your path lies with ours farther than you thought,” Jesse said. “You'll stay with me when I go to my family, and they will introduce you to the offworlders.”

“Jesse, my people have been asking Center's help for decades. They won't even speak to us.”

“But now one of the city's families is obligated to you. Whether my people will take me back I don't know—but they'll be in debt to you for helping me, nevertheless.”

Snake listened in silence, intrigued by the possibilities lying in Jesse's

words . . . by the hope . . .

"Healer, believe me," Jesse said. "We can help each other. If they accept me, they'll accept my friends as well. If not—they'll still have to discharge their debt to you. Either one of us can present both our requests."

Snake was a proud woman, proud of her training, her competence, her name. The prospect of atoning for Grass's death in some other way than begging forgiveness fascinated her. Once every decade an elder healer would make the long trip to the city, seeking to renew the breeding stock of dreamsnakes. They had always been refused. If Snake could succeed . . .

"Can this work?"

"Only to make my family help us," Jesse said. "Whether they can make the offworlders help us too, I don't know."

During the hot afternoon, all Snake and the partners could do was wait. Snake decided to let Mist and Sand out of the satchel for a while before the long trip began. As she left the tent, she stopped beside Jesse. The handsome woman was sleeping peacefully, but her face was flushed. Snake touched her forehead. Perhaps Jesse had a slight fever; perhaps it was just the heat of the day. Snake still thought Jesse had avoided serious internal injuries, but it was possible that she was bleeding, even that she was developing peritonitis. That was something Snake could cure. She decided not to disturb Jesse for the moment, but to wait and see if the fever rose.

Walking out of camp to find a sheltered place where her serpents would frighten no one, Snake passed Alex, staring morosely into space. She hesitated, and he glanced up, his expression troubled. Snake sat down beside him without speaking. He turned toward her, staring at her with his penetrating gaze: the goodnaturedness had vanished from his face in his torment, leaving him ugly, and sinister as well.

"We crippled her, didn't we? Merideth and me."

"Crippled her? No, of course not."

"We shouldn't have moved her. I should have thought of that. We should have moved the camp to her. Maybe the nerves weren't broken when we found her."

"They were broken."

"But we didn't know about her back. We thought she'd hit her head. We could have twisted her body—"

Snake put her hand on Alex's forearm. "It was an injury of violence," she said. "Any healer could see it. The damage happened when she fell. Believe me. You and Merideth couldn't have done any of that to her."

The hard muscles in his forearm relaxed. Snake took her hand away, relieved. Alex's stocky body held so much strength, and he had been controlling himself so tightly, that Snake feared he might turn his own force unwittingly back on himself. He was more important to this partnership than he appeared, perhaps even more important than he himself knew. Alex was the practical one, the one who kept the camp running smoothly, who

dealt with the buyers of Merideth's work and balanced out the romanticism of Merideth the artist and Jesse the adventurer. Snake hoped the truth she had told him would let him ease his guilt and tension. For now, though, she could do no more for him.

As twilight approached, Snake stroked Sand's smooth patterned scales. She no longer wondered if the diamondback enjoyed being stroked, or even if a creature as small-brained as Sand could feel enjoyment at all. The cool sensation beneath her fingers gave her pleasure, and Sand lay in a quiet coil, now and then flicking out his tongue. His color was bright and clear; he had outgrown his old skin and shed it only recently. "I let you eat too much," Snake said fondly. "You lazy creature."

Snake drew her knees up under her chin. Against the black rocks, the rattlesnake's patterns were almost as conspicuous as Mist's albino scales. Neither serpents nor humans nor anything else left alive on Earth had yet adapted to their world as it existed now.

Mist was out of sight, but Snake was not worried. Both serpents were imprinted on her and would stay near and even follow her. Neither had much aptitude for learning beyond the imprinting, which the healers had bred into them, but Mist and Sand would return when they felt the vibration of her hand slapping the ground.

Snake relaxed against a boulder, cushioned by the desert robe Arevin's

people had given her. She wondered what Arevin was doing, where he was. His people were nomads, herders of huge musk-oxen whose undercoat gave fine, silky wool. To meet the clan again she would have to search for them. She did not know if that would ever be possible, though she very much wanted to see Arevin once more.

Seeing his people would always remind her of Grass's death, if she were ever able to forget it. Her mistakes and misjudgments of them were the reason Grass was gone. She had expected them to accept her word despite their fear, and without meaning to they had shown her how arrogant her assumptions were.

She shook off her depression. Now she had a chance to redeem herself. If she really could go with Jesse, find out where the dreamsnakes came from and capture new ones—if she could even discover why they would not breed on Earth—she could return in triumph instead of in disgrace, succeeding where her teachers and generations of healers had failed.

It was time to return to the camp. She climbed the low rise of jumbled rock that covered the mouth of the canyon, looking for Mist. The cobra was coiled on a high chunk of basalt.

At the top of the slope Snake reached for Mist, picked her up and stroked her narrow head. She was not so formidable unexcited, hood folded, narrow-headed as any venomless serpent. She did not need a thick-jowled head, heavy with poison. Her venom

was powerful enough to kill in delicate doses.

As Snake turned, the brilliant sunset drew her gaze. The sun was an orange blur on the horizon, radiating streaks of purple and vermilion through the gray clouds.


And then Snake saw the craters, stretching away across the desert below her. The Earth was covered with great circular basins. Some, lying in the path of the lava flow, had caught and broken its smooth frozen billows. Others were clearer, great holes gouged in the earth, still distinct after so many years of driving sands. The craters were so large, spread over such a distance, that they could have only one source. Nuclear explosions had blasted them. The war itself was long over, almost forgotten, for it had destroyed everyone who knew or cared about the reasons it had happened.

Snake gazed over the ravaged land, glad to be no nearer. In places like this the effects of the war had lingered visibly and invisibly to Snake's time; they would persist for centuries beyond her life. The canyon in which she and the partners were camped was probably not completely safe itself, but they had not been here long enough to be in serious danger.

Something unusual lay out in the rubble, in line with the brilliant setting sun so it was difficult to see. Snake squinted at it. She felt uneasy, as if she were spying on something she had no business knowing about.

The body of a horse, decaying in the





heat, lay crumpled at the edge of a crater. The dead animal's rigid legs poked grotesquely into the air, forced up by its swollen belly. Claspng the animal's head, a gold bridle gleamed scarlet and orange in the sunset.

Snake released her breath in a sound half sigh, half moan.

She ran back to the serpent case and urged Mist inside, picked Sand up and started back toward the camp, cursing when the rattler in his mindlessly obstinate way tried to twine himself around her arm. She stopped and held him so he could slide into his compartment, and started running again while she was still fastening the catch. The case banged against her leg.

Panting, she reached the tent and ducked inside. Merideth and Alex were asleep. Snake knelt beside Jesse and carefully pulled back the sheet.

Little more than an hour had passed since Snake had examined Jesse last. The bruises down her side had darkened and deepened, and her body was unhealthily flushed. Snake felt her forehead. It was burning hot and paper dry. Jesse did not respond to her touch. When Snake took her hand away the smooth skin looked darker. Within minutes, as Snake watched horrified, another bruise began to form as the capillaries ruptured, their walls so damaged by radiation that mild pressure completed their destruction. The bandage on Jesse's thigh suddenly reddened in the center with a stain of blood. Snake clenched her fists. She was shaking, deep inside, as if from

penetrating cold. She called . . .

“Merideth!”

In a moment Merideth was awake, yawning and mumbling sleepily. “What’s wrong?”

“How long did it take you to find Jesse? Did she fall in the craters?”

“Yes, she was prospecting there. That’s why we come—other artisans can’t match our work because of what Jesse finds here. But this time a rim gave way. We found her in the evening.”

A whole day, Snake thought. She must have been in one of the primary craters.

“Why didn’t you tell me?”

“Tell you what?”

“Those craters are dangerous—”

“Do you believe all those old legends, healer? We’ve been coming here for a decade and nothing ever happened to us.”

Now was not the time for angry retorts. Snake glanced at Jesse again and realized that her own ignorance and the partnership’s contempt for the danger of the old world’s relics had unwittingly granted Jesse some mercy. Snake had treatments for radiation poisoning, but there was no treatment for anything this severe. Whatever she could have tried would only prolong Jesse’s death.

“What’s the matter?” For the first time Merideth’s voice showed fear.

“She has radiation poisoning.”

“Poisoning? How? She’s eaten and drunk nothing we haven’t tasted.”

“It’s from the crater. The ground is poisoned. The legends are true.”

Beneath deep tan, Merideth was pale. “Then do something, help her!”

“There’s nothing I can do.”

“You couldn’t help her injury, you can’t help her sickness—”

They stared at each other, both of them hurt and angry. Merideth’s gaze dropped first. “I’m sorry . . . I had no right . . .”

“I wish to the gods I were omnipotent, Merideth, but I’m not.”

Their conversation woke Alex, who rose and came toward them, stretching and scratching. “It’s time to—” He glanced back and forth from Snake to Merideth, then looked beyond to Jesse. “Oh, gods . . .”

The new mark on her forehead, where Snake had touched her, was slowly oozing blood.

Alex flung himself down beside her, reaching for her, but Snake held him back. He tried to push her away.

“Alex, I barely touched her. You can’t help her like that.” He looked at her blankly. “Then how?”

Snake shook her head.

Tears welling up, Alex pulled away from her. “It isn’t fair!” He ran out of the tent. Merideth started after him, hesitated at the entrance, and turned back. “He can’t understand . . . he’s so young . . .”

“He understands,” Snake said. She blotted Jesse’s forehead, trying not to rub or put pressure on her skin. “And he’s right, it isn’t fair. Who ever said anything was fair?” She cut off the words to spare Merideth her own bitterness over Jesse’s lost chances, snatched away by fate and ignorance

and the remnants of another generation's insanity.

"Merry . . ." Jesse groped in the air with a trembling hand.

"I'm here." Merideth reached out but stopped, afraid to touch her.

"What's the matter? Why do I . . ." She blinked slowly. Her eyes were bloodshot.

"Gently," Snake whispered. Merideth enfolded Jesse's fingers with hands soft as bird wings.

"Is it time to go?" The eagerness was tinged with terror, unwillingness to realize something was wrong.

"No, love."

"It's so hot . . ." She started to raise her head, shifting her weight. She froze with a gasp of pain. Information entered Snake's mind without any conscious effort, a cold inhuman analysis she was trained for: Bleeding into the joints. Internal bleeding. And in her brain?

"It never hurt like this." She glanced at Snake without moving her head. "It's something else, something worse."

"Jesse, I—" Snake was first aware of her tears by the taste of salt on her lips, and the grit from the desert's dust. She choked on words. Alex crept back into the tent. Jesse tried to speak again, but could only gasp.

Merideth grabbed Snake's arm. She could feel the fingernails cutting her skin. "She's dying."

Snake nodded.

"Healers know how to help—how to—"

"Merideth, no," Jesse whispered.

"—how to take away the pain."

"She can't . . ."

"One of my serpents was killed," Snake said, more loudly than she had intended, belligerent with grief and anger.

Merideth did not make a second outburst, but Snake could feel the unspoken accusation: You couldn't help her live, and now you can't help her die. This time it was Snake's gaze that fell. She deserved the condemnation. Merideth let her go and turned back to Jesse, looming over her like a tall demon waiting to fight beasts or shadows.

Jesse reached out to touch Merideth but drew her hand sharply back. She stared at the soft center of her palm, between the calluses of her work. A bruise was forming. "Why?"

"The last war," Snake said. "In the craters—" Her voice broke.

"So it's true," Jesse said. "My family believes the land outside kills, but I thought they lied." Her eyes went out of focus; she blinked, looked toward Snake but did not seem to see her, blinked again. "They lied about so many other things. Lies for making children obedient. . . ."

Silent again, her eyes closed, Jesse slowly went limp, one muscle at a time as if even relaxation was an agony she could not tolerate all at once. She was still conscious but did not respond, with word or smile or glance, as Merideth stroked her bright hair and moved as close as was possible without touching her. Her skin was ashen around the livid bruises.

Suddenly she screamed. She clamped her hands to her temples, pressing, digging her nails into her scalp. Snake grabbed for her hands to pull them away. "No," Jesse groaned, "oh, no, leave me alone—Merry, it hurts!" Weak a few moments before, Jesse struggled with fever-fired strength. Snake could do nothing but try to restrain her gently, but the inner diagnostic voice returned: Aneurysm. In Jesse's brain a radiation-weakened vessel was slowly exploding. Snake's next thought was equally unbidden and even more powerful: Pray it bursts soon and hard, and kills her cleanly.

At the same time Snake realized Alex was no longer beside her trying to help with Jesse, but had crossed to the other side of the tent, she heard Sand rattle. She turned instinctively, launching herself toward Alex. Her shoulder rammed his stomach and he dropped the satchel as Sand struck from within. Alex crashed to the ground as Snake felt a sharp pain in her leg and drew back her fist to strike him, but checked herself.

She fell to one knee.

Sand coiled on the ground, rattling his tail softly, prepared to strike again. Snake's heart raced. She could feel the pulse throbbing in her thigh. Her femoral artery was less than a handsbreadth from the puncture where Sand had sunk his fangs into muscle.

"You fool! Are you trying to kill yourself? Her leg throbbed a few more times, then her immunities neu-

tralized the venom. She was glad Sand had missed the artery. Even she could be made briefly ill by a bite like that, and she had no time for illness. The pain faded to a dull, ebbing ache.

"How can you let her die in such pain?"

"All you'd give her is more pain with Sand." Disguising her anger, she turned calmly to the diamondback, picked him up, and let him flow back into the case. "There's no quick death with rattlers." That was not quite true, but Snake was still angry enough to frighten him. "If anyone dies of it they die from infection. Gangrene."

Alex paled but held his ground, glowering.

Merideth called him. Alex glanced at his partners, then stared at Snake again for a long challenging moment. "What about the other one?" He turned his back on her and went to Jesse's side.

Holding the serpent-case, Snake fingered the catch on Mist's compartment. She shook her head, pushing away the image of Jesse dying from Mist's poison. Cobra venom would kill quickly, not pleasantly but quickly. What was the difference between disguising pain with dreams and ending it with death? Snake had never deliberately caused the death of another human being, in anger or in mercy. She did not know if she could now. Or if she should. She could not tell if the reluctance she felt came from her training or from some deeper, more fundamental knowledge that to kill

Jesse would be wrong.

She could hear the partners talking softly together, voices but not words distinguishable: Merideth clear, musical, mid-range; Alex deep and rumbling; Jesse breathless and hesitant. Every few minutes they all fell silent as Jesse fought another wave of pain. Jesse's next hours or days, the last of her life, would strip away her strength and spirit.

Snake opened the case and let Mist slide out and coil around her arm, up and over her shoulder. She held the cobra gently behind the head so she could not strike, and crossed the tent.

They all looked up at her, startled out of a retreat into their self-sufficient partnership. Merideth, in particular, seemed for a moment not even to recognize her. Alex looked from Snake to the cobra and back again, with a strange expression of resigned, triumphant grief. Mist flicked out her tongue to catch their smells, her unblinking eyes like silver mirrors in the growing darkness. Jesse peered at her, squinting, blinking. She reached up to rub her eyes but stopped, remembering, a tremor in her hand. "Healer? Come closer, I can't see properly."

Snake knelt down between Merideth and Alex. For the third time she did not know what to say to Jesse. It was as if she, not Jesse, were becoming blind, blood seeping across her retinas and squeezing the nerves, sight blurring slowly to scarlet and black. Snake blinked rapidly and her vision cleared.

"Jesse, I can't do anything about

the pain." Mist moved smoothly beneath her hand. "All I can offer . . ."

"Tell her!" Alex growled. He stared as if petrified at Mist's eyes.

"Do you think this is easy?" Snake snapped. But Alex did not look up.

"Jesse," Snake said, "Mist's natural venom can kill. If you want me to—"

"What are you saying?" Merideth cried.

Alex broke his fascinated stare. "Merideth, be quiet, how can you stand—"

"Both of you be quiet," Snake said. "The decision's up to neither of you, it's Jesse's alone."

Alex slumped back on his heels; Merideth sat rigid, glaring. Jesse said nothing for a long time. Mist tried to crawl from Snake's arm and Snake restrained her.

"The pain won't stop."

"No," Snake said. "I'm sorry."

"When will I die?"

"The pain in your head is from pressure. It could kill you . . . any time." Merideth hunched down, face in hands, but Snake had no way of being gentler. "You have a few days, at the most, from the poisoning." Jesse flinched when she said that.

"I don't wish for days anymore," she said softly.

Tears streamed between Merideth's fingers.

"Dear Merry, Alex knows," Jesse said. "Please try to understand. It's time for me to let you go." Jesse looked toward Snake with sightless

eyes. "Give us a little while alone, and then I'll be grateful for your gift."

Snake stood and walked out of the tent. Her knees shook, while her neck and shoulders ached with tension. She sat down on the hard gritty sand, wishing the night were over.

She looked up at the sky, a thin strip edged by the walls of the canyon. The clouds seemed peculiarly thick and opaque tonight, for though the Moon had not yet risen high enough to see, some of its light should have been diffracted into sky-glow. Suddenly she realized the clouds were not unusually thick but very thin and mobile, too thin to spread light. They moved in a wind that blew only high above the ground. As she watched, a bank of dark cloud split and parted, and Snake quite clearly saw the sky, black and deep and shimmering with multicolored points of light. Snake stared at them, hoping the clouds would not come together again, wishing someone else were near to share the stars with her. Planets circled some of those stars, and people lived on them, people who might have helped Jesse if they had even known she existed. Snake wondered if their plan had had any chance of success at all, or if Jesse had accepted it because on a level deeper than shock and resignation her grip on life had been too strong to let go.

Inside the tent someone uncovered a clear bowl of lightcells. The blue bioluminescence spilling through the entrance washed over the black sand.

"Healer, Jesse wants you." Meri-

deth stood outlined in the glow, voice stripped of music, tall and gaunt and haggard.

Snake carried Mist inside. Merideth did not speak to her again. Even Alex looked at her with a fleeting expression of uncertainty and fear. But Jesse welcomed her with her blinded eyes. Merideth and Alex stood in front of her bed, like a guard. Snake stopped. She did not doubt her decision, but the final choice was still Jesse's.

"Come kiss me," Jesse said. "Then leave us."

Merideth swung around. "You can't ask us to go now!"

"You have enough to forget." Her voice trembled, but not from fear. Her hair clung in tangles to her forehead and her cheeks, and what was left in her face was endurance near exhaustion. Snake saw it and Alex saw it, but Merideth stood, shoulders hunched, staring at the floor.

Alex knelt and gently raised Jesse's hand to his lips. He kissed her almost reverently, on the fingers, on the cheek, on her lips, afraid of hurting her. But she laid her hand on his shoulder and kept him a moment longer. He rose slowly, silent, looked at Snake, and left the tent.

"Merry, please say goodbye before you go."

Defeated, Merideth knelt beside her and brushed her hair back from her bruised face, gathered her up and held her. She returned the embrace. Neither offered consolation.

Merideth left the tent, in a silence

that drifted on longer than Snake meant it to. When the footsteps faded to a whisper of sand against leather, Jesse shuddered with a sound between a cry and a groan.

“Healer?”

“I’m here.” She put her palm under Jesse’s outstretched hand.

“Do you think it would have worked?”

“I don’t know,” Snake said, remembering when one of her teachers had returned from the city, having met only closed gates and people who would not speak to her. “I want to believe it would have.”

Jesse’s lips were darkening to purple. Her lower lip had split. Snake dabbed at the blood, but it was thin as water and she could not stop the flow.

“You keep going,” Jesse whispered.

“What?”

“To the city. You still have a claim on them.”

“Jesse, no—”

“Yes. They live under a stone sky, afraid of everything outside. They can help you, and they need your help. They’ll all go mad in a few more generations. Tell them I lived and I was happy. Tell them I might not have died if they had told the truth. They said everything outside killed—so I thought nothing did.”

“I’ll carry your message.”

“Don’t forget your own. Other people need . . .” She ran out of breath, and Snake waited in silence for the command that would come next.

Sweat slid down her sides. Mist sensed her fear and coiled tighter on her arm.

“Healer?”

Snake patted her hand.

“Merry took the pain away. Please let me go before it comes back.”

“All right, Jesse.” She freed Mist from her arm. “I’ll try to make it as quick as I can.”

The handsome ruined face turned toward her. “Thank you.”

Snake was glad Jesse could not see what was about to happen. Mist would strike the carotid artery, just beneath the jaw, so the poison would flow to Jesse’s brain and kill her instantly. Snake had planned that out very carefully, dispassionately, at the same time wondering how she could think about it so clearly.

Snake began to speak soothingly, hypnotically. “Relax, let your head fall back, close your eyes, pretend it’s time to sleep . . .” She held Mist over Jesse’s breast, waiting as the tension flowed away and the slight tremor ceased. Tears ran down her face, but her sight was brilliantly clear. She could see the pulse-beat in Jesse’s throat. Mist’s tongue flicked out, in. Her hood flared. She would strike straight forward when Snake released her. “A deep sleep, and joyful dreams . . .” Jesse’s head lolled, exposing her throat. Mist slid on Snake’s hands. Snake felt her fingers opening as she thought, Must I do this? and suddenly Jesse convulsed, her upper spine arched, flinging her head back. Her arms went rigid and her fingers spread and

tensed into claws. Frightened, Mist struck. Jesse convulsed again, hands clenching, and relaxed completely, all at once. Blood pulsed in two thin drops from the marks of Mist's fangs. Jesse shuddered, but she was already dead.

Nothing was left but the smell of death and a spirit-empty corpse, Mist cold and hissing atop it. Snake wondered if Jesse somehow had felt the pressure grow to breaking point, and had stood the pain as long as she could to save her partners this memory.

Shaking, Snake put Mist in the case and cleaned the body as gently as if it were still Jesse. But there was nothing left of her now; her beauty had gone with her life, leaving bruised and battered flesh. Snake closed the eyes and drew the stained sheet up over the face.

She left the tent, carrying the leather case. Merideth and Alex watched her approach. The moon had risen; she could see them in shades of gray.

"It's over," she said. Somehow, her voice was the same as ever.

Merideth did not move or speak. Alex took Snake's hand, as he had taken Jesse's, and kissed it. Snake drew back, wanting no thanks for this night's work.

"I should have stayed with her," Merideth said.

"Merry, she didn't want us to."

Snake saw that Merideth would always imagine what had happened, a thousand ways, each more horrible than the last, unless she stopped the fantasy.

"I hope you can believe this, Merideth," she said. "Jesse said, 'Merry took the pain away,' and a moment later, just before my cobra struck, she died. Instantly. A blood vessel broke in her brain. She never felt it. She never felt Mist. Gods witness it, I believe that to be the truth."*

"It would have been the same, no matter what we did?"

"Yes."

That seemed to change things for Merideth, enough to accept. It did not change anything for Snake. She still knew she would have been the cause of Jesse's death. She saw the self-hatred vanishing from Merideth's face, and she started toward the crumbled part of the canyon wall where the slope led up to the lava plain.

"Where are you going?" Alex caught up to her.

"Back to my camp," she said dully.

"Please wait. Jesse wanted to give you something." If he had said Jesse had asked them to give her a gift, she would have refused, but, somehow, that Jesse left it herself made a difference. Unwillingly, she stopped. "I can't," she said. "Alex, let me go."

He turned her gently and guided her back to the camp. Merideth was gone, in the tent with Jesse's body or grieving alone.

Jesse had left her a horse, a dark gray mare, almost black, a fine-boned animal with the look of speed and spirit. Despite herself, despite knowing it was not a healer's horse, Snake's

hands and heart went out to her. The mare seemed to Snake the only thing she had seen in—she could not think how long—that was beauty and strength alone, without tragedy or pain. Alex gave her the reins and she closed her hands around the soft leather. The bridle was inlaid with gold in Merideth's delicate filigree style.

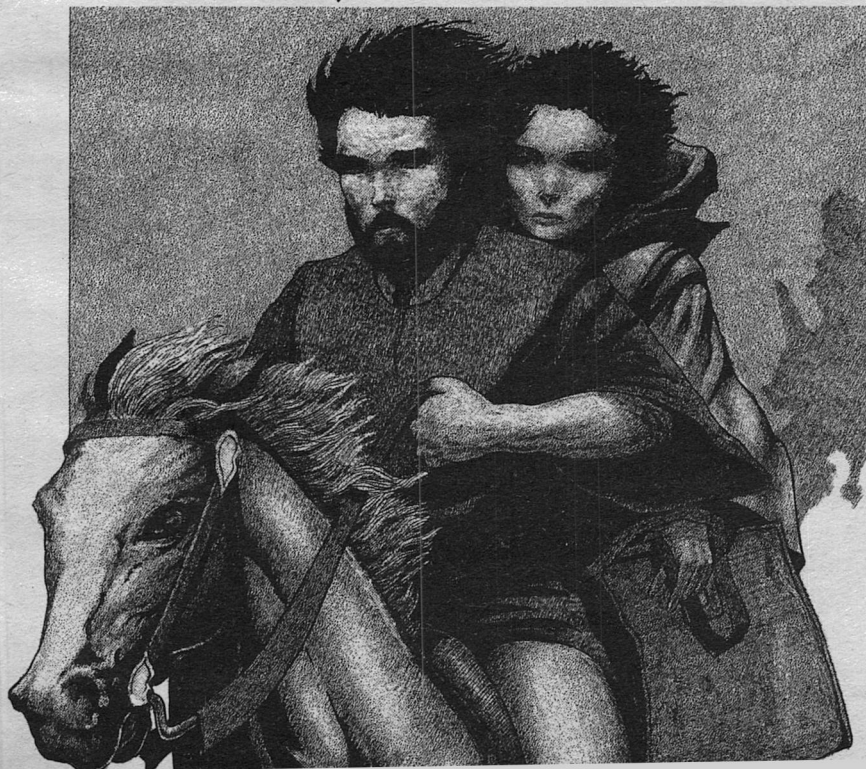
"Her name is Slate," Alex said.

Then Snake was alone, on the long trek to cross the lava before morning. The mare's hooves rang on the hollow-sounding stone, and the leather case rubbed against Snake's leg from behind.

She knew she could not return to the healers' station. Not yet. Tonight

had proved that she could not stop being what she was, no matter how inadequate her tools. If her teachers took Mist and Sand and cast her out, she knew she could not bear it. She would go mad with the knowledge that in this town, or that camp, sickness or death occurred that she could have cured or prevented or made more tolerable. She would always try to do something.

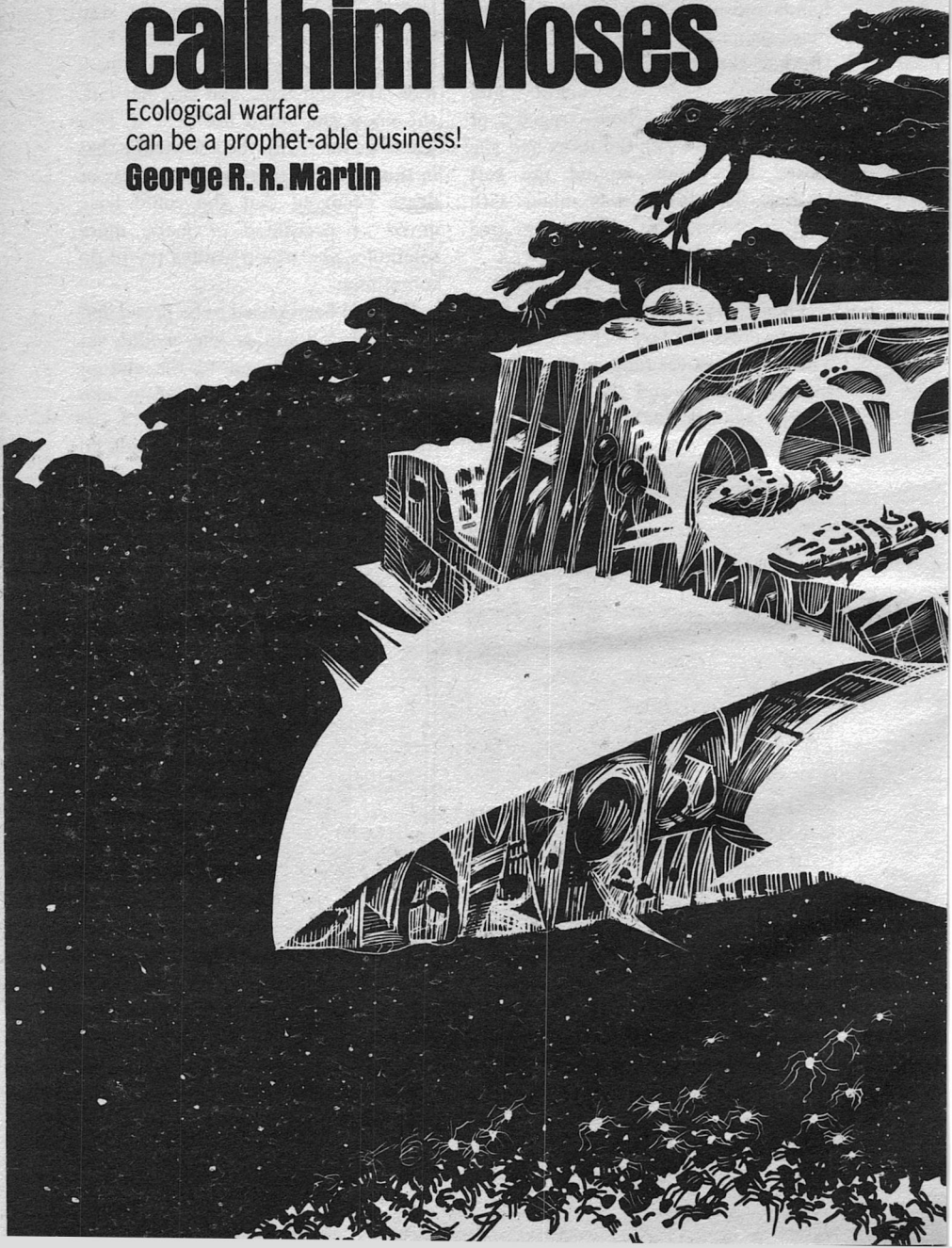
She had been raised to be proud and self-reliant, qualities she would set aside if she returned to the station now. She had promised Jesse to take her last message to the city, and she would keep the promise. She would go to the city for Jesse, and for herself. ■



call him Moses

Ecological warfare
can be a prophet-able business!

George R. R. Martin





JACK GAUGHAN

Rumors were seldom of any concern to Haviland Tuf. For one thing, he seldom heard any. Tuf was not averse to acting the tourist on most of the worlds he visited, but even when he was mingling with others in public places he remained somehow apart and unapproachable. His chalk-white skin and utterly hairless face and body usually made him conspicuous among the peoples of the planets on which he plied his trade, and even on those infrequent occasions when his complexion might have allowed him to pass, his size made him stand out. Haviland Tuf was a *huge* man, almost two-and-a-half meters tall, and heavier than his height might indicate, although most weight was concentrated in a great roll above his ornate belt buckle. Thus, though people might stare at Tuf and talk of him everywhere he went, few of them talked to him unless they had business to transact. His only habitual companion was Dax, a massive long-haired black tomcat. Tuf carried Dax here and there and all over whenever he felt talkative, and the two of them had many a fine conversation with Tuf doing all of the conversing.

Given his nature, then, it was hardly remarkable that Haviland Tuf had never heard of the man called Moses until the evening that he and Dax were assaulted by Jaime Kreen in a restaurant on K'theddion.

It was a small shabby place just off the spaceport. Tuf had finished a plate of smokeroots and neoglass and was relaxing with his third liter of mush-

room wine when abruptly Dax raised his head from the table. Tuf shook a bit, slopping some wine on his sleeve, and ducked his head quickly to one side, barely far enough so that the bottle Kreen was wielding smashed open against the back of Tuf's chair instead of the back of Tuf's skull. Glass exploded, and the liquid within—a smelly local liquor—went everywhere, soaking the chair, the table, the cat, and both men. Jaime Kreen, a thin blond youth with drunken blue eyes, stood blinking stupidly, holding the broken bottle in a bleeding fist.

Haviland Tuf rose ponderously to his feet, his long white face singularly impassive. He glanced at his assailant, blinked, and then reached down to pick up Dax, who was wet and unhappy. "Can you fathom this, Dax?" he said in a deep bass. "We have here a mystery, albeit an inconvenient one. Why does this odd stranger attack us, I wonder? Do you have any ideas?" He stroked Dax slowly as he cradled him in his arms, and only when the cat began to purr did he look at Jaime Kreen again. "Sir," he said. "It might be wise of you to release the fragments of that bottle. It appears to me that your hand is full of glass and blood and that particularly noxious brew, and I have severe doubts that the combination will enhance your health."

The stricken Kreen seemed to come alive. His thin lips drew back in anger, and he flung the bottle away from him. "Are you mocking me, criminal?" he said in a slurred voice.

"Sir," said Haviland Tuf. The restaurant had grown very still; the other patrons were quiet and staring, and the proprietor had vanished. Tuf's deep voice could be heard in every corner of the room. "I would venture that the title 'criminal' is more applicable to you than to myself, but perhaps that is not to the point. No, I am not mocking you. You appear to be upset. Under such conditions it would be folly to mock you, and I am not given to folly." He placed Dax back on the table and scratched the tomcat behind the ear.

"You *are* mocking me," Jaime Kreen said. "I'll *hurt* you!"

Haviland Tuf betrayed no emotion. "You will not, sir, although I believe you are thinking of attacking me once again. I do not approve of violence. However, your boorish behavior leaves me with little choice." So saying, he stepped forward quickly, and lifted Jaime Kreen high off the floor before the younger man could react. Then, carefully, he broke both of his arms.

Kreen emerged pale and blinking from the tomb-like dark of Kythed-dene Prison into the bright street. His arms were in slings. He looked baffled and tired.

Haviland Tuf stood by the curbside, cradling Dax in one arm and petting him with the other. He looked up when Kreen came forth. "Your mood appears to have quieted somewhat," Tuf commented. "Moreover, you are now sober."

"You!" Kreen looked more baffled than ever; his face was so screwed up that it threatened to collapse in upon itself. "Do I understand that *you* bought my freedom?"

"You raise an interesting point," Haviland Tuf said. "I did indeed pay a certain sum—two hundred standards, actually, if we want to be precise—and upon that payment you were handed over to me. Yet it is incorrect to say that I bought your freedom. The crux of the matter is that you are not free. Under Kythed-dene law, you belong to me, a bound servant whom I may work as I see fit until such time as you have discharged your debt."

"Debt?"

"I calculate it as follows," said Haviland Tuf. "Two hundred standards for the sum I paid to the local authorities in order to bask in your presence. One hundred standards for my suit, which was genuine Lambereen cotton, and which you quite ruined. Forty standards for the damage to the eatery, which damages I paid in order to settle the proprietor's claims against you. Seven standards for the delightful mushroom wine that you gave me no opportunity to drink. Mushroom wine is a noted specialty of K'thed-dion, and that was a particularly choice vintage. These total some three hundred forty-seven standards in actual damages. Furthermore, your unprovoked assault made Dax and myself the center of a highly unpleasant scene, and much disturbed our tranquility. For that I am assessing you an

additional fifty-three standards, which is a generously low sum, to bring your total to an even four hundred standards.”

Jaime Kreen chuckled maliciously. “You’ll have a hard time getting even a tenth of that out of me, animal-seller,” he said. “I have no funds, and I won’t be good for much in the way of work. My arms are broken, you know.”

“Sir,” said Haviland Tuf. “If you had any significant funds of your own, you could have paid your own fines, in which case my assistance would not have been necessary. And since I myself broke your arms, I am aware of that condition as well. Kindly do not belabor the obvious with statements that convey no meaningful information. Despite your handicaps, I intend to take you with me back to my ship, and work you until your obligation has been discharged. Come.”

Haviland Tuf turned and took two steps down the street. When Kreen made no move to follow, Tuf stopped and turned back on him. Kreen smiled. “If you want me anywhere, you can carry me,” he said.

Tuf stroked Dax dispassionately. “I have no intention of carrying you,” he said in even tones. “You forced me to touch you once, and that experience was sufficiently unpleasant so that I have no intention of repeating it. If you decline to follow me, I will return to the authorities and hire two guards to take you bodily where I wish you to be. Their wages will be tallied to your debt. The choice is yours.” Tuf turned

again and moved off toward the spaceport.

Jaime Kreen, suddenly docile, followed behind, muttering under his breath.

The ship that waited for them at K’theddion Star Port was impressive enough to Kreen’s eyes; an ancient, deadly-looking craft of pitted black metal, with small rakish wings, it loomed half again as tall as the modern big-bellied trading ships that surrounded it. Like virtually all of Haviland Tuf’s infrequent visitors, Kreen was awed (though he did not admit it) to discover that the *Griffin* was only a shuttle, that the *Ark* itself waited above, in orbit.

The shuttle deck of the *Ark* was twice the size of the landing field at K’theddion Star Port, and full of ships; four other shuttles identical to the *Griffin*, an old cargo ship with the teardrop shape characteristic of Avalon sitting on its three bent landing legs, a wicked-looking military flyer, an absurd golden barge with baroque ornamentation and a primitive harpoon gun mounted atop it, two craft that looked alien and vaguely untrustworthy, another that appeared to be nothing but a large square plate with a pole in its center. “Do you collect spacecraft?” Jaime Kreen asked, after Tuf had docked the *Griffin* and they had emerged onto the deck.

“An interesting concept,” Tuf replied. “But no. The five landing shuttles are part of the *Ark* itself, and I retain the old trader for sentimental

reasons, since it was my first ship. The others I have acquired along the way. Perhaps I should clean out the deck at some point, but there is the possibility that some of these vessels might have some commercial value, so I have refrained up to now. I will have to give the matter some thought. Now, come along with me."

They moved past a series of reception rooms and down several corridors, to a motor pool where several small three-wheeled vehicles were parked side-by-side. Haviland Tuf ushered Kreen into one, set Dax between them, and drove them down a great echoing tunnel that seemed to go on and on for kilometers. The shaft was lined by glass vats of many different sizes and shapes, each filled with fluids and gels. In some vats, dark shapes moved sluggishly within translucent bags, and seemed to peer out at them as they passed. Kreen found the suggestive motions somehow terrible and frightening. Haviland Tuf never noticed; he looked neither right nor left as he drove.

Tuf stopped the vehicle in a room identical to the one that they had started from, gathered up Dax, and led his prisoner down another corridor into a cramped, dustily-comfortable chamber full of overstuffed furniture. He motioned Kreen to a seat and took one himself, setting Dax in a third chair since, when seated, he had no apparent lap. "Now," said Haviland Tuf, "we shall talk."

The vast dimensions of Tuf's ship had left Jaime Kreen somewhat sub-

dued, but now a bit of spirit returned to his face. "We have nothing to talk about," he said.

"You think not?" said Haviland Tuf. "I disagree. It was not simply the generosity of my soul which bid me to rescue you from the ignominy of imprisonment. You pose a mystery to me, as I remarked to Dax when you first assaulted us. Mysteries disturb me. I desire some clarification."

Jaime Kreen's thin face took on a calculating look. "Why should I help you out? Your false charges put me in prison and now you've bought me as a slave. And you broke my arms, too! I don't owe you anything."

"Sir," said Haviland Tuf, locking his large hands together on his immense paunch, "we have already established that you owe me four hundred standards. I am prepared to be reasonable. I will ask you questions. You will give me answers. For each answer, I will deduct one standard from the sum you owe me."

"One standard! Absurd. Whatever you want to know is worth more than that! Ten standards for each answer! Not a tenth less!"

"I assure you," said Haviland Tuf, "that whatever information you possess is probably worth nothing at all. I am merely curious. I am a slave to curiosity. It is a fault of mine, one I am helpless to correct, and one that you are now in a position to take advantage of. Yet you should not attempt to press me too far. I refuse to be cheated. Two standards."

"Nine," said Kreen.

"Three, and I will go no higher. I grow impatient." Tuf's face was completely emotionless.

"Eight," said Kreen. "Don't try to bluff me."

Haviland Tuf was silent. He sat unmoving except for his eyes, which wandered over to Dax. The big black tomcat yawned and stretched himself.

After five minutes of silence, Kreen said, "Six standards, and that's cheap. I know a lot of important things, things that Moses would want to know. Six."

Haviland Tuf said nothing. Minutes passed.

"Five," said Kreen, swearing.

Haviland Tuf said nothing.

"All right," Kreen said at last. "Three standards. You are a cheat and a scoundrel, as well as a criminal. You have no ethics."

"I will ignore your bombast," said Haviland Tuf. "Three standards is the agreed sum, then. A sudden hunch comes to me that you may attempt to give evasive or confusing answers, so that I would have to ask many questions in order to elicit a small particle of information. I warn you that I will brook no such nonsense. Nor will I tolerate any deception. For each lie you attempt to tell me, I will add an additional ten standards on to your debt."

Kreen laughed. "I have no intention of lying, Tuf. But even if I did, how would you ever know? I am not that transparent."

Haviland Tuf permitted himself a



smile, a tiny tight-lipped smile that barely touched his face and then was gone again. "Sir," he said, "I assure you that I would know at once. Dax would tell me, in precisely the same manner that he told me how far you would come down from your absurd demand for ten standards, and warned me of your cowardly attack on K'theddion. Dax is a feline, sir, as no doubt even you will perceive. All felines are at least partially psionic, as mankind has known throughout history, and Dax is the end product of generations of breeding and genetic manipulation that have greatly strengthened this trait in him. So you will save all of us a good deal of time and effort if you will give complete, honest answers. While Dax' talents are not sufficiently sophisticated to pluck difficult abstract concepts from your mind, I assure you that he can easily tell if you are lying or holding something back. So, with this in mind, shall we begin?"

Jaime Kreen was glaring at the big tomcat with venom in his eyes. Dax yawned again. "Go ahead," Kreen said sullenly.

"First," said Tuf, "there is the mystery of your assault upon us. I do not know you, sir. You are utterly a stranger to me. I am a simple merchant, and my services benefit all those who employ me. I had in no way given you offense. Yet you attacked me. This raises several questions. Why? What was your motive? Did you know me in some way? Had I given you offense in some action I have since forgotten?"

"Is that one question or four?" Kreen said.

Haviland Tuf folded his hands against his stomach again. "A point, sir. Begin with this: do you know me?"

"No," said Kreen, "but I know of you, by reputation. You and your *Ark* are unique and widely-famed, Tuf. And you were easy to recognize, when I chanced across you in that slimy Kytheddene restaurant. Gross hairless white giants are not exceptionally common, you know."

"Three standards," Tuf said. "I will take notice of neither your insults nor your flattery. You did not know me, then. Why did you assault me?"

"I was drunk."

"Insufficient. It is true that you were drunk. But there were a number of other patrons in the eatery, any of whom might have obliged you if you were simply looking for a brawl. You were not. You choose me out of all those others. Why?"

"I dislike you. You are a criminal, by my standards."

"Standards vary, of course," Haviland Tuf replied. "On some worlds, my size itself would be a crime. On others, the fact that you wear boots made of cowhide would be punishable by long imprisonment. So in that sense, we are both of us criminals. Yet it is my feeling that it is unjust to judge a man by any laws save those of the culture in which he lives, or is presently moving. In that sense, I am no criminal, and your answer is still insufficient. Explain your dislike of

me. What crimes do you charge against me?"

"I am a Charitan," Kreen said. He coughed. "Or perhaps I should say I was formerly a Charitan. In fact, I was an administrator, although only sixth grade. Moses destroyed my career. I charge you with the crime of assisting Moses. It is well known. Do not bore me with your denials."

Haviland Tuf glanced at Dax. "You appear to be telling the truth, and your answer contains a fair amount of information, although it raises several questions as well, and is far from clear. Nonetheless, I will do you a kindness and count it as an answer. Six standards, then. And my next questions will be simple ones. Who is Moses and what is a Charitan?"

Jaime Kreen looked incredulous. "Do you want to give me six standards? Don't pretend, Tuf. I won't buy it. You know who Moses is."

"Indeed I do, in a sense," Tuf replied. "Moses is a myth-figure associated with the various orthodox Christian religions, a figure alleged to have lived on Old Earth in the vast distant past. I believe he is somehow associated or related to Noah, who my *Ark* is named after, in a fashion. Moses and Noah were brothers, perhaps. The details escape me. In any event, both of them were among the earliest practitioners of ecological warfare, a field with which I am quite familiar. So, in a sense, I do know who Moses is. However, that Moses has been dead for a period sufficiently

long to make it unlikely that he had destroyed your career, and even more unlikely that he would care a whit about any information you cared to convey to me. So I must judge that you are speaking of some other Moses, who I do not know. And that, sir, was the thrust of my question, the very point."

"All right," Kreen said, "if you insist on feigning ignorance, I'll play your silly game. A Charitan is a citizen of Charity, as you know perfectly well. Moses, as he styles himself, is a religious demagogue who heads the Holy Altruistic Restoration. With your aid he has conducted a devastating campaign of ecological warfare against the City of Hope, our single great arcology, the center of Charitan life."

"Twelve standards," said Tuf. "Explain further."

Kreen sighed and shifted in his chair. "The Holy Altruists were the original settlers of Charity, centuries ago. They left their original planet because their religious sensibilities were offended by its advanced technology. The Holy Altruistic Church teaches that salvation is obtained by living a simple life close to nature, by suffering and by self-sacrifice. So the Altruists came to a raw planet and suffered and sacrificed and died quite happily for a hundred years or so. Then, unfortunately for them, there was a second wave of settlers. The newcomers built the arcology we call the City of Hope, farmed the land with advanced robotic machinery,

opened a star port, and generally sinned against God. Worse, after a few years, children of the Altruists began to desert to the City in droves, to enjoy life a little. In two generations, nothing was left of Altruists except a few old folks. Then Moses appeared, leading this movement they call the Restoration. He marched into the City of Hope, confronted the council of administrators, and demanded that we let his people go. The administrators explained that none of his people *wanted* to go. Moses was unmoved. He said that unless we let his people go, closed the star port, and dismantled the City of Hope to live close to God, he would bring down plagues on us."

"Interesting," said Haviland Tuf. "Continue."

"It's your money," said Jaime Kreen. "Well, the administrators threw Moses out on his hairy ass, and everybody had a good laugh. But we also did some checking, just to be safe. We had all heard ancient horror stories about biological warfare, of course, but we presumed those secrets long lost. Our computers confirmed as much. Techniques of cloning and genetic manipulation such as were employed by the Earth Imperials survived on only a handful of planets, those much scattered, and the nearest some seven years from us even by ftl drive."

"I see," said Haviland Tuf. "Yet no doubt you also learned of the seedships of the Federal Empire's vanished Ecological Engineering Corps."

"We did," said Kreen, smiling sourly. "All gone, destroyed or lost or crippled centuries ago, of no concern to us. Until we learned otherwise from the captain of one trading vessel that put down at Port Faith. Rumors travel, Tuf, even from star to star. Your fame precedes you and condemns you. He told us all about you, you and this *Ark* you stumbled on, and used to line your pockets with standards and your gut with layers of fat. Other crews from other worlds confirmed your existence, and that you controlled a still-functioning EEC seedship. But we had no idea that you were in league with Moses until the plagues began."

A single thin furrow appeared on Haviland Tuf's massive bone-white brow, and then was gone again. "I begin to grasp your complaint," he said. He rose, a slow ponderous movement that was almost tidal, and stood towering above Jaime Kreen. "I will credit you with fifteen standards."

Kreen made a rude noise. "Only three standards, for all that. Tuf, you—"

"Twenty standards, then, if only to quiet you and restore some tranquility to the *Ark*. I have a beneficent nature. Your debt is now three hundred eighty standards. I shall ask you one further question, and give you an opportunity to reduce it to three hundred seventy-seven."

"Ask."

"What are the coordinates for your world, Charity?"

Charity was not so terribly far from

K'theddion, as interstellar distances go, and the voyage between took but three standard weeks. For Jaime Kreen, they were busy weeks. While the *Ark* silently ate up the light years, Kreen worked.

The *Ark* had been built a millenium ago to house a crew of two hundred, but it was so thoroughly automated that Haviland Tuf had little difficulty operating it alone, especially since he worked on a much smaller scale than that for which the seedship had been designed. Still, here and there, ancient machineries had broken down, and there were whole sections of the craft that stood unlit and abandoned, where nothing had lived in generations. Centuries of dust had accumulated in some of the most desolate corridors. Haviland Tuf gave Kreen a broom and told him to clean it out.

Kreen begged off, citing his broken arms as a more-than-ample excuse. Haviland Tuf then sedated him, and confined him within the *Ark's* stasis tank, where the same great energies that warped the fabric of space could be used to do strange things to time. It was the last and greatest secret of the Earth Imperials, Tuf claimed, and had been lost virtually everywhere else. He used it to bring his clones to full maturity in a matter of days, and now he used it to age Jaime Kreen, and incidentally heal his broken arms in hours.

With his newly-mended arms, Kreen set to sweeping at the rate of five standards an hour.

He swept kilometers of corridor,

more rooms than he could count, all manner of empty cages where more than dust had accumulated. He swept until his arms ached, and when he did not have broom in hand, Haviland Tuf found other things for him to do. At mealtime Kreen played the butler, fetching Tuf pewter mugs of brown ale and platters heaped high with steamed vegetables. Tuf accepted them impassively in the overstuffed armchair where it was his custom to take his leisure and read. Kreen was forced to feed Dax too, sometimes three or four times over, since the big tomcat was a fussy eater and Tuf insisted that his preferences be indulged. Only when Dax was satiated was Jaime Kreen allowed to see to his own meal.

Once Kreen was asked to make a minor repair that the *Ark's* machinery had not attended to, for some reason, but he bungled the job so badly that Haviland Tuf promptly relieved him of all future assignments of that kind. "The blame lies entirely with me, sir," Tuf said when it happened. "I failed to remember that you are by training a bureaucrat, and thus good for virtually nothing."

Despite all his labors, Jaime Kreen's debt dwindled with excruciating slowness, and sometimes it did not dwindle at all. Kreen very quickly discovered that Haviland Tuf gave absolutely nothing away. For mending his broken arms, Tuf tacked a hundred-standard "medical services" charge onto Kreen's obligation. He also charged a standard a day for air,

a tenth-standard for each liter of water, a half-standard for a mug of ale. Meals were fairly cheap; only two standards each if Kreen ate basic fare. But basic fare was an unpalatable fortified mash, so as often as not Kreen payed higher prices for the tasty vegetable stews that Tuf himself favored. He would have been willing to pay even more for meat, but Tuf refused to provide it. On the one occasion when he asked Tuf to clone a steak for him, the trader simply stared and said, "We do not eat animal flesh here," then went on his way as unperturbed as ever.

During his first day on the *Ark*, Jaime Kreen asked Haviland Tuf where the toilet could be found. Tuf charged him three standards for the answer, and an additional tenth-standard for the use of the facility.

From time to time, Kreen thought about murder. But even in his most homicidal moments, when he was drunk as a dog, the idea never seemed quite feasible. Dax was always about when Tuf was, prowling down by the corridors by the giant's side or riding serenely in his arms, and Kreen was certain that his host had other allies as well. He had glimpsed them on his travels around the ship; dark winged shapes that wheeled above his head in the more cavernous chambers, furtive shadows that scrambled away between the machines when surprised. He never saw them clearly, any of them, but he was somehow certain that he would see them all too well indeed were he to assault Tuf.

Instead, hoping to reduce his debt a bit faster, he gambled.

That was not perhaps the wisest course of action, but Jaime Kreen had a bit of a weakness for gambling. So each night they consumed hours playing a ridiculous game that Tuf enjoyed, shaking dice and moving counters around an imaginary star cluster, buying and selling and trading planets, building cities and arcologies and charging other star travelers all manner of landing fees and taxes. Unfortunately for Kreen, Tuf was much better at the game than he was, and usually ended up winning back a fair portion of the wages he had paid Kreen during the day.

Away from the gaming table, Haviland Tuf seldom spoke to Kreen at all except to set him tasks and haggle about payments back and forth. Whatever intentions he had toward Charity, he certainly did not volunteer them, and Kreen did not intend to ask, since every question added three standards onto his debt. Nor did Tuf ask any questions that might have tipped his hand. He simply continued to his solitary habits, worked alone in the various cloning rooms and laboratories of the *Ark*, read dusty ancient books in languages that Kreen could not comprehend, and held long conversations with Dax. Thus life went on, until the day they entered orbit around Charity, and Haviland Tuf summoned Kreen to the communications room.

The communications room was long

and narrow, its walls lined with dark viewscreens and softly-shining consoles. Haviland Tuf was seated before one of the blackened screens when Kreen entered, with Dax on his knee. He swiveled at the sound of the door panel sliding shut. "I have attempted to open channels of communication with the City of Hope," he said. "Observe." He touched a playback button on his console.

As Jaime Kreen slid into an empty seat, light flared on the viewscreen in front of Tuf, and coalesced into the face of Moses; a man in late middle age, with features that were regular and almost handsome, thinning gray-brown hair, and deceptively gentle hazel eyes. "Move off, starship," the recorded voice of the Altruistic leader said. His tones were deep and mellow, even if his words were harsh. "Port Faith is closed, and Charity is under new government. The people of this world wish no traffic with sinners, and have no need of the luxuries you bring. Leave us in peace." He raised his hand in a gesture that might have meant 'Blessings' and might have meant 'Halt,' and then the screen went blank.

"So he has won," Jaime Kreen said in a tired voice.

"This would appear to be the case," said Haviland Tuf. He scratched Dax behind the ear and began to stroke him. "Your debt to me presently stands at two-hundred eighty-four standards, sir."

"Yes," Kreen said suspiciously. "What of it?"

"I wish you to undertake a mission for me. You will descend to the surface of Charity in secrecy, locate the former leaders of your council of administrators, and bring them here for a consultation. In return, I will credit you with fifty standards toward your outstanding debt."

Jaime Kreen laughed. "Don't be ridiculous, Tuf. The sum is absurdly small for such a perilous mission. And I wouldn't do it even if you were to make me a fair offer. Which I'm sure that you would not. Something like canceling out my entire debt, and paying me some two hundred standards besides."

Haviland Tuf stroked Dax. "This man Jaime Kreen takes us for absolute fools," he said to the cat. "Next I suspect he will also ask for the *Ark* itself, and perhaps title to a small planet or two. He has no sense of proportion." Dax gave a small purr that might or might not have meant something. Tuf looked up again at Jaime Kreen. "I am in an uncommonly generous mood, and I may allow you to take advantage of me in this single instance. One hundred standards, sir. It is twice what this small task is worth."

"Bah," Kreen replied. "Dax is telling you what I think of your offer, I'm sure. This scheme of yours is nonsense. I have no idea whether the council members are alive or dead, to be found in the City of Hope or elsewhere, free or imprisoned. I can hardly expect them to cooperate with me, either. Not when I come bearing a

summons from you, who we know to be an ally of Moses. And if Moses captures me, I will spend the rest of my life grubbing for turnips. Likely as not, I *will* be captured. Where do you intend me to land? Moses may have a recording set up to answer approaching starships, but he will certainly have posted guards around Port Faith to keep it closed. Think of the risks, Tuf! I couldn't possibly attempt this for anything less than the cancellation of my entire debt! All of it! Not a single standard less, you hear!" He crossed his arms stubbornly against his chest. "Tell him, Dax, you know how adamant I am."

Haviland Tuf's bone-white features remained impassive, but a small sigh escaped his lips. "You are truly a cruel man, sir. You make me rue the day when I carelessly told you that Dax was more than an ordinary feline. You deprive an old man of his one useful bargaining tool, and swindle him mercilessly with this inflexible stubborn attitude. Yet I have no choice but to give in. Two hundred eighty-four standards, then. It is established."

Jaime Kreen grinned. "At last you're being sensible. Good. I'll take the *Griffin*."

"Sir," said Haviland Tuf. "You will not. You will take the trading ship you noticed on the shuttle deck, the *Cornucopia of Excellent Goods at Low Prices*, the ship wherein I began my own career many years ago."

"That! Absolutely not, Tuf. That ship is in obvious disrepair. I am going

to have to make a difficult landing in some wilderness area, and I insist on a craft capable of surviving a bit of rough treatment. The *Griffin*, or one of the other shuttles."

"Dax," said Haviland Tuf to the quiet tomcat, "I fear for us. We are shut up in this small place with a congenital idiot, a man with neither ethics nor courtesy nor comprehension. I must explain every obvious ramification of a task that was childishly simple to begin with."

"What?"

"Sir," said Haviland Tuf. "The *Griffin* is a shuttle. It is unique in its design, and it has no stardrive. Should you be caught landing in such a craft, even a person with less intellectual equipment than yourself might deduce that a larger ship such as the *Ark* remained above, since shuttles frequently need something to shuttle from, and seldom materialize from the vacuum of deep space. The *Cornucopia of Excellent Goods at Low Prices*, in contrast, is a common model Avalon-made starship, complete with drive, albeit dysfunctional in this case. Do you understand the point, sir? Do you grasp the essential differences between the two craft?"

"Yes, Tuf. But since I don't intend to be captured, the distinction is academic. Still, I'll humor you. For an additional fifty standards above and beyond my debt, I will consent to use your *Cornucopia*."

Haviland Tuf said nothing.

Jaime Kreen fidgeted. "Dax is telling you that I'm going to give in if you

wait, isn't he? Well, I'm not. You can't trick me that way any more, do you understand." He crossed his arms more tightly than ever. "I am a rock. I am steel. I am adamantine in my resolve on this matter."

Haviland Tuf stroked Dax, and said nothing.

"Wait all you like, Tuf," said Kreen. "Just this once, I'm going to fool you. I can wait too. We'll wait together. And I'll never give in. Never. Never. NEVER."

When the *Cornucopia of Excellent Goods at Low Prices* returned from the surface of Charity a week and a half later, Jaime Kreen had three others with him, all former top administrators of the City of Hope. Rej Laithor was an elderly hatchet-faced woman with iron-gray hair who had formerly chaired the council; since Moses had taken over, she had been undergoing retraining as a spinning-wheel operator. She was accompanied by a younger woman and a large man who looked as if he had once been very fat, although now his skin hung from his face in loose yellow folds.

Haviland Tuf received them in a conference room. He was seated at the head of the table when Kreen ushered the Charitans in, his hands folded neatly in front of him, and Dax curled up lazily on the polished metal.

"I am pleased that you could come," he said as the administrators took seats. "You appear hostile, however, and I regret this. Let me begin by assuring you that I played no role

whatsoever in your vicissitudes."

Rej Laithor snorted. "I interrogated Kreen when he found me, Tuf, and he told me of your protestations of innocence. I believe them no more than he did. Our city and our way of life were destroyed by ecological warfare, by the plagues that this Moses let loose on us. Our computers tell us that only you and this ship are capable of waging such warfare."

"Indeed," said Haviland Tuf. "I might suggest that you consider reprogramming your computers, if they frequently make such errors."

"We have no computers now," the former fat man said dolefully. "I was Chief of Programming, however, and I resent the inference that I was less than capable."

"You *are* less than capable, Rikken, or you never would have let those lice infest the system," Rej Laithor said. "That makes Tuf not one whit less innocent, however. They were his lice."

"I do not have a monopoly of lice," Haviland Tuf said simply. Then he raised a hand. "Yet we should desist from this squabbling. It takes us nowhere. Let us, instead, discuss the sad history and plight of the City of Hope, and of Moses and the plagues. Perhaps you are familiar with the original Moses, the Old Earth Moses whom your own antagonist patterns himself after. This elder Moses had no seedship, no formal tools for biowar. He did however have a god, who proved to be equally effective. His people were being held in captivity. To free them,

he sent ten plagues against his enemies. Did your Moses follow this self-same pattern?"

"Don't answer him for free," Jaime Kreen said, from where he lounged against the door.

Rej Laithor glanced at him as if he were insane. "We looked up the original Moses story," she said when she turned back to Tuf. "Once the plagues started coming, we wanted to know what to expect. Moses used the same plagues as the original, but he varied the order a bit. And we only got six of them, at which point the council gave in to the Altruistic demands, closed Port Faith, and evacuated the City of Hope." She held up her hands. "Look at them, look at those blisters, look at that callous. He has us all scattered through these rotting Altrusitic villages, living like primitives. Hungry, too. He's mad."

"First Moses turned the waters of the river into blood," said Haviland Tuf.

"It was disgusting," the younger woman said. "All the water in the arcology. The fountains. The swimming pools. The taps. You turned on the faucet or stepped into the shower and suddenly you were covered with blood. Even the toilets were full of blood."

"It wasn't real blood," Jaime Kreen added. "We analyzed it. Some organic poison had been added to the city water supply. But whatever it was made the water thick and red and undrinkable. How did you do it, Tuf?"

Haviland Tuf ignored the question. "The second plague was a plague of frogs."

"In our yeast tanks, and our whole hydroponics section," said Kreen. "I was the supervising administrator. It ruined me. The frogs gummed up all the machinery with their bodies, and they died and rotted and spoiled the food. Laithor gave me a summary discharge when I couldn't contain them. As if it was my fault!" He grimaced at his former superior. "Well, at least I didn't wind up slaving for Moses. I left for K'theddion when it was still possible to leave."

"Third," said Haviland Tuf, "was the plague of lice."

"Everywhere," muttered the former fat man. "Everywhere. They couldn't live inside the system, of course, so they died there, but that was bad enough. The system went down. The lice just moved on. Everybody had them. You couldn't stay clean enough to avoid it."

"Fourth was the plague of flies."

The Charitans all looked glum. No one said anything.

"Fifth," continued Haviland Tuf, "Moses set loose a murrain that killed all the cattle of his enemies."

"He skipped the murrain," said Rej Laithor. "We had our herds out on the prairies, but we put guards around them, and down in the cellars around the meatbeasts too. We were expecting him. Nothing happened. He skipped the boils too, thank goodness, and the hail. I would have liked to have seen him make it hail inside the

arcology. He went straight to the locusts."

"Indeed," said Haviland Tuf. "The eighth plague. Did these locusts eat your fields clean?"

"The locusts didn't touch our fields. They were inside the city, in the sealed grain storage compartments. Three years worth of surplus were gone overnight."

"The ninth plague," said Haviland Tuf, "was darkness itself."

"I'm glad I missed that one," volunteered Jaime Kreen.

"Every light in the city died," said Rej Laithor. "Our repair crews had to fight through piles of dead flies and live locusts, scratching at their lice all the while. It was hopeless, and the people were already leaving by the thousands. I ordered the city abandoned once it became clear that even the secondary power stations were full of bugs. After that, everything went very fast. A week later I was living in an unheated cabin in the Hills of Honest Labor, and learning how to operate a spinning wheel." Her tone was savage.

"Your fate is a sad one," Haviland Tuf agreed in a placid voice. "Yet you should not despair. When I heard of your plight from Jaime Kreen, I resolved at once to help you. And here I am."

Rej Laithor looked suspicious. "Help us?" she said.

"I will win back your City of Hope for you," said Haviland Tuf. "I will smite Moses and his Holy Altruistic Restoration. I will free you from your

spinning wheel and give you back your vocoder."

The young woman and the former fat man were beaming. Rej Laithor continued to frown. "Why?"

"Rej Laithor asks me why," Haviland Tuf said to Dax, stroking the cat softly. "My motives are always imputed. People have no trust in this hard modern age, Dax." He looked at the top administrator. "I will help you because the situation on Charity moves me, because your people are obviously in pain. Moses is no true altruist, as we both know, but this does not mean the impulse to self-sacrifice and benevolence is dead in humanity. I deplore Moses and his tactics, his use of innocent insects and animals in an unnatural manner to impose his will on his fellow human beings. Are these motives sufficient for you, Rej Laithor? If not, say as much, and I will take my *Ark* and depart."

"No," she said. "No, Don't do that. We accept. I accept, on behalf of the City of Hope. If you succeed, we will build a statue to you, and set it atop the city to be seen for kilometers."

"Passing birds would relieve themselves upon such a statue," said Haviland Tuf. "The wind would abrade and erode it, and it would be placed too high for any to see its features clearly. Such a statue might tickle my vanity—I am a small man, for all my size, easily pleased by such things—but I would want it set in your largest public square, safe from all harm."

"Of course," Laithor said quickly.

"Anything . . . anything at all."

"Anything," said Haviland Tuf. It was not a question. "In addition to the statue, I will also require fifty thousand standards." Her face went pale and then red. "You said," she began in a sort of a choked whisper. "You . . . benevolence . . . altruism . . . our need . . . the spinning-wheel . . ."

"I must meet my expenses," said Haviland Tuf. "Certainly I am willing to donate my own time to this matter, but the resources of the *Ark* are too valuable to squander. I must eat. Surely the coffers of the City of Hope are sufficient to meet this small sum."

Rej Laithor made a sputtering noise.

"I'll handle this," Jaime Kreen interjected. He turned to Tuf. "Ten thousand standards. No more. Nothing. Ten thousand."

"Impossible," said Haviland Tuf. "My costs will surely exceed forty thousand standards. Perhaps I can diet for a time, take only that sum, and content myself with a small loss. Your people do suffer."

"Fifteen thousand," Kreen said.

Haviland Tuf said nothing.

"Oh, hell," said Jaime Kreen. "Forty thousand then, and I hope that damned cat dies of gout."

It was the habit of the man called Moses to walk each evening along the rugged footpaths of the Hills of Honest Labor, to watch the beauty of the sunset and contemplate in solitude the

problems of the day. He would stride along briskly at a pace few younger men could match, his long crooked staff in hand and a peaceful look on his face, his eyes fixed on far horizons. Often he would cover a dozen kilometers before turning back toward home and bed.

The pillar of fire first appeared to him on such a walk.

He had just topped a rise and there it was; a twisting, writhing funnel of orange flame, shot through with flickers of blue and yellow, tracing a path through the rocks and the dust straight toward him. It was easily thirty meters high, crowned by a small gray cloud that somehow paced it.

Moses rested on the crest of the hill, leaning on his staff, and watched it come.

The pillar of fire stopped five meters from him, on slightly lower ground. "Moses," it said in a booming thunderous voice from above, "I am the Lord God, and you have sinned against me. *Give my people back!*"

Moses chuckled. "Very good," he said in his rich tones. "Really, very good."

The pillar of fire trembled and spun. "Release the people of the City of Hope from your cruel bondage," it demanded, "lest in my wrath I bring down plagues upon you."

Moses scowled and pointed his staff at the pillar of fire. "I am the one who brings down plagues around here, I would thank you to remember." There was a hint of iron in his voice.

"False plagues from a false pro-

phet, as both you and I know full well," boomed the pillar of fire. "All of your feeble tricks and travesties are known to me, the Lord God whose name you have profaned. Give my people back, or you shall look upon the terrible face of genuine pestilence!"

"Nonsense," said Moses. He began walking downhill, toward the pillar of fire. "Who are you?"

"I am what am," the pillar of fire said, retreating hastily as Moses advanced. "I am the Lord God."

"You are a holographic projection," Moses said, "emanating from that silly cloud above us. I am a holy man, not a stupid one. Go now."

The pillar of fire stood its ground, and rumbled threateningly. Moses walked right through it, and continued smartly down the hill. The pillar remained, writhing and spinning, until long after Moses had vanished. "Indeed," it boomed in its vast thunderous voice to the empty night. Then it shuddered and winked out.

The small gray cloud scuttled across the hills and caught up to Moses a kilometer down the road. The pillar of fire snaked down again, crackling with ominous energy. Moses walked around it. The pillar of fire began to follow him.

"You city-dwellers begin to try my patience," Moses said as he walked. "You seduce my people with your sinful, slothful ways, and now you interrupt my evening reflections. I have had a hard day of holy toil. Be warned that you are near to provoking

me. I have forbidden all this traffic with science. Take your aircar and your holographs and be gone with you, before I bring down a plague of boils upon your people."

"Empty words, sir," said the pillar of fire, trailing close on his heels. "Boils are well beyond your limited abilities. Do you think to deceive one such as I as easily as you deceived that pack of small-visioned bureaucrats?"

Moses hesitated, and cast a thoughtful look over his shoulder. "You doubt the powers of my God? I would think that my demonstrations had been ample enough."

"Indeed," said the pillar of fire. "Yet the things demonstrated were your own limitations, and those of your opponents. It is clear that you planned long ahead, and well, but your only powers were in that."

"No doubt you believe the plagues that swept the City of Hope were coincidence, bad fortune?"

"You mistake me, sir. I know full well what they were, and there was nothing supernatural in any of them. For generations the young and the disaffected among the Altruists had been emigrating to the City. How simple and obvious to plant among their numbers your own spies, saboteurs, and agents. How cunning to wait a year or two or five until each among those had been fully accepted into the City of Hope, and given positions of responsibility. Frogs and insects can be bred, sir, and easily, whether in a cabin in the Hills of Honest Labor or in an apartment com-

plex within the City itself. Release such creatures in the wild, and they will dissipate and die. The elements will slay them, natural enemies will hunt them down, they will perish for want of food; the complex merciless mechanism of the ecology will set them in their natural place. But how different within an arcology, the veritable architectural ecology that is truly no ecology at all, for it has a niche for no animal but humanity alone. The weather within is always fair and gentle, no competing species of predatory enemies exist, and it is an easy enough thing to find a proper source of food. Under such conditions, the result is inevitably a plague. Yet a false plague, looming large only within the confines of the City; outside, your little plagues of frogs and lice and flies would be as nothing to the wind and the rain and the wild."

"I turned their water into blood," Moses insisted.

"Indeed, your agents placed organic chemicals in the City's water supply."

"I brought down a plague of darkness," Moses said. His tone had grown quite defensive.

"Sir," said the pillar of fire, "you insult my intelligence with the obvious. You turned out a light."

Moses swung about to face the pillar, glaring up at it defiantly, his face red by reflected light. "I deny this, I deny all of it. I am a true prophet."

"The true Moses brought down a grievous murrain upon his enemies,"

the pillar of fire boomed in an even voice, as much as thunder can be even. "You brought none. The true Moses set upon his enemies a festering sweat of boils, so that none could stand before him. You did not. Your omissions give you away, sir. True pestilence is beyond your powers. The true Moses devastated the lands of his enemies with hail that rained down day and night. That plague too defeated your own limited capacities. Yet your enemies, beset by your tricks, surrendered the City of Hope before the tenth plague, the death of the first-born, and that was to your great good fortune, for by that time you were of a certainty plagued out."

Moses smote the pillar of fire with his staff. There was no apparent effect on either staff or pillar. "Move off," he shouted. "Whoever you are, you are no God of mine. I defy you. Do your worst! You have said it yourself; in nature, plagues are less simple things than inside an arcology. We are secure in the simple life we live in the Hills of Honest Labor, close to our God. We are full of grace. You cannot harm us."

"Indeed," boomed the pillar of fire. "You are wrong, Moses. *Give my people back!*"

Moses was not listening. He walked through the fire again and, furious, began to race back toward the village.

"When will you start?" Jaime Kreen asked eagerly after Haviland Tuf had returned to the *Ark*. He had

remained aboard after taking the other Charitans back to the surface, since—as he had pointed out—the City of Hope was uninhabitable and there was no place for him in the villages and work camps of the Altruists. “Why aren’t you working? When will—”

“Sir,” said Haviland Tuf. He was sitting in his favorite chair, eating a bowl of creamed mushrooms and lemon-peas. A mug of ale sat on the table by his side. “Do not presume to give me orders, unless you chance to prefer the hospitality of Moses to my own.” He sipped at his ale. “Such work as needs be done has been done. My hands, unlike your own, were not entirely idle during our voyage from K’theddion.”

“But that was before . . .”

“Details,” said Haviland Tuf. “Most of the basic cloning is done. The clones too have kept themselves occupied. The breeding tanks are full.” He blinked at Kreen. “Leave me to my dinner.”

“The plagues,” said Kreen. “When will they begin?”

“The first,” said Haviland Tuf, “began some hours ago.”

Down through the Hills of Honest Labor, past the six villages and the rocky fields of the Holy Altruists and the sprawling barren work camps where the refugees were quartered, ran the wide slow-flowing river that the Altruists called God’s Grace and other Charitans the River of Sweat. When dawn broke on the distant hori-

zon, those who had gone down to the riverside to fish or fill their jugs or wash their clothing returned to the villages and work camps with cries of horror. “Blood,” they shouted. “The river is blood, as the waters of the City were.” Moses was sent for, and he went to the river reluctantly, wrinkling his nose at the smell of dead and dying fish, and the stink of the blood itself. “A trick of the sinners of the City of Hope,” he said, when he looked down on the sluggish scarlet stream. “The Lord God renews the natural world. I will pray, and in a day the river will be clean and fresh again.” He stood in the mud, at his feet a bloody shallow pool full of dead fish, and stretched out his staff over the diseased waters and began to pray. He prayed for a day and a night, but the waters did not clear.

When dawn came again, Moses retired to his cabin, and gave orders, and Rej Laithor and five other top administrators were taken from their families and questioned most intensely. The questioners learned nothing. Patrols of armed Altruists went upstream, searching for the conspirators who were dumping chemical pollutants into the river. They found nothing. They traveled for three days and three nights, as far as the great waterfall in the High Country, and even there the tumbling waters were blood, blood, blood.

Moses prayed without surcease, both day and night, until he finally collapsed from exhaustion, and his lieutenants took him back to his sim-

ple cabin. The river remained red and murky.

"He is beaten," Jaime Kreen said after a week, when Haviland Tuf had returned from scouting out the situation below in his airbarge. "Why does he wait?"

"He waits for the river to cleanse itself," said Haviland Tuf. "It is one thing to contaminate the water supply of a closed system like your arcology, where only a finite amount of contaminant will be sufficient for the task. A river is an undertaking of a higher magnitude. Inject any amount of chemical you please into its waters, and sooner or later it will all flow past and the river will be clean again. Moses no doubt believes we shall soon run out of chemicals."

"Then how are you doing it?"

"Microorganisms, unlike chemical substances, multiply and renew themselves," said Haviland Tuf. "Even the waters of Old Earth were subject to such red tides, the ancient records of the EEC tell us. There is a world called Scarne where the corresponding lifeform is so virulent that even the oceans themselves are perpetually stained, and all other creatures must adapt or die. Those who built the *Ark* visited Scarne and took cloning material."

That night the pillar of fire appeared outside of Moses' cabin, and frigtened away the guards. "*Give my people back!*" it roared.

Moses staggered to the door and threw it wide. "You are a delusion of Satan," he screamed, "but I will not

be tricked. Be gone. We will drink no more from the river, trickster. There are deep wells we can take our water from, and we can dig others."

The pillar of fire writhed and crackled. "No doubt," it commented, "yet you only delay the inevitable. Release the people from the City of Hope, or I will set the plague of frogs upon you."

"I will eat your frogs," Moses yelled. "They will be fine and delicious."

"These frogs will come from the river," said the pillar of fire, "and they shall be more terrible than you can imagine."

"Nothing lives in that poisoned gutter," Moses said. "You have seen to that." Then he slammed the door, and would listen no more to the pillar of fire.

The guards that Moses sent to the river at dawn came back bloody and hysterical with fear.

"There were *things* there," one of them testified, "moving around in the pools of blood. Little crimson wrigglers, 'bout as big as your finger, but their legs was twice as long. Looked like red frogs, except when we got closer we saw that they had teeth, and they was ripping up the dead fish. Hardly any fish was left at all, and them that were had these frog-things crawling all over them. Then Danel tried to pick up one of these frogs, and it snapped at him, right into his hand, and he screamed and all of a sudden the air was full of the damn things,

jumping around like they was flying, biting people, tearing at you when they got hold. It was terrible. How are you going to fight a frog? Stab it? Shoot it? *How?*” He was shaking.

Moses sent another party down to the river, armed with sacks and poison and torches. They came back in total disarray, carrying two of their number. One man died that morning, his throat torn out by a frog. Another went a few hours later, from the fever that many of those bitten had developed.

By dusk, all the fish were gone. The frogs began to move up from the river, into the villages. The Altruists dug trenches and filled them with water and flame. The frogs leaped over the trenches. The Altruists fought with knives and clubs and fire, some even with the modern weapons they had taken from the cityfolk. Six more people were dead by dawn. Moses and his followers retreated behind closed doors.

“Our people are out in the open,” Jaime Kreen said fearfully. “The frogs will come into the damps and kill them.”

“No,” said Haviland Tuf. “If your Rej Laithor can keep her charges calm and quiet, they have nothing to fear. Scarnish bloodfrogs are carrion-eaters chiefly. They attack living creatures larger than themselves only when attacked or frightened.”

Kreen looked incredulous, then slowly smiled. “And Moses hides in fear! That’s rich, Tuf.”

“Rich,” said Haviland Tuf. There

was nothing in his tone to indicate either agreement or mockery. But Dax was in his arms, and Kreen noticed suddenly that the cat was still and stiff, his fur slowly bristling.

That night the pillar of fire came not to the man called Moses, but to the refugees from the City of Hope, huddled in fear in their ramshackle camp, watching the frogs prowl beyond the fences that kept them apart from the Altruists.

“Rej Laithor,” the pillar of fire said, “your enemies have prisoned themselves behind barred doors. You are free. Go. Take your people in hand and lead them back to your arcology. Walk slowly, watch where you set your foot, make no sudden moves. Do these things without fail, and the frogs will leave you unharmed. Clean and repair your City of Hope, and ready my forty thousand standards.”

Rej Laithor, surrounded by her junior administrators, stared up at the writhing flames. “Moses will attack us again as soon as you depart, Tuf,” she shouted. “Finish him. Unleash your other plagues.”

The pillar of fire said nothing. It turned and crackled for long minutes, and then it was gone entirely.

Warily, the people of the City of Hope began to file out of camp, being very careful where they set their feet.

“The generators are working again,” Jaime Kreen reported two weeks later. “The City will soon function as before. But that is only half our

bargain, Tuf. Moses and his followers still sulk in their villages. The bloodfrogs are nearly all dead now, for want of any carrion to eat except each other. And the river shows signs of clearing. When are you going to unleash the lice on them? And the flies? They deserve to scratch, Tuf."

"Take the *Griffin*," Haviland Tuf ordered. "Bring Moses to me, willing or no. Do this and one hundred standards of your City's funds will be yours."

Jaime Kreen looked astonished. "Moses? *Why?* Moses is our enemy. If you think you can turn around and make a deal with him now, sell us back into slavery for a better price . . ."

"Contain your suspicions," Tuf replied. He stroked Dax. "Always people think the worst of us, Dax. Perhaps it is our sad fate to be ever suspect." He addressed Kreen again. "I wish only a conference with Moses. Do as I have told you."

"I am not in your debt any more, Tuf," Kreen said sharply. "I assist you only as a patriotic Charitan. Tell me your motives, and I may do your bidding. Otherwise, do it yourself. I refuse." He crossed his arms.

"Sir," said Haviland Tuf, "are you aware of how many meals and mugs of ale you have taken aboard the *Ark* since our balance was adjudged even? Are you aware of the quantity of my air you have breathed, and how many times you have used my sanitary facilities? I am abundantly aware of all of these things. Are you further aware that the usual charge for a voyage

from K'theddion to Charity is some three hundred seventy-nine standards? All of these amounts could easily be added to your account. I have foregone this, to my great financial disadvantage, only because you have afforded me certain minor conveniences. I can see now that my forbearance was an error. I will rectify the mistakes in my bookkeeping."

"Don't bluff me, Tuf," Kreen said stubbornly. "We're even, and we're a long way from Kytheddene Prison, and any claims you have to me under their absurd laws are null and void on Charity."

"The laws of K'theddion and Charity are alike to me, except when they serve my purposes," Haviland Tuf said very quietly. "I am my own law, Jaime Kreen. And if I should determine to make you my slave until the last days of your life, neither Rej Laithor nor Moses nor your own bravado could help you in the least." Tuf delivered the words as always, evenly, calmly, in his bass voice, with hardly a hint of emotion in his flat inflection.

But Jaime Kreen suddenly felt very cold. And he did as he was bid.

Moses was a tall, strong man, but Tuf had told Jaime Kreen of his nightly reflections, and it was an easy enough thing to wait one evening in the hills beyond the village, wait in the brush with three others, and overcome Moses as he passed. One of Kreen's assistants suggested killing the Altruistic leader then and there, but Kreen forbade it. They carried the uncon-

scious Moses back to the waiting *Griffin*, where Kreen dismissed the others.

Shortly after, Kreen delivered Moses to Haviland Tuf, and turned to take his leave.

"Stay," Tuf said. They were in a room that Kreen had never seen before, a vast echoing chamber where the walls and ceiling were a dome of the purest white. Tuf was seated in the center of the chamber, at a horseshoe-shaped instrument panel. Dax sat atop the console, looking quite alert.

Moses was still groggy. "Where am I?" he demanded.

"You are aboard the seedship *Ark*, the last functioning biowar ship of the Ecological Engineering Corps. I am Haviland Tuf."

"Your voice," Moses said.

"I am the Lord God," Haviland Tuf said.

"Yes," Moses said. He stood up suddenly. Jaime Kreen, standing behind him, grabbed him by the shoulders and shoved him roughly back into his seat. Moses protested, but did not try to rise again. "You were the one who brought the plagues, the voice from the pillar of fire, the devil who impersonated God."

"Indeed," said Haviland Tuf. "Yet you misunderstand. You are the impersonator in this company, Moses. You sought to impersonate a prophet, to pretend to vast supernatural powers you do not have. You employed tricks, and waged a primitive form of ecological warfare. I, in contrast, am no pretender. I am the Lord God."

Moses spat. "You are a man with a starship, and a host of machines. You played the plague game well. But two plagues do not make a man a god."

"Two," said Haviland Tuf. "Do you doubt the other eight?" His large hands moved over the instruments before him, and the room darkened, and the dome ran with light, and it seemed they were out in space, looking down on Charity. Then Haviland Tuf did something else to his instruments and the holographs shifted and they were moving, sinking, soaring, until the blurs resolved themselves. They floated above the settlements of the Holy Altruists, in the Hills of Honest Labor. "Watch," commanded Haviland Tuf. "This is a computer simulation. These things were not, yet could have been. I am confident that you will find this enlightening."

In the domed room, all about them, they saw the villages, and shadow-faced people moving among them, shoveling the carcasses of dead frogs into pits for burning. They saw within the cabins too, where weaker people burned with fevers. "It is after the second plague," Haviland Tuf announced, "even as now. The bloodfrogs have spent themselves." His hands moved. "Lice," he said.

The lice came. The dust itself seemed to burst with them, and suddenly they were everywhere, and all the shadow-folk were scratching, and Jaime Kreen (who had scratched a good bit himself before departing for K'theddion) chuckled. Then he stopped chuckling. The lice seemed more

than lice. The people broke out in a scarlet rash, and many of them took to bed, screaming of the itches, the horrible itches, and some scratched themselves so badly that they drew blood, and scraped deep gouges in their skin, and tore their fingernails loose in their fury.

"Flies," said Haviland Tuf. And the flies swarmed, flies of all kinds; the swollen stinging flies of Dam Tullian, the ancient flies of Old Earth with their ancient diseases, the black and gray fleshflies of Gulliver, the sluggish flies of Nightmare who plant their eggs in living tissue. They settled on the villages and the Hills of Honest Labor in immense clouds, and covered them as if they were but a particularly large dung-heap, and left them black and thick and stinking.

"The murrain," said Haviland Tuf. They watched the herds die by the thousands, and the gross immobile meatbeasts in the cellar of the City of Hope turned to rot and corruption. Burning could not check the pestilence, and soon no meat was left, and those people who still lived grew gaunt and bitter-looking. Haviland Tuf said other words; anthrax, Ryerson's Disease, roserot, calierosy.

"Boils," said Haviland Tuf, and again disease raged, but this time among the people and not their animals. They sweated and screamed and the boils covered their faces and hands and chests, each swelling until it burst, so the blood and the pus ran free and then new boils grew, fast as the old ones vanished. Men and women stag-

gered through the streets of the simple villages, blind and pockmarked, bodies crusted and covered with open sores, the perspiration running like oil over their skin. When they fell in the dirt, among the dead flies and lice and cattle, they rotted there, with none to bury them.

"Hail," said Haviland Tuf, and it came, a great thundering pounding hail, the stones fists of ice, and coming down for a day and a night and a day and a night and a day and a night, and on and on, and fire mingled with the hail. Those who went outside died, the hailstones smashing them to the ground. And many of those who stayed within died too, and when the hail had stopped at last, there was hardly a cabin left standing.

"Locusts," said Haviland Tuf. They covered the earth and the sky, clouds of them, worse than the flies, and they landed everywhere, and crawled over the living and the dead both, and ate what little food was left, until there was nothing at all.

"Darkness," said Haviland Tuf. Darkness moved. It was a gas, a thick black gas, drifting with the wind. It was a liquid, flowing, moving like a sensuous stream of jet, gleaming, shining. It was silence. It was night. It was alive. Where it moved, no life remained behind it; the weeds and grasses were dry and dead, and the soil itself looked raw and ravaged and bruised. It was a cloud larger than the villages, or the Hills of Honest Labor, or the locusts. It settled over all of them, and nothing moved for a day or



a night, and then the living darkness rolled on, and behind it was only dust, and dry decay.

Haviland Tuf touched his instruments, and the visions were gone from them, and the lights came on again. The walls were very white.

"The tenth plague," Moses said slowly, in a voice that no longer seemed rich or large. "The death of the firstborn."

"I admit to my own failures," said Haviland Tuf. "I cannot make such fine distinctions. I would point out, however, that all of the firstborn *are* dead, in these scenes that never were, even as the lastborn. I am a gross and clumsy god in that; in my awkwardness, I must need kill all."

Moses was pale and broken, but within him was still a strong and stubborn man. "You are only human," he whispered.

"Human," said Haviland Tuf, in his voice without emotion. His huge pale hand was stroking Dax. "I was born human, and lived as such for long years, Moses. Yet then I found the

Ark, and I have ceased to be a man. The powers I may wield are vaster than those of many gods that humans have worshipped. There is not a man I meet but I could take his life. There is not a world I pause on but I could waste utterly, or remake as I choose. I am the Lord God, or as much of one as either of you is ever likely to encounter.

"It is a great fortune for you that I am kind and benevolent and merciful, and too frequently bored. You are counters to me, nothing more, pieces and players in a game with which I have wiled away a few weeks. It seemed an interesting game, this plague business, and so it was for a time. Yet it quickly grew dull. Even after two plagues, it was clear that I had no meaningful opposition, that you, Moses, were incapable of anything that might surprise me. My objectives were accomplished, I had taken back the people of the City of Hope, and the rest would be meaningless ritual. I have elected instead to end it.

"Go, Moses, and plague no more. I am through with you.

"And you, Jaime Kreen, see that your Charitans take no further vengeance. You shall have victories enough. In a generation, his culture and his religion and his way of life will all be dead.

"Remember who I am, and remember that Dax can look into your thoughts. If the *Ark* should pass this way again, and find that you have disobeyed me, it will be as I have

shown you. The plagues will sweep your little world until nothing lives upon it."

Jaime Kreen was thoughtful. "You were bluffing, Tuf," he said "You're no god. Those were only simulations you showed us. You could never have actually done all that. But you can program a computer to show anything."

"Indeed," said Haviland Tuf.

"In-deed," said Jaime Kreen, warming now. "You frightened Moses out of his head, but you didn't deceive me for a minute with your picture show. The hail gave you away. Bacteria, disease, pests, all that is within the sphere of ecological warfare. Maybe even that darkness creature, although I think you made that up. But *hail* is a meteorological phenomenon, has nothing to do with biology or ecology. You slipped up, Tuf. But it was a nice try, and it should keep Moses humble."

"Humble," agreed Haviland Tuf. "I should have hesitated and planned more thoroughly before attempting to mislead a man of your perception and insight, no doubt. At every turn you frustrate my small schemes."

Jaime Kreen chuckled. "I have a hundred standards due me," he said, "for bringing Moses up and back."

"Sir," said Haviland Tuf, "I would never forget such a debt. It is not necessary to chivvy me." He opened the box that Kreen had brought up from Charity, and paid out one hundred standards. "You will find a con-

venient personal airlock in section nine, just beyond the doors marked Climate Control."

Jaime Kreen frowned. "Airlock? What do you mean?"

"Sir," said Haviland Tuf, "I would think it obvious. I mean airlock, a device by which you may depart the *Ark* without my valuable atmosphere departing with you. Since you have no spacecraft, it would be foolish to use the large airlock here. A smaller personal lock, as I said, may be found in section nine."

Kreen looked aghast. "Are you going to jettison me?"

"Not the best choice of words," said Haviland Tuf. "They sound so harsh. Yet I can hardly keep you aboard the *Ark*, and were you to depart in one of my shuttles, there would be none to bring it back to me. I can hardly afford to sacrifice a valuable piece of equipment simply for your personal convenience."

Kreen frowned. "The solution to your dilemma is simple. We will both board the *Griffin*. You will take me down to Port Faith. Then you will return to your ship."

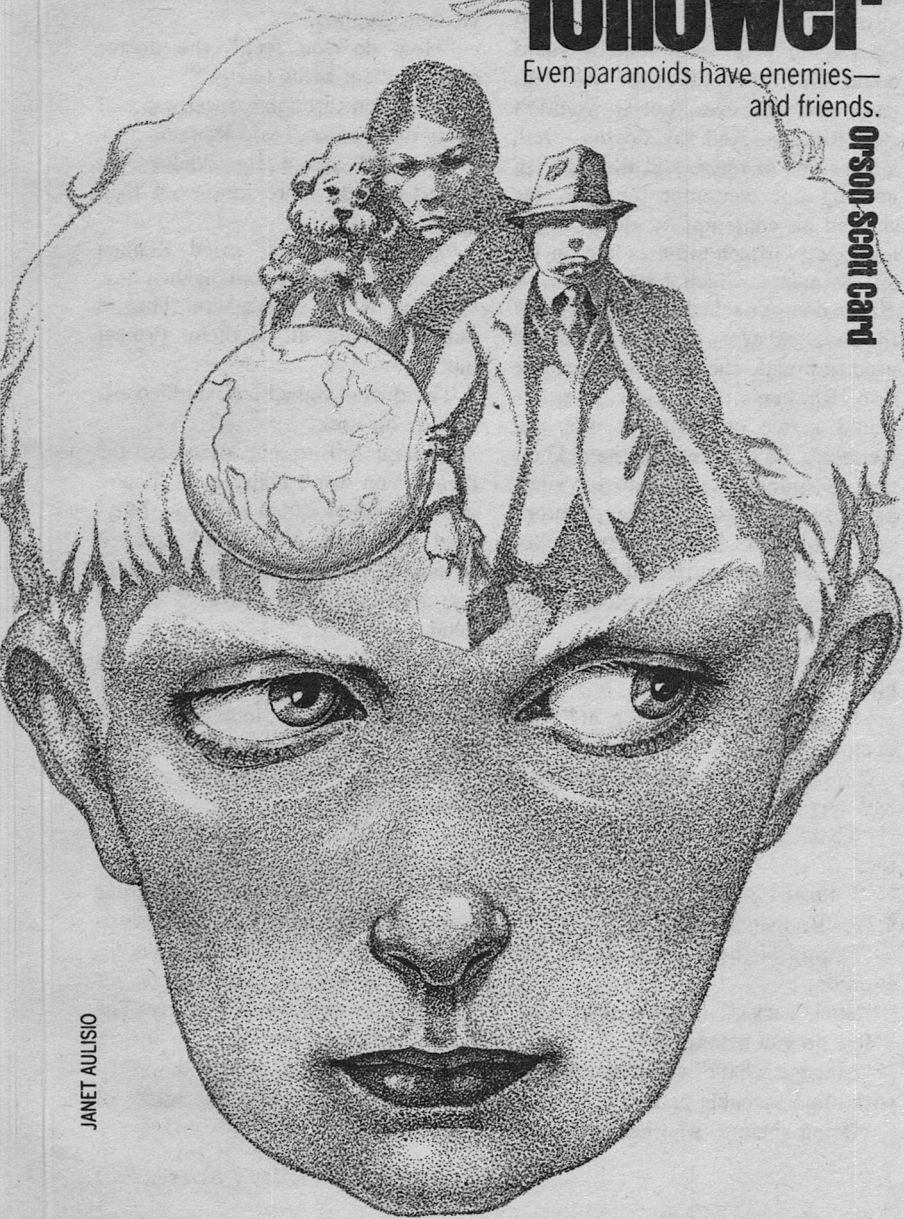
Haviland Tuf stroked Dax. "Interesting," he said. "Yet I do believe it might work. You must understand, of course, that such a trip would constitute a distinct annoyance for me. Surely I should receive something for my troubles."

Jaime Kreen stared into the still white face of Haviland Tuf for a minute, then sighed, and handed back the hundred standards. ■

follower

Even paranoids have enemies—
and friends.

Orson Scott Card



JANET AULISIO

Reuben Ives decided on his twelfth birthday that this would be his lucky year. His dog and his doctor disagreed, but he ignored them. Maynard could hide under the bed with his paws over his eyes, but it wouldn't stop Reuben. And the doctor—well, he was one of *them*, and Reuben had nothing but contempt for him. He showed his contempt by always arriving exactly fifteen minutes late for his appointments, which he knew threw off the doctor's schedule for the rest of the day. And every time the doctor got used to it and scheduled someone else into Reuben's half hour, Reuben would arrive on time. It was just Reuben's way of letting them know that he didn't care, the doctor whispered to the nurse. *Ho hum*, Reuben said to himself. And Maynard looked embarrassed and curled up under the chair looking more like a sheep than a sheepdog.

In fact, Reuben thought, he looks kind of sheepish.

"What are you laughing at?" the doctor asked.

Reuben sneered at him. "You. You look terrible with bifocals."

"Thank you, Reuben," said the doctor.

"I turned twelve this morning at 9:37," Reuben announced.

"Happy birthday," the doctor answered.

"Suck rocks," Reuben responded. "How do you manage it?"

"Manage what?" asked the doctor, with imperturbable patience.

"Being sincere, whether you mean

it or not. I mean can't you—"

"But I mean it," said the doctor. Reuben laughed.

"How do you feel," the doctor asked, "about being twelve?"

"I've lived through a dozen years of being dumped on," said Reuben.

"Really?" asked the doctor. He looked a little more interested than usual.

"Oh, doctor, yes!" cried Reuben frantically. "They're all against me, they follow me everywhere! They're out to get me, all of them. Protect me!"

The doctor sighed and shuffled papers on his desk.

Reuben fell to his knees on the floor. "You won't help, then? You're one of them. I can see it now. Maynard, protect me from them!" Reuben screamed, grabbing at the dog under his chair. Irritated, Maynard bit his hand.

Reuben looked at the scratch marks on his skin. "Et tu, Maynard," he murmured. "Doctor, look. Even Maynard."

"Paranoia isn't a joke, Reuben," the doctor said.

"A joke he says," Reuben said to Maynard, laughing bitterly.

With the enemy ships circling our planet and everybody we meet a possible traitor, the doctor said to himself, paranoia is normal. The sky is our enemy. The world is our enemy. The only escape from fear is to be buried. But Reuben was not paranoid.

Reuben was chewing the leaves of the rubber plant.

"Isn't it bad enough that you're crazy," the doctor said to him, "without you acting crazier than you are?"

"Uh uh uh," Reuben said, getting back on the chair. "You must not express any negative emotions toward a disturbed person. Code Seven, paragraph three."

"I'm a doctor," the doctor reminded him. "I can tell you to go to hell if I want to."

"Do you want to?" asked Reuben.

"Go to hell," answered the doctor.

"I been there," said Reuben in his backcountry voice, "and I ain't goin' back."

"How do you feel," asked the doctor, "about being twelve?"

"This," said Reuben, "is my lucky year."

The doctor looked at him blankly. "What do you mean, lucky?"

"Having luck," Reuben answered. "Meeting with success; having good fortune. In other words, things is gonna go mah way."

"And how," asked the doctor, "is this marvelous thing going to occur?"

But Reuben sat quietly and did not answer. He just stroked Maynard for the rest of the half hour, until the doctor got up and opened the door and said, "Time's up. Get lost, see you next week. Three-thirty. If you're late, I'll revoke your pass."

"If I'm late," Reuben said, "you'll see me when I come."

The doctor sighed as he watched Reuben go out the door. Reuben

smiled. He never counted a visit as a success unless the doctor sighed as he went out the door.

Reuben got on the overhead, getting his ticket punched at the machine. When he got off at the downtown station, he flashed his purple pass at the man who took money and credit cards. The man smiled cheerfully and waved Reuben through, but Reuben noticed that he stepped back and that his eyes were full of fear as he looked at the boy. Reuben was not surprised—most people reacted to him that way. He didn't like it. But at least he got through free—fringe benefits of being a Disturbed Person.

He walked out to the middle of the routing room, where the overhead train schedules flashed on large screens. A huge crowd was milling around. Reuben stopped and set Maynard down. (He always carried Maynard on the overhead because the vibrations made Maynard nervous and he would go to the bathroom on the floor.)

"Crowd's a little bigger than usual," Reuben said to Maynard. Maynard coughed.

Crowds were always big, Reuben thought. He wondered what it had been like back when it was legal to own your own car and people used to drive all over. How would the overhead stay in business then? It gave lousy service. There was always gum on the seats. Nobody would use the overhead unless they had to.

But they had to.

Reuben closed his eyes and counted

to two hundred. People stared, but then they noticed the purple card in his hand and looked away. It was illegal to stare at disturbed persons.

Then Reuben opened his eyes. The first person he saw was a tall man in a business suit. The man was walking away, and Reuben stepped out to follow him. Then he realized that the man looked like his father, and he stopped dead. No, it wasn't his father. But Reuben decided not to follow him anyway.

Reuben remembered the last time he had seen his father. It was his birthday, and his father had—his birthday. Father would be coming to visit him again today. Reuben felt very dark and somehow vaguely afraid.

Father would visit him and Mother would stay home. Reuben spat on the ground. The people around him did not look disgusted. It was illegal to look disgusted at the antisocial acts of disturbed persons.

Reuben closed his eyes and counted again. This time when he looked up he saw a short dumpy man in an expensive suit. He seemed uncomfortably hot, even in the air-conditioned station, and Reuben thought this one might be fun. So he put his purple card in his pocket and walked out of the station right behind the man.

Following was easy for the first few blocks, because the man was walking through crowds, and Reuben could stay ten feet behind without the man ever seeing him. Because Reuben was shorter than the adults in the crowd,

staying out of sight was simple. It was one of the few times Reuben was glad he was not yet grown up.

But then the man left the crowds and went down a long alley. The only people were a few workmen unloading a truck. The man walked by and waved. The workmen waved back.

Reuben took a rubber ball out of his pocket and threw it down the alley, not far enough to reach the man, but well over halfway. "Okay, Maynard," Reuben said, "Go earn your dog biscuits."

Maynard took off down the alley after the ball. When he reached it he didn't pick it up and bring it back. Instead, he pushed it farther along.

"Fetch!" yelled Reuben. The dog ignored him and pushed the ball even farther.

"Come back with that ball, you stupid mongrel!" Reuben yelled. Then he took off trotting down the alley.

The men stopped work and watched Reuben. Suspiciously, he thought. One of the workmen glanced up the alley, where the man Reuben was following was just turning the corner. Then the workman turned back and looked at Reuben.

"How come you ain in school, boy?" the man challenged.

Reuben pulled the purple card from his pocket.

"Oh, hey, boy," the man said, embarrassed. "Hey, sorry, okay, kid?"

"Sure, fine," Reuben answered. Maynard had the ball at the end of the alley.

"Dog doesn't fetch too good, huh,

kid?" the workman asked, trying to joke. A lot of people tried to be friendly to disturbed persons. Reuben felt nothing but contempt. He ran on after Maynard.

But when he got to the end of the alley and took the ball back from Maynard, he noticed that the workmen were still watching him. Suspiciously, Reuben thought again. What are they suspicious of? And they had seemed to know the man Reuben was following.

It didn't matter. The man was nowhere to be seen on the busy street the alley opened into. Lost him, Reuben thought as he gave a biscuit to Maynard. "Not fast enough this time," Reuben said. Maynard ignored him and gobbled the biscuit. "You're not a dog," Reuben said. "You're a pig."

Maynard stopped eating and glared at him.

"Okay, sorry," Reuben said. "Geez, what a sensitive dog."

Maynard swallowed the last of the biscuit and trotted on down the street.

"What is this," Reuben said. "Trying to play hero and smell him out?" But Maynard went on until he had stopped in front of Auerbach's department store. "Okay, Ugluk, Dog of the North, let's go find somebody else."

But Maynard wouldn't budge. And then the man came out of the department store carrying a small sack. The chase was on again. Maynard strutted ahead of Reuben. "Let's not have any of that I-told-you-so crap,"

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Reuben said to Maynard. Maynard ignored him and went on strutting.

The man stopped one more time before they got to Liberty Park, and that was to buy a newspaper. When he got to the park he strolled to a bench under some trees where there were some guys throwing a frisbie, and a family having a picnic. He started reading the paper.

Reuben and Maynard watched for about five minutes. The man turned a page. "Whoopee," Reuben said. "What a winner. Let's go follow somebody else." But just then the man looked at his watch, folded the paper, and left. Reuben almost got up to follow him, but the grass was too comfortable and the guy was dull anyway. He watched the frisbie game.

Then he glanced at the bench. The man had left the sack he had bought at Auerbach's. What a dunce.

"Hey, Maynard," Reuben said softly, stroking the dog's neck. "We've been following a dunce. Left his bag on the bench."

And then a woman with a poodle walked over to the bench and sat down to rest.

The poodle was in heat. Maynard was feeling frisky. He got up and trotted over to the poodle. The poodle seemed to sneer at the shambling sheepdog. Maynard didn't mind. It didn't seem to occur to him that a fellow dog could be snobbish.

But snobbish the poodle was, and she began to bark, running behind the woman for safety. Cheerfully persis-

tent, Maynard followed. The poodle tried to go farther, but the leash stopped her. Maynard kept coming. So the poodle lunged away, snapping the leash out of the woman's hand.

"Gertrude!" the woman shouted.

Gertrude took off at a brisk run. Maynard shuffled after her, gaining on her in his ramshackle way. The poodle dodged and headed back for the bench. Maynard turned faster than anyone would have thought he could, and began to head her off.

"Gertrude, come back here!" the woman yelled. "Whose dog is that? Leave Gertrude alone, you mangy mongrel!"

Reuben had been enjoying the show. But when the woman called his dog a mangy mongrel he got mad. "Who you calling mangy?" he called out.

"Is that your animal?" the woman asked.

"I feed him," Reuben said.

"Get him away from my dog!" the woman demanded.

Reuben called to Maynard.

"Hey, Maynard, get back here," he said. Maynard didn't even glance back. "Come on, Maynard. You'll probably get a disease anyway."

The woman gasped in anger. At that moment Maynard got tired of chasing—he wasn't used to having to ask twice—and came back. Gertrude, utterly exhausted, came back to the woman, who reached down and picked up the leash. "Gertrude, you poor thing," the woman crooned. "Was that big nasty dog making you afraid-

sy? Was he, sweetly?"

"Oh, Maynard, you poor poopsy-woopsy," Reuben crooned in imitation. "Did that little warthog run away from you?" Maynard moved away in disgust, but Reuben got what he wanted: the woman had heard him.

"What do you mean, anyway," the woman snapped, "letting your dog run around in a public park without a leash? I should have you arrested."

Reubed pulled the purple card from his pocket. He loved to watch how people suddenly became kind and thoughtful.

The woman saw the card and suddenly became kind and thoughtful. "I'm so sorry," she said sweetly, though Reuben could tell it was a strain. "I hope my dog didn't disturb you," she said as she moved away. Was that sarcastic? Reuben wondered. She had more spunk than most. But she was still a zero.

"She's still a zero," Reuben said to Maynard. Then he remembered the Auerbach's package on the bench and went over to see what the man had bought.

But the package was gone. Reuben tried to remember if anyone had gone near the bench during the melee. No one. The woman must have lifted the package. Clever, Reuben thought. "Clever," he said to Maynard. "The lady's a thief."

But something didn't ring true in the whole situation. What had been in the bag? And when did the woman take it? And why, for that matter, had

the man forgotten it? Why—
Coincidence.

His father was waiting for him when he got home.

"Reuben, my boy," said his father cheerfully. "Happy birthday, my lad. Good to see you."

"Hello, Father," Reuben said as he opened a can of dog food for Maynard.

"It's been a long time," his father said.

Reuben set the dog food down in a dish. Maynard slurped it up noisily. "Has it?" Reuben asked. "I've been busy."

"I've been busy," his father said. Then he realized that Reuben had just said that. "Oh, you just said that." Then his father laughed. "Mother sends her love."

"How nice," Reuben said.

"And I brought you a present," his father said. He had even wrapped it.

"Thank you," Reuben said.

"Take it," his father said, offering him the package.

Reuben took the package.

"Aren't you going to open it?" Reuben's father asked.

"Do you want me to?"

His father's patience snapped right then. It always snapped within the first five minutes.

"I don't care if you flush it down the toilet."

Reuben opened the package. It was a watch. Very expensive. The kind that told the time, the day, the weather, did math problems up to twelve

digits, and played FM radio.

"Three hundred twenty-nine ninety-five plus tax," Reuben said. "Or did you get a discount?"

His father looked angry. "I got a discount, Reuben. I own the store."

"Ah," Reuben said, putting on the watch. "Did you know that two plus two is four?"

"Yes, I knew that."

"So did the watch. It's a clever watch. Thank you."

Then Reuben ran water into another dish and set it in front of Maynard. Maynard slopped into it, splashing all over the floor as he drank. Reuben's father sat down on the couch. "Nice place," he said.

"Yes," Reuben answered. "The government gives us new furniture every three years. It makes us disturbed persons feel—not so disturbed. Of course, some of them can't cope with new furniture, so they don't change it. And others—the furniture slashers—they get new furniture more often. But me, I'm a *regular* disturbed person, so I got my new furniture at the regular time."

"I'm glad they, uh, take care of you so well," said Reuben's father lamely.

"I'm sure you are. Eases the conscience, doesn't it?"

"Reuben, do you have to?"

"Does Mother miss me?" Reuben asked. "Or has she forgotten her little boy?"

"She hasn't forgotten."

"Why don't you tell her that my name is Reuben? It might remind her.

I'm twelve, too, a big boy now, with bright eyes and tousled, sweet-looking blond hair. A lovely child, of whom she can be very proud."

Reuben's father had a sick look on his face. "Can't you lay off? For one day a year?"

"Daddy, this is the only day in the year I get to lay *on*."

"Well, I hope you've had a good time."

"It's been swell," Reuben answered.

Reuben's father paced angrily to the window and back again. "You aren't crazy," he finally said. "You aren't crazy, Mr. Boy Genius. You just think you're too good for the world. Come down off your IQ for a few minutes someday, Reuben. Maybe real human beings have something you don't have."

Reuben smiled at his father. "I love you, Daddy," he said.

He watched his father struggle, trying not to answer, knowing what would happen if he did. Finally habit won, and his father said, "I love you, too, Reuben."

Reuben began to laugh. He laughed and laughed, rolling on the couch, falling off and rolling on the floor. When he finally stopped laughing his father was gone, and Maynard was scratching his paws on the refrigerator door. Reuben lay on the floor looking at the ceiling for a while. Then he went to bed. For a few crazy moments he wanted to cry himself to sleep. But he hadn't shed a tear in years. Not about to start now.

He dreamed about his mother.

He woke up with Maynard licking his face.

He followed the short dumpy man every day that week, and all the next week, too. The man had a routine. Mondays at the park, where he always forgot a package from Auerbach's and the woman walking her dog happened to pick it up. Reuben never saw her take it, but it was always gone. Tuesdays to the airport, where he left a briefcase in a locker—Reuben followed on the overhead.

Wednesdays to the post office, where he took a letter from a post office box. The man opened the letter as he walked. Inside was another envelope, which he casually dropped by a mailbox. A few moments later another man came along, picked up the envelope, and walked away. Reuben followed this second man every time, and every time a block away from the mailbox the man opened the envelope, crumpled up the letter and threw it in a wastebasket without reading it, and saved the envelope. Strange, Reuben thought.

Thursdays the man was back in the park, only this time the woman came first and left an empty package of dog biscuits, which the man carried to the garbage and threw away. And Fridays the man went to a dirty movie and stayed there for three hours. So many people came and went that Reuben had no way of knowing if one of them was coming to meet the man.

And by the end of the two weeks, Reuben was more confused than ever.

The short dumpy man was obviously a messenger. And obviously the messages he carried were secret. But who were the messages from? And who were they to?

Reuben imagined many things. Perhaps it was a gang of criminals passing the messages. But the short dumpy man didn't seem like a criminal. That meant nothing, of course, as Reuben well knew. But he still didn't think that that was the answer.

It might be government work. That fit much better, because the man's regular routine seemed like just the sort of stupid thing the government would have somebody do. But why would the government be hiding its actions like this? It seemed to Reuben that the government spent most of its time hiding things from the people, not from itself.

Which left the last guess, which Reuben thought was crazier than the others. The man must be a spy.

Of course, everyone knew who a spy would be spying for. There was only one enemy. The spaceships circling the world had been there all Reuben's life, a shadow hanging over the planet. All the enemy needed was an ally on the Earth and they would attack.

But who in the world would be friends with the enemy? What could anyone gain by being enslaved as the other planets had been enslaved?

It didn't matter who, Reuben decided. It was the only possible answer to the things he had seen.

The next Wednesday when he followed the man, Reuben waited for his

chance. Obviously the bit with the letter was so that if someone found it, they would simply mail it without ever realizing that it was something important. So when the short dumpy man dropped the letter, Reuben ran in before the other man could get there. He picked up the letter, looked carefully at the envelope, and dropped it in the slot. As he turned and left, he saw the other man come over to find the letter, then move quickly away when he realized it was gone.

They won't suspect a thing, Reuben thought.

When he and Maynard got home that night, Reuben wrote down the address that had been on the envelope:

Bill
14 N 7 W
Enterprise, Utah 840033

Mr. Hyrum Wainscott
1408 S 2200 E
Salt Lake City, Utah 841236

And that was all. An address and a return address.

Reuben decided it was a code. He sat down and copied out the alphabet and tried to link up all the letters in ways that might make an intelligent pattern. He tried assigning number values to the letters, and letter values to the numbers. But no matter what he did, it made no sense. He fell asleep at the table.

When he woke up he looked at his work of the night before and decided

it had all been stupid. The letter meant nothing. The man just had some weird habits. He dropped letters a lot. He always left Auerbach's sacks behind when he went to the park. He left briefcases in airport lockers just for fun. And he liked dirty movies. It meant nothing.

Then Reuben looked at the address again and realized how simple it really was. The address was real. It told where the real message was. The return address was just for show.

Reuben gathered up Maynard, who grumbled about leaving the house so early, and took the overhead to thirteenth south and twenty-first east. He walked from there to the corner of fourteenth and twenty-second.

There was no 1408.

Another theory down the drain. Discouraged, Reuben got back on the overhead and headed into town.

And just as he stepped off the overhead he realized what the address meant. He headed straight for the library and got the Forest Service map of Utah. He found Enterprise near the southwest corner of the state.

Fourteen miles north and seven miles west of the town of Enterprise, Utah, there was absolutely nothing but desert mountains. It was miles off the road, and there wasn't a town or even a settlement close enough to matter.

So if on the fourteenth day of the eighth month, which was in three days, at 2200 hours—ten p.m., just after dark—something were to happen

fourteen miles north and seven miles west of Enterprise, Utah, not a soul would see it.

What would it be? A meeting? A parachute drop? An important message? It didn't matter. The short dumpy man had delivered the message, but it had not been received. Would the meeting or the message or the parachute drop take place anyway? They must have a backup system. It would undoubtedly happen right on schedule. And I have to do something about it, Reuben thought. It didn't occur to him that it was none of his business. He might feel contempt for everyone he knew, but the enemy was the enemy.

Reuben went straight to the doctor's office. It wasn't time for his appointment, but the doctor was willing to see him anyway. Reuben explained about everything he had done in the last few weeks, about the short dumpy man and the messages, and finally about the address and what he had finally realized that it meant.

The doctor leaned forward across the desk.

"I think this is a very important day," the doctor said.

"Of course it is," Reuben answered. "We've got to tell the authorities. You've got to, I mean, because they'd never believe me."

"And why do you think they'd never believe you, Reuben?" the doctor asked.

"Because I'm a disturbed person. They'd just send you a memo about what crazy thing I did this time."

"And why do you think they'd do that?" the doctor asked.

"Because," Reuben said, "this is just the sort of thing a paranoid schizophrenic would cook up. You know I'm not a paranoid schizophrenic. They don't."

The doctor looked very pleased with himself. "So you feel that you're helpless without relying on an outside authority figure, is that it?"

Reuben cocked his head and looked at the doctor. "Yeah, Doc," Reuben said. "That's it."

"You've had these feelings of personal helplessness for a long time, haven't you? Or have they just started?"

Reuben got up. "Come on, Maynard. The doctor's busy."

"Not at all," the doctor said, rising from his chair. "I have plenty of time to talk to you."

"I've got things to do," Reuben said. The doctor sighed. But this time Reuben felt no pleasure in it. He should have known that the doctor would only see this whole thing as another symptom.

So Reuben went to the only other person he could think of. His father's office was in the old Kennecott Copper Building, right at the dead center of downtown.

Reuben's hands were cold when he punched the buttons on the elevator. And when the elevator stopped abruptly on the sixteenth floor, Reuben's knees were shaky and he was breathing hard. He had only been to his father's office once before. And

that was five years ago, before the— before. The secretary told him his father was not in.

“Don’t give me that,” Reuben said impatiently. “He’s always in. Tell him his little boy is here to see him.”

The secretary glared at him and left her desk, motioning to a security man standing nearby. The security man came and sat at the desk. The secretary came back in a few minutes and whispered in the security man’s ear.

“All right, sonny,” the security man said. “Come with me.”

They went down a thickly carpeted hall with real wood walls and several doors. At the end of the hall they turned right and went down another corridor. At last they came to Reuben’s father’s office. The security man opened the door and let Reuben in.

“Hello, Reuben,” his father said, looking at him strangely.

“Hello, Father,” Reuben said, wondering why in the world he had come to this man for help.

“What can I do for you?” his father asked.

“I need your help,” Reuben answered. Maynard scratched his paws on the front of Reuben’s father’s real wood desk. He reached down and picked Maynard up. “Sorry.”

“That’s all right,” his father said. “Sit down and tell me.”

So Reuben told him about the short dumpy man and the messages and the envelope and the desert northwest of Enterprise. And his father nodded all the way through.

“Have you told the police?” his

father asked quizzically.

“No, Father. I’m a disturbed person, remember? I need you to tell them.”

His father nodded, and Reuben felt relieved. Until his father said, “Do you have any other evidence?”

“Isn’t that enough?” Reuben asked.

“Well, it seems a little farfetched. Why couldn’t it just be a wrong address that somebody put on the envelope?”

“But it all fits,” Reuben said, with a sinking feeling. “And what about the things this guy does?”

“Lots of people do lots of things,” his father said. “Have you talked to the doctor about this?”

Reuben looked at his father and realized how carefully he was thinking of his words before he spoke and how he was playing nervously with his telephone receiver. And he knew that his father didn’t believe him, that he was afraid of him, that he wanted the doctor to be there.

“The doctor?” Reuben asked. “Yes, Father. Go ahead and call him. I’m sure he’ll make you feel better about your little boy. He’ll call this a sign of incipient social interest, and tell you that you should be encouraged that my emotional dysfunction should now be bringing me to seek contact with my father and to try to win favor from society for my heroic but imagined deeds.” Reuben got up and went to the door. “Come on, Maynard. Don’t shed on the rug.” Maynard followed him out the door.

Back on the street Reuben felt angry and bitter. Why had he bothered? They had never believed him, never seen things his way. They all tried to cope with him, as if he were an epidemic or a forest fire that they had to keep under control. Even his mother, back in the early years—in all his memories of her, Reuben could see her trying to talk to him, trying to answer his questions, but afraid, like his father, like his doctor, like the people on the street.

He pulled out his purple card and watched people move aside, opening a path for him through the crowd. The huge trees on Main Street even seemed to recoil.

Maynard stopped and went to the bathroom on one of the trees. "Not a bad idea," Reuben said. "Let 'em all drop dead. Let the enemy come down and take over everything. They deserve it."

It was when Reuben was eating a sandwich at the restaurant in the overhead station that he thought of what an enemy invasion would mean. It was all right to think of huge blond men with white eyes dragging his father off in chains. But when he thought of them coming to his mother, he set down his sandwich, got off his chair, and left, flashing his purple card at the checkout lady, who smiled at him with fear in her eyes.

He took the overhead to Murray, where he transferred to the overhead up Cottonwood Canyon. It was full of sightseers and retired people heading up to their cabins.

He got off at the seventh stop and walked up a winding asphalt path to a large house nestled among huge pines on the north slope of the canyon. The house was all wood—it could only belong to a millionaire many times over. Reuben chuckled to think of his father's wealth.

He went to the door but did not touch the knob. Instead he stood and thought for a moment. They must have expected him to come here sometime. The doorknob would be keyed so that his palm or fingers would trigger an alarm. He remembered the household routine.

He knelt on the welcome mat close to the door, where the camera would not catch his face—only the top of his head, which would make him look like a little boy. He pushed the doorbell strip with his elbow.

A woman's voice spoke. "Who is it?"

"Groceries," Reuben answered.

"Today?" The woman paused. "This is Thursday. There aren't supposed to be deliveries on Thursday."

"They send me, I come," Reuben answered.

"All right," the woman sighed. The door slid open. Reuben came in on his knees. Once past the door he stood up. He could hear the kitchen intercom saying, "Just leave them on the table, please." But he did not go into the kitchen. Instead he climbed the stairs in the living room and went down a short hall to a door that stood ajar. Inside the room someone was typing. Reuben went to the door and pushed

it farther open. Well, there—

His mother sat at the typewriter, her long dark hair falling on the keys as she leaned over her work. He had often seen her like that, years ago when he had lived at home.

Then she felt his presence in the door and looked up. She was beautiful, with soft features and large eyes and a white scar down her left cheek.

She looked at him for a moment, and then fear and recognition entered her eyes at the same time.

“Reuben,” she whispered.

“Mother,” he said, stepping into the room.

She got up and moved back toward the window.

“Wait,” he said.

“Stay there,” she said.

“Mother, listen to me.”

“You aren’t supposed to be here,” she said, her voice husky with fear. “They’ll take away your card. They’ll put you in a—place.”

“Not if you listen to me. Not if you help me.”

She shook her head, her face white. She touched the scar on her cheek.

“Mother, I’m sorry,” Reuben said.

“Please believe me. Please trust me.”

“Go away,” she said. A tear ran down her cheek.

“Mother, I love you,” Reuben said, reaching out his hand. “See? My hands are empty. I won’t hurt you, I promise.”

“No.”

“Mother, you’ve got to listen to me!”

She closed her eyes. “I’m listen-

ing,” she whispered desperately.

And for the third time that day Reuben told the story of the short dumpy man and the message on the envelope. He told her about the doctor and about his father.

“Do you believe me?” Reuben asked.

She opened her eyes and looked at him. “Is it true?” she asked softly.

“Every word,” Reuben said, wanting to shout, but keeping his voice to a whisper. “I didn’t make any of it up.”

“I don’t know,” she said. “I don’t know if I believe you.”

Reuben’s heart sank again, only this time the pain and tightness in his chest and throat were more than he could bear. Tears came to his eyes.

“Well you’ve just got to,” he said. No sound came, but his mother saw his lips move. She took a step toward him and then stopped, seeing what no one had seen for five years. Tears on Reuben’s cheeks.

“Show me,” she said. “I’ll go with you and you show me.”

Reuben nodded, and then he fell to his knees and began to cry, saying, “You’ve got to believe me,” over and over again. When he stopped crying, his head dizzy and his throat thick, he realized that his mother’s arms were around him. Suddenly ashamed, he stood up and stepped away. He looked in her eyes and saw that even though she was looking lovingly at him, his sudden movement had made her afraid again. “What time is it?” he asked.

"Two-fifteen," she said.

"There's time. Come with me and I'll show you." They walked down the hill together to the overhead.

They got to the park a half hour later. He led her to a waiting place he had used before. "We'll toss sticks for Maynard. It'll look natural. Just pretend you're my—"

She nodded. "All right," she said.

In ten minutes the woman with the poodle came. Maynard looked over wistfully, but kept playing with the sticks. Reuben told his mother not to watch the woman. Out of the corner of his eye he saw her give a dog biscuit to Gertrude, then shake the box and toss it to the ground by the bench. Just like the last two weeks.

Then the woman got up and moved away. Reuben knelt by Maynard. "All right, Maynard," he said. "Earn your biscuits. Get the box."

Then Reuben stood and threw a stick toward the bench. Maynard took off after the stick, but when he got near the box he stopped and sniffed around, went to the bathroom on the bench, then picked up the box and ran back to Reuben.

"Bad dog," Reuben said loudly, but Maynard understood, waiting patiently for the biscuit that Reuben surreptitiously dropped. Then Maynard set down the box and picked up the biscuit. Reuben grabbed the box and said to his mother, "All right. Let's go. Slowly and naturally, in case they're watching."

They walked away from the park without looking back, and caught the

overhead for Magna. On the first stop Reuben told her to get out, and he followed her to the overhead to Kearns. They hopped a few more overheads, then got on one heading back downtown. Only then did Reuben look at the box.

"What does the box mean?" asked his mother.

Reuben shrugged. "I don't know," he said. "I've never picked up one of these before. I just know that she leaves this, and the guy picks it up and throws it away."

And then he felt a terrible fear that the box would be meaningless and that his mother would think he had made it up, that he was really crazy. And she would tell the doctor, and the doctor would know that he had broken the rules and gone to see her, and he would lose his pass and go to the hospital, and he would rather die.

He reached into the box and found something taped to the inside. He peeled off the tape and pulled out three microfiches. It was too small to read, of course, but his mother looked at them and her face went white.

"There's really something there," she said.

She hadn't believed him.

She turned to him and smiled. "Reuben, Reuben, I hoped so hard that it would be there."

He felt strange. Her smile was so warm that he felt his face flush with heat that pulsed rapidly. She had hoped that they would find something.

"Here," he said. "Put them in your

purse. We'll go to the federal building. There's an FBI office there."

"All right," she said, putting the film in her purse.

"You saw," he said. "You saw the woman leave the box. You saw how it happened."

"Of course," she said. "I saw it all. And with this, whatever it is, I'm sure there'll be somebody down in Enterprise on the fourteenth."

"There better be," Reuben said. "This is a serious business."

They rode the rest of the way in silence. But when Reuben got off the overhead to walk to the federal building, it seemed perfectly natural to be holding his mother's hand.

The FBI believed Reuben and his mother. Or rather, they believed the microfilm. Reuben and his mother were in the federal building for several hours, explaining how and when and what and where, and the FBI agent listened respectfully to Reuben's reasoning about the envelope.

"Thanks, kid," the man said when it was over. "We'll handle it from here."

So Reuben and his mother left. Reuben went to the door of the house in the canyon with her, and she asked him to come in.

"I would only leave again," Reuben said.

He turned to go, but then, as an afterthought, he said, "Mother."

"Yes," she said.

"Uh, Father shouldn't . . ."

"I won't tell him." She closed the door.

Reuben and Maynard went back to the apartment. Reuben slept badly that night. He kept dreaming of his father hitting his mother, though he had never seen him do such a thing. And then he dreamed of the lady in the park with the dog named Gertrude. He watched her and watched her in his dream, but he could never see her pick up the package from Auerbach's. It always just disappeared during the first split second he glanced away.

He woke up feeling foul. Even brushing his teeth didn't take the taste out of his mouth. He went to where he usually found the short dumpy man and waited. Now that the FBI was taking care of things, there was no real point in following him. Except that there was nothing else to do.

But the man did not come. Reuben waited all day. Finally he went to the theater at the time the man usually came out. The dirty movie ended, but the short dumpy man was not among the crowd that came out.

Why did the routine change today?

But it was the weekend, and Reuben followed someone else on Saturday and Sunday.

On Saturday he followed a prostitute to the Nevada border. He didn't have a passport, so he took the overhead back to Salt Lake.

On Sunday he followed a wino along Second South and finally used his purple card to buy a bottle of something. The wino said thank you and offered to share. Reuben said no

but Maynard drank a little.

Reuben and Maynard went home and watched murders and happy families on television.

Sunday was October 22nd, and as he went to bed Reuben realized that northwest of Enterprise whatever the enemy was doing was being stopped tonight.

The next day the short dumpy man was right on schedule: the package from Auerbach's, the bench in the park, and the lady with the dog. Since it was all over by now Reuben let Maynard chase Gertrude again.

The lady was more irritated than ever, and Reuben laughed. The two dogs raced barking along by the pond, and the geese swam away in a hurry.

"Stop your dog," the lady said. "Please. Gertrude gets an upset stomach." She spoke carefully, remembering Reuben's purple card.

Reuben looked at the bench, ignoring her. Once again the Auerbach's package had disappeared. But he was sure the woman hadn't gone anywhere near it.

Gertrude ran back to the woman, who was trying to control her fury. She scooped up the female dog. Maynard bounded up and tried to jump on Gertrude. He missed, leaving muddy pawprints all over the lady's skirt. Reuben laughed.

The lady kicked Maynard. Reuben stopped laughing. That was dangerous—Maynard had a mean streak a mile wide, and he always bit the legs that kicked him.

Maynard snapped at the lady. She

kicked again, and this time Maynard bit, sinking his teeth into the loose flesh of her calf.

But the woman didn't shriek as Reuben had expected. She just shook her leg, and Maynard loosed his grip and dropped away. She glared at Reuben and walked off, carrying Gertrude. She didn't limp.

Maynard lay on the ground, not moving. Reuben walked up to him. "Hey, Maynard, getting weak in your old age?"

But Maynard didn't even resent the gibe. He was dead.

When Reuben was sure of it, he picked up his dog's corpse and walked home. He laid Maynard's body on the carpet. There was no blood. There was no sign of any damage. There was no sign there was any disease. Maynard had bit the lady and died.

Reuben called the FBI. The man told him to come down and bring the dog. He sounded worried, Reuben decided.

"What happened?" Reuben said to the FBI man as soon as he arrived. At the same moment the FBI man looked at Maynard's corpse and said, "What happened?"

Reuben answered, "The lady in the park. He bit her."

"And?"

"And nothing. And he died."

"What did she do?"

"She got bit," Reuben said, a little angrily, though he knew it would be dangerous to let any emotion happen right now.

"And the dog died."

"The man in the pinstripe suit wins the prize," Reuben said, absentmindedly stroking the dog's fur.

"Look, kid, I know you've told us straight so far, but you're a DP, right? Do you hallucinate?"

Reuben glared at him. "Never."

"Hey, Okay," the man said, "I just had to ask."

"What happened? Down in the south?" Reuben asked.

"Well," the FBI man said, "I don't know if I can tell you, and unless the boss says I can tell you and signs it in triplicate in his own blood, I'm sure as hell not going to breathe a word."

"They weren't there, were they," Reuben said.

The FBI man looked at him. "What makes you think they weren't?"

"Because," Reuben said, "the day after I told you they broke their routine, and the lady in the park knew enough to kill Maynard."

"Who the hell is Maynard?" the FBI man asked.

"My dog," said Reuben.

"Oh, he's got a name," the FBI man commented. "Hey, look, can I do an autopsy? Cause of death?"

"You?" Reuben asked.

"I mean one of our staff."

"Sure," Reuben said. "Maynard won't give a damn."

The FBI man laughed. "Right," he said, and then stopped laughing when he saw the expression on Reuben's face. "Hey, kid, I'll have the dog right back, Okay?"

Reuben nodded and sat down to wait. While he waited he wondered

what they'd say if he told them about the way the lady in the park always snatched the packages when nobody could see, and how she never even seemed to get close to the bench. They'd be sure to think he was hallucinating after all.

It was a circle. No way out. He looked at the drab walls and his mind wandered.

What did the enemy look like, anyway? Nobody could say. On the few planets they had come to and had not yet conquered no one had ever seen them. On the planets they *had* conquered, no one would say. All that anyone knew—or at least all the government would let on—was that without active help from the people on the planet they were attacking, the enemy couldn't do a thing. But *with* such help, they were irresistible.

What if they were already on the Earth? Reuben looked at his hands, how the fingers were all the same and yet different. What if they could look just like us, and they were already going to the store, and holding down influential jobs, and—why not?—walking dogs in the park and picking up Auerbach's packages without going near them? Possible, Reuben thought.

Maybe I do hallucinate, he thought. The idea frightened him.

The FBI man came back after about an hour.

"What did Maynard die of?" Reuben asked, jumping to his feet.

"Nothing," said the man. "He's not dead. I mean, he is, of course," he

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caught himself, seeing the look of hope that Reuben couldn't hide. "But there's no reason in the world that the dog should be dead. Perfect shape. Good for years. Not an injury."

"But dead anyway," said another man who came through the door. Reuben hadn't met him before.

"He's The Boss," the FBI man said, "and he wants to have a talk." The Boss smiled. Reuben did not smile. The FBI man left the room.

Reuben and The Boss had a talk. During the talk Reuben figured out that nothing had happened down in southern Utah, that the whole thing was either called off or was so subtle that nobody saw it. The FBI was hunting for straws, because they *did* have the microfilm, and it had to mean something.

"Ideas?" The Boss asked.

"You're asking me for ideas?" Reuben asked.

"Is there anyone else in the room?" The Boss asked.

"What kind of great ideas do you think I can give you when you've been trying so hard not to tell me that nothing happened down in Enterprise and that you don't know what's going on?" Reuben said with a look that made The Boss feel a little weak.

"So you can read between the lines," The Boss whispered.

"Why are you whispering?" Reuben asked.

"Get off my back for a minute," The Boss said. "In my line of work we meet guys with brains about once every twenty years. Everybody else is

a cop, a crook, or a congressman."

"So let's trade some secrets," Reuben said, feeling, for some reason, a little less contempt for The Boss than he felt toward everyone else.

"All right," The Boss agreed.

"You first," Reuben said.

"Okay," The Boss said, sighing. "So much for Top Secret. Right, nothing happened in Enterprise, even though everything pointed to it, and so we figure that either they were on to you, in which case why the hell did they have another rendezvous in the park today, or else the whole thing was a sham and they wanted someone to find out about Enterprise so we'd all go there while the real thing happened someplace else. In which case we're looking for a needle in a haystack."

"And you want ideas," Reuben said.

"You said we'd trade secrets," The Boss said,

"All right," Reuben said. "How's this? Maybe it was a sham, like you said, only not to keep you from noticing something happening at the same time someplace else, but to keep you from noticing that it already happened awhile ago."

The Boss looked at him. "Like?"

"Like you're running around this time and maybe next time and maybe the time after, trying to find where the enemy is going to land—all the time not noticing that they're already here and working right where you won't notice them—under your noses."

The Boss looked interested. "So if

they can do that, what've they been waiting for?"

"I don't know," Reuben said, "unless maybe there aren't very many of them, and they need to get up an organization, or else maybe they're weak, and they have to divide us in order to take over. I don't know. But I think they're here."

And then Reuben told The Boss about the way the woman in the park never seemed to touch the Auerbach's package. "And the way Maynard died. My dog. Just bit her and then dropped dead."

"Interesting theory," The Boss said. "In fact it holds up pretty well, just the sort of devious thing we might expect. Except for one thing."

"Yeah?" asked Reuben.

"We know who the lady is. Birth certificate, lots of relatives, no way she could be a plant, already thirty years old when the enemy ships came. Sorry. Just an ordinary Earth-type traitor."

"Was she ever bit by a dog before?" Reuben asked.

"What does that have to do with anything?" The Boss asked.

"Because unless it's ordinary for certain people to cause dogs to drop dead without an injury, then she isn't ordinary. She's changed, right?"

The Boss smiled. "Very good, Reuben," he said. "We'll check it out."

Reuben shook his head. "Promise me something."

The Boss said, "What in particular? Some promises I can't make."

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"Promise me you'll tell me what happens."

On the way out Reuben stopped by Maynard's corpse in the autopsy rooms. The body was kind of a mess, and Reuben did not touch Maynard's fur.

"Want us to take care of this for you?" The Boss asked.

"Yeah," Reuben said.

Three months later they told him what happened, and as Reuben had announced on his birthday, it was his lucky year. He got to meet the president of the United States and shake his hand and wear a medal, none of which impressed him much. He got to have his picture in every newspaper in the country, along with pictures of the people he had followed who turned out to be the enemy, which didn't thrill him either.

However, he also got to go home.

His father wasn't happy about it and Reuben noticed that there were new locks on all the bedroom doors, but Reuben just thought *Suck Rocks* and talked to his mother for an hour or two alone just to bug his father. They quarreled a lot, Reuben and his father. And his mother really didn't understand him any better than she ever had. But all in all it beat hell out of the government-owned apartment and there were other compensations.

It turned out that the enemy was a very intelligent but not-too-tough marsh gas sort of thing, only about six of them, and they had to take over human bodies—curious people, who

came too close—in order to do anything at all. And once they were in a human body, when the body died so did they. So—firing squads (Utah law) and the problem was over. The ships continued to circle around the Earth, but after a few months some air force shuttleships with heavy rockets shot them down. All the ships' defenses, impregnable a few months before, were gone, and the ships fell into the Sargasso Sea.

It was on Reuben's thirteenth birthday that he realized his lucky year was over. That was the day they took away his purple card and he had to start carrying money and asking permission. But he didn't mind all that much. It was kind of fun.

The day after his thirteenth birthday his mother and father took him to the park. Out at the car, Reuben's father remembered the camera.

"It's upstairs in my closet," his father said, and Reuben ran back up the asphalt path. He stopped just inside the front door. He bowed his head a moment, reached out his hand, and waited.

The camera materialized in his palm.

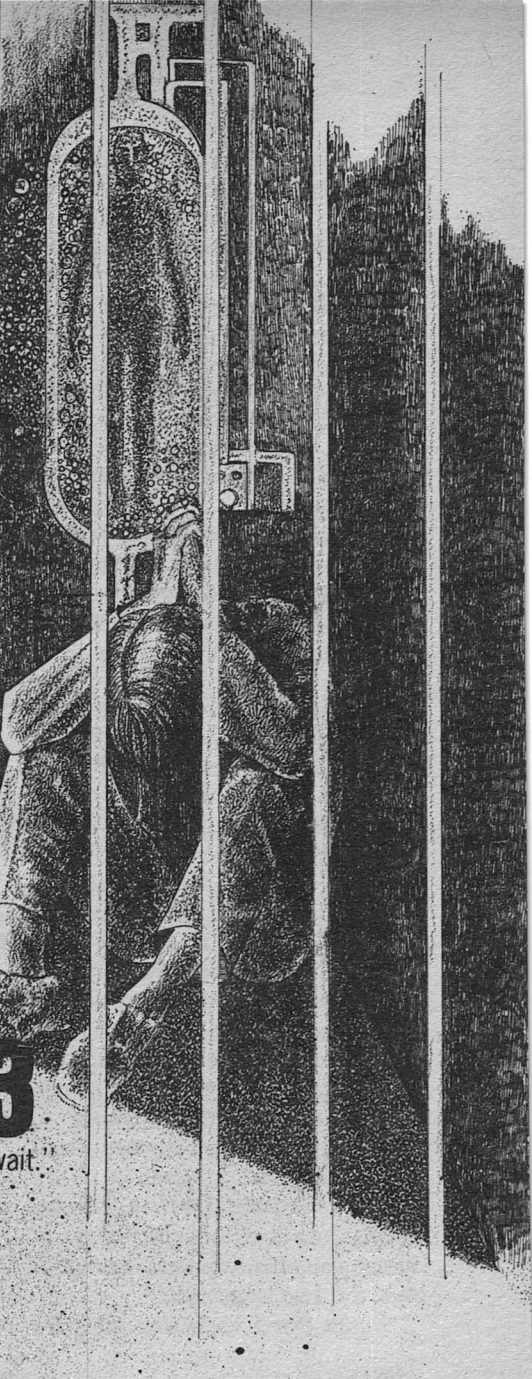
He opened his eyes, looked at the camera, smiled, and ran back outside, being careful to lock the door behind him as his father always asked. Then he skipped down the sidewalk, conversing with the stranger in his mind, who followed him far more closely than he would have thought possible back in the old days when he was a child, and still human. ■

ROSEMARY JOHNSON



quinera 3

"They also serve who stand and wait."
Kevin O'Donnell, Jr.



Clone brother 97 is dying, his throat torn out by an insurgent's arrow. I can do nothing for him except receive his information. I cannot even lessen his pain. So I quiet myself, and press the button which converts my cage into a sensory deprivation chamber. Absence swallows me everywhere; for a giddy moment "I" am set free to spin through another space-time universe, this one a vortex of blackness in which there is but one light: the whirligig of my sentience.

Abruptly the darkness is pierced by clone brother 97's vision. Through the rent in the ebony velvet pour his other senses, and for the next little while I am with him, in him, and of him. I am he.

Autumn leaves crackle under rag-wrapped feet. Voices ebb and flow in accord with the tides of my suffering. It is hard to breathe, with my hand squeezing my throat as it does, but I must keep the crimson jet from spurting until the last relevant datum has been extracted from the situation.

If only I could talk! I would question them closely, about the world and the war and, most of all, my origins, which are enigmatic even after all these years. They've honored such dying requests in the past . . . although I must remember that I remain, to them, the enemy. Perhaps they would ignore me. The overlords do. They view me as a faithful servant, yet they educate me in tightly-rationed increments, and often repossess that which they feel I no longer need.

Would that I knew something for

sure! My masters forged me as a tool, obedient and uncurious because with the complexity of intelligence comes unpredictability. For years I accepted their every pronouncement, until once, eavesdropping on a campfire, I heard people say, with utter confidence, things that were so opposed to what I had been told that the very seriousness with which they were heard out cast my entire worldview into doubt. Later, I realized that my opinions were founded completely upon the scraps of knowledge tossed my way by the overlords. It was then I began to collect my own data.

They stand above me, discussing the disposition of my clothes, congratulating themselves on their luck and their archer on his skill. Though I have no weapons, they are not disappointed; the fox does not expect the hound to bear the hunter's shotgun. I would like to see their faces but I lie as I fell, on my stomach, with my head twisted awkwardly so that neither end of the arrow can dig into the ground and widen the hole in my neck.

Before me are two pair of legs, encased in greasy, tattered pants that were once khaki. My eyes creep up them, touch the scabbarded knives on the leather belts, ignore the clubs in the gnarled, wind-chapped hands, mount higher—but no, they are too close; the angle is too great.

Eye muscles aching from the strain, I surrender vision, and concentrate instead on hearing. Perhaps one of them will provide—or provoke—the insight I seek: why harried, precarious

freedom is preferable to well-rewarded submission. Once I thought "insurgent" meant "insane." Now I sympathize, though I still hunt them diligently, and do not—quite—comprehend . . . A male voice, deep and raspy. Another male, stuttering. A third surprisingly smooth, considering the conditions in which it's been speaking for the last fifteen years. Are there more? Will they—

Clone brother 97's system collapses. His nerves sputter and crackle, like stubborn embers in a rain-killed campfire, but they serve no purpose. They tell me nothing except his agony. I remove myself from them.

I would like to dance in nothingness again, or perhaps ride with another of my brothers, but I must make my report. There are penalties for dawdling. My controller punishes me severely when I wait for the blood to coagulate; he says he must act while the steam still rises in the crisp fall air.

The button returns me to my cage; at once I activate the microphone and recite: "Insurgents at site XA75968991. At least three males. At least one armed with bow and arrow. Have attacked and killed Donald Quinera Clone 97. Visual identification impossible. Aural identification possible; request check of voiceprint files."

I tighten my jaw as I await the Robber. Its electrode strikes. I am helpless. I vibrate as it shakes me viciously, dislodging my memory of the voices. I do not resist; in fact, I do

my best to help it. In a few seconds, we have succeeded: it possesses my recollection of the voices and nothing more; I have had a glimpse of the control room, and seen a ghastly "finger" jab a sun-gold button.

Relieved, I sit on the cement floor and cross my legs. The controller will talk to me now, and then I will be fed. I must remember to pay attention to him, and not let the thought of food distract me. If my mind wanders too obviously, he will rebuke me.

The speaker in the ceiling clears its throat; my controller says, "Well done." He speaks in his language, of course—it is the conquered who must be linguists—we are supposed to emulate them in every way, so that we will become miniatures of them, and they, having civilized us, will no longer be obligated to rule us for our own good. The insurgency will evaporate like a lake whose stream has been diverted. Paradise will be at hand. So they say.

An insurgent that clone brother 41 once sniffed out phrased it differently. He said that every modern conqueror has studied the Chinese model, and discovered that a handful of foreign aristocrats is easily assimilable by a large, sullen native population that is allowed to maintain its traditions. Hence the eradication of our culture, and, in reaction, the birth of outlaw schools, where English and other indigenous subjects are taught. "We really must reward you, Quinera."

"I am Quinera 3," I reply. It is very important to me that he remember

that. Donald Quinera, he who was born of woman, can never win his freedom. Far too hostile to the new regime to live under it, he offered himself to the insurgency. Captured only days later, he was judged—for what reason I do not know, unless it was his life-long familiarity with this region—essential to the pacification program. He was disembodied and added to the data banks, where, on occasion, I have encountered innocuous traces of him. His genes live on, lured by the carrot of eventual independence. Someday, perhaps . . .

“Very well, Quinera 3.” My controller chuckles, a curiously metallic sound. It is probably distortion induced by our aging communications equipment. They brought none down with them, and, at least in the disputed areas that I patrol, I have yet to see evidence of their erecting factories to produce devices closer to the state of their art. “You’ll be pleased to hear that 1.3 seconds after you submitted the coordinates, appropriate action was taken.”

The sun-gold button. I shudder, but inwardly, so that if he is viewing me through the camera he will not notice my revulsion. Idly, I wonder whether he would be capable of comprehending such a human response in any event. “I am pleased, Controller.”

“Excellent.” A soft *thunk* in the wall to my right lends sincerity to his praise. My eyes dart that way; my mouth softens with saliva. “Yes, Quinera 3, you may eat now.”

Excitement forces a moan through

my ravenous throat. Too hungry to waste time on trivia, I cross the room on all fours, and scabble at the wall panel. My fingernails scratch and scrape; at another time the sound would shiver my spine. Not now. The panel snickers up; behind it glows a plate of roast meat. I gather it to me, concealing the plate with my body, hugging it with my left arm. My teeth tear at it, ignoring my tongue’s plaintive advice that it might be better cooler. Soon it is gone.

I thrust the plate back into the panel, and rise, stretching despite the pain of my swollen belly. No. I stretch to feel the pain, to know that I have gorged myself. Then I waddle into the shower to rinse the blood and the grease from my sallow skin.

Afterwards I sit, eyes glazed, mind stupefied, in a corner of my cage. Gentle green moss grows against the two cement walls; if I lean back carefully, I can cushion my bones without injuring my delicate cagemate.

Reflectively, I pick bits of gristle from between my teeth, swallowing them despite my satiation because it could be weeks before I eat again. The overlords will, of course, insure that I survive—needles will bite my flesh and nutrients will trickle insipidly into my veins—but they will not *feed* me until I locate another group of insurgents.

“Quinera 3.” My controller sounds bored.

“Yes, sir?”

“We’re setting 98 down on a hilltop 3 miles from the coordinates you gave

us earlier. Please assume control and reconnoiter the area."

Involuntarily I tense. Does he suspect me?

Without waiting for my reply, he continues, "TacPsych has suggested that surviving members of the insurgent group may visit the strike area to salvage weapons and to bury the dead. We know that nothing will be found, but they, presumably, might not. See what you can find."

I slough off my lethargy like a snake his skin. This could be another opportunity for me. "Yes, sir."

"Very good, Quinera 3." There is a pause. The speaker hums to itself absentmindedly. "Quinera 3."

"Sir?"

"Ah—" a new note has entered his

voice, one that hints at embarrassment, perhaps even guilt "—you've become something of a legend around here, what with your phenomenal ability to . . ." He trails off, unable to complete his sentence. It is guilt.

"To experience death, sir?"

"Precisely. Your colleagues, ah . . ." Again reality chokes him with its ugliness. My colleagues—like my predecessors—are good for two, perhaps three ambushes, before their clone brothers' death throes derange them. They are then disposed of. "How do you do it?"

To tell the truth would be to condemn myself; I must dissemble. "I have been promised, sir," I say, picking my way through my vocabulary as though it were a field of brambles,

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“that when the insurgency has been eliminated, I will be given my freedom. That promise enables me to cling to my sanity.”

“I see,” he says.

He would have blundered on, but I break in to confuse the issue with: “I view myself, in a sense, as a latter-day Moses, but I will not only *see* the Promised Land, I will inhabit it!”

Unsolicited expressions of loyalty are appreciated around here. My controller thanks me—he claims to be touched—and then, remembering our mutual responsibility, advises me to take clone brother 98 and complete the mission.

“Yes, sir.” Button depressed, I travel again through the infinity that may be no larger than my cage. 98 senses my approach, and welcomes me. He is leaning against the trunk of a buckeye; much of its bark has fallen away, leaving satin smooth patches of yellow wood. The wind plays with the leaves at my feet, seeming to single out colors to hurl at me: first red, then yellow, then somber crackly brown. There is a faint tang of woodsmoke in the air; the insurgents must have a camp nearby. Someday I will find it and be fed for a week.

I have oriented myself. Overruling 98’s suggestion that we take a nap (they are always drowsy after first awakening), I head down the hillside to XA75968991.

The nose-stinging smell strengthens, and I realize that my initial impression was wrong. Ahead of me is a steady snapping. A squirrel

scampering toward the crest skids to a halt, rears on his hindpaws while his red tail balances him, and seems to rub his sharp brown eyes. He cannot believe that I am walking toward that which he flees.

I pass him by. Through a clump of defiantly-green bushes flicker orange ghosts, shapeless phantasms born in fiery enmity. They dance before the breeze that helps them eat. I stop, and look beyond them.

XA75968991 is bleak and black. The lasers that blasted it left nothing combustible; even the scabbarded knives have been vaporized. I peer through the smoke, barely aware that my eyes water, but there are no insurgents. I had not expected any, though my superiors had.

My controller, and his TacPsych associates, are, ultimately, alien. Militarily irresistible, they confuse their technology with their intelligence, and from the muddle draw inferences about us. Our technology was inferior to theirs; reasoning that our intelligence must be also, they assume that we would be tugged, mothlike, to the death flames. But I have noticed, in my years of patrolling these hills, that the insurgents are chary of such mini-deserts, and allow Nature to return before they do . . . although they may, surreptitiously, assist Nature’s reclamation.

Excellent. This *is* the opportunity I’ve been waiting for. Withdrawing momentarily from clone brother 98, I whistle in the darkness. Once. Twice. Three times. Then I recite the string

of letters and numbers, and again assume control of 98.

I prowl the fringes of the fire, seeking the optimum location. There are rustlings in the forest around me, but I ignore them. They will come no closer till the last line of the comedy has been recited.

Sweat trickles down my face, and soot sticks to it, but I roam on. The fire is as hungry for me as I am for its menace. A quarter-mile down the hill we agree on a table.

A fallen tree limb, easily twenty feet long, lies on a patch of windswept rock. Its forked end probes the flames, which reciprocate by chewing on its ragged bark. Hands on my hips, I nod. This is what I want.

Beneath the midpoint of the log is a rock which holds the branch a few inches off the ground. Clone brother 98 cringes as I walk toward it. He senses what I am about to do, and wants no part of it. He's a child, barely out of his vivi-tank. I quash his forebodings with a flick of my mind.

I force my left leg under the tree limb. Waves of heat roll over me, drying my sweat while forcing more

through my pores. I lick my lips, grit my teeth, and grip the rock. I take a deep breath. I pull.

The muscles of my back and torso protest the effort. The skin of my fingers tears. The rock slips. Sticks. Jerks free.

Clone brother 98 screams as I leave him. His leg is badly bruised, if not shattered. His fingernails break as he claws at the log. His blood streaks the brown bark; his shrillness drives the birds from the trees.

I spin like a top through the blackness, and am talking into the microphone even before the sensory deprivation equipment recesses. "Sir," I say frantically, "Sir!"

"Yes?" His voice is distant, aloof. He will not allow my excitement to touch him.

"Sir, 98's trapped—"

"Insurgents?" he asks, his tone sharpening.

"No, sir, it's a burning tree. I was patrolling the site and—"

"Did you spot any insurgents in the vicinity?"

"No, sir, not a sign of them."

I cannot control my shaking; the

It's easy enough for science fictioners to dream up stories about battles on alien planets, but George Olney's story, "Moontrack"—which leads off our March issue—shows in detail how existing Mobile Infantry tactics can be applied to fighting on the airless surface of Luna. Paul Lehr has done an exciting cover painting for the tale.

Vonda N. McIntyre's "Snake" series, which started in 1973 with the Nebula Award-winning "Of Mist, and Grass, and Sand," concludes in next month's issue. The story is called "The Broken Dome." Don't miss it.

The March issue will also feature a science fact article on the possibilities of disposing of nuclear wastes in space, plus more stories and all our usual features.

risk is very great. From a wall panel emerges the Robber, semisentient tentacle waving in the air like an alarmed cobra. Then it strikes. It attaches itself to my skull and I immediately return to clone brother 98, whose suffering is awesome. The Robber tarries for less than a heartbeat, just long enough to perceive the situation and to relay its perceptions to my controller. Then we're back. I saw nothing that would be of use, but there will be other occasions. Many of them.

The cement floor is harsh and gritty. The speaker pops several times before my controller says, "I regret this, Quinera 3, but we cannot reach 98 in time to save him. The nearest landing site is three miles away, and—"

"Please," I moan, "please."

Disgusted with my begging, he frosts his voice to say, "Quinera 3, snap out of it! You've lost clone brothers before. Disassociate yourself from him. In half an hour, it will be over. We'll even give you the night off."

"Strike him with your lightning," I urge. "Let him die quickly."

"No," he says, "no. We can't justify use of the lasers unless there will be a positive result. Do you understand?"

I say nothing. Hugging myself, I roll on the floor, feigning indifference to the cuts and scratches it inflicts on my face and arms.

"Quinera 3—" he hesitates for a long moment as he tries to recall what motivates me; I am a valuable asset

and my replacement would be costly—"Quinera 3, you must retain your sanity. Do not allow this to derange you. If you do, you will never be free."

As if listening—and believing—I pull myself upright, and lean against the wall. It is cool under my abraded forehead. "Thank you, sir," I breathe. "Thank you. I am all right now."

"Very good." He sounds pleased with himself. "I shall return to you in the morning."

Since he could yet be observing me, I do not activate sensory deprivation. I find instead the soft corner, and lower myself against the crumbly moss. Eyes closed, I shout a brief message; it will be exceedingly faint, but its mere arrival will trigger the appropriate action.

Then I imagine the scene on the outskirts of XA75968991: thirty-one Donald Quineras, listening intently, leaping at the signal, rushing toward the burning log and their anguished clone brother. The log will be lifted; a stretcher will materialize; the convoy will set out for the caves.

I grow slowly. Surely. Secretly. I do nothing to attract attention. Deep in the hills, in rock-vaulted wombs invisible and immune, I gather the disparate parts of myself, and I wait. By the time another fifteen years have passed, I will have learned quite a bit about the world, the war, and the enemy. Especially will I have learned the value of the overlords' promises.

They gave their word that I will have my freedom.

And I will, one way or another. ■

UPDATE:
THE LORD'S PRAYER

Some truths are
revealed . . . by committee

KENNEDY P. MAIZE

HOLD FOR RELEASE UNTIL 7 P.M. EST

CONTACT: The Rev. Sappho Lumumba-Smyth 212-616-7171

Jersey City, N.J., May 1—The Council of Jersey City today announced that it has reached final agreement on the wording of a new version of the Lord's Prayer. The announcement followed 143 hours and 59 minutes of non-stop bargaining and debate among the leaders of organized Christianity.

Her Holiness Pope Paulette, a principal author of the final version of the prayer, termed the approval of the new wording "the most important event in Christianity since She died on the cross."

The new prayer represents the culmination of the five-month meeting of Christian leaders from around the world. The purpose of the meeting was to produce doctrinal unity preparatory to organizational unification.

The final charge to the delegates was to "promote the eventual unification of all Christian peoples through the elimination of all degrading, oppressive, racist, sexist, fascist, proto-fascist, Zionist, capitalist, exploitive language from church creed, literature, and liturgy."

The charge itself, originally drafted by Dr. Fidel Allende of the Third World Council of Churches, caused much controversy among the delegates. As their first action, the delegates rejected the Allende charge in late February by a vote of 346 to 345. They settled on a new charge to themselves a month later on April 1, by a vote of 346 to 345. The new charge added Zionism to the list of items to be expunged from the liturgy.

The new prayer, to be known as "The Liberated Lord's Prayer," represents the only other official action of the Council. Spokespersons expect no further actions and predict the delegates will return to their homes as soon as they can agree on the wording of the motion to adjourn, perhaps as soon as late summer.

The resolution approving the final version of the Liberated Lord's Prayer passed by the overwhelming vote of 347 to 344. It is expected that Christian churches all over the world will begin using the prayer in all services as a substitute for the traditional Lords Prayer.

The Reverend Haji Muhammed Dos X of the Black Muslim Christian Church of African Unity, one of 690 delegates and Co-Chair-Christians of the Council, said that any church which does not adopt the prayer "is in danger of being considered by the masses as a reactionary revisionist and a dupe of the international Zionist-imperialist conspiracy, and maybe even a CIA agent."

Most delegates desired to change the name of the prayer. Suggested

new titles ranged from the conservative, "The Liberated Lord's Prayer," to the more radical, "Hey There, Mysterious Being, Let's Rap." The delegates felt that the title, "The Lord's Prayer," connoted not only maleness but hereditary nobility.

The Women's Liberation Front, a caucus of delegates, was planning to bring the issue to a vote, but was unable to get the support of the God Is Gay faction. Since the GIG had many supporters among the Sergeant at Arms force, they controlled access to the podium. Consequently, no vote was taken on this important issue, a serious omission in the work of the Council.

(Editors: What follows is a line-by-line analysis of the traditional prayer, with the new prayer on the right, the old prayer on the left, and footnotes to elucidate the discussion and debate leading to the revision. There will be a press conference next Monday with Council officials present to answer questions.)

Our Father¹, who art in Heaven², hallowed be thy name.³ Thy Kingdom come⁴, thy will be done, in Earth as it is in Heaven.⁵ Give us this day our daily bread⁶, and forgive us our debts as we forgive our debtors.⁷ Lead us not into temptation, but deliver us from evil.⁸ For thine is the Kingdom⁹ and the power¹⁰ and the glory¹¹ for ever and ever.

Amen¹²

Mysterious being which pervades all existence and has no name. Overthrow all Kingdoms and permit the oppressed masses to rise and assert their will. Give us this day our daily bread, and give us the bread of the male chauvinist, racist, Zionist exploiters. Forgive us our debts and wreck retribution on our creditors. Tempt us not to waver in the long march against imperialist aggression, until the people rule the kingdom, and the people have the power, and the people get the glory for ever and ever.

Right on!

¹ "Father" is obviously a sexist concept, indicating a hierarchical patriarchy and a male deity. While a substantial minority of the delegates held out for "Mother," the majority favored "Father/Mother" or "Mother/Father," a model derived from the non-sexist Nicean creed of 1975. However, the majority coalition broke down on the issue of whether father or mother should come first. One delegate, an English professor and member of the Mea Culpa Church of Liberal Sin, who asked to remain anonymous, suggested the term parent. The other delegates unanimously rejected the suggested compromise as a

neo-colonialist trick. The delegates then reached consensus on “Mysterious being” after a marathon bargaining session orchestrated by Bishop Usury of the Universal Unitarian Unisex Church.

² “Heaven” is a diversionist term invented by the exploiter classes to misdirect the attention of the people. Instead of focusing on the bread and butter issues of the subjugation of dissidents and minorities, the concept of heaven fools the people into accepting their condition of the moment in exchange for greater rewards in a pie-in-the-sky hereafter. The substitute language was a contribution of Bro. Daniel Patrick Harrigan, S.G. The Society of Gelignite took a leading role in many of the more complex and arcane discussions of doctrine and philosophy. Bro. Harrigan is a leading gelignitist poet, as well as a demolitions expert.

³ “Hallowed be thy name” was unacceptable on two counts. First, it implies that the masses should kowtow and humble themselves to an oppressive god, clearly alien to the modern concept of christ the liberator. Second, the idea of a name for a “mysterious being which pervades all existence” seemed to several influential delegates to be a logical absurdity. In the spirit of compromise which prevailed throughout the Council, the delegates decided on the new language, by the usual 346 to 345 vote.

⁴ The delegates are unalterably opposed to monarchy in any form. In addition, according to the Right-on Reverend Dr. Calhoun K. Fish of the African Anabaptist Episcopal, Anti-Zion, Church, the original language “clearly imply the attributes of a pro-Zionist conceptualization, manifested in the form of a Kingdom come.” Dr. Fish developed quite a reputation in the Council for his succinct summary statements.

⁵ See footnote 2

⁶ The original language received the unanimous approval of the nearly 700 delegates. The additional language in the Council version is the result of a drafting committee of leading Council figures including Bro. Harrigan, the Right-on Rev. Dr. Fish, Her Holiness the Pope, and chaired by Bishop Usury. While Bro. Harrigan was critical of the proposed committee language on esthetic grounds, he felt it was ideologically unassailable, a view the other delegates shared. The committee’s additional language—“and give us the bread of the male chauvinist, racist, Zionist exploiters”—passed by a voice vote that was so enthusiastic that the pounding and stamping cracked the concrete foundation of the Jersey City convention center. The Right-on Rev. Dr. Fish quipped, “The Lord say to build your house upon a foundation of rock. He don’t say nothin’ ’bout no concrete.”

⁷ The etymology of this section of the prayer is similar to that in footnote 6.

The delegates enthusiastically adopted the original “forgive us our debts” phraseology. The new substitute language emerged from Bishop Usury’s drafting committee. However, the drafting committee had initially agreed upon a recommendation to the full council supporting all the original language. Most of the committee, perhaps still exhilarated from the celebration over the “bread” passage, felt a gesture of magnanimity was what the new prayer needed at this point. However, the committee consensus evaporated when the Convention Center management presented the Council with a bill for damages to the Convention Center foundation. The bill was for \$443,876.53.

This act of rapacious greed, reminiscent of the robber barons of 19th Century Amerika, galvanized the delegates. Two days of picketing throughout Jersey City followed, with a few gratuitous fire bombs thrown in. Some unknown person, probably not a delegate, spray painted the slogan “long live the provisional IRA” on the walls of City Hall. The Council finally reached a compromise with City Hall when Mayor Anthony “Pig Tony” Liberale said he would put out a contract on each delegate if the bill wasn’t paid. The Mayor knocked off the \$.53 from the bill and the drafting committee came up with the language concerning creditors. The compromise over the bill for foundation repairs passed the Council by 346 to 345. The new language in the prayer was unanimously approved by a voice vote, whispered.

⁸ This new passage was the product of the delegation from the Chinese Christian Church of St. Mao the Unifier. The Chinese delegates were generally inactive at the convention, content to savor their triumph of last year. They were successful last year at the Diet of Rice in getting the gospel according to Mao put in the New Testament as a replacement for the gospel according to Mark. Despite their general silence at Jersey City, however, the Chinese felt strongly about this passage in the Prayer. The other delegates were generally apathetic and perhaps exhausted after the events surrounding the bread and debts passages. At this point in time, the Council had been in continuous session for over 120 hours and some delegates may even have been hoping to be led into temptation. But Chinese delegate Cho Yu Lai made an impassioned plea ending with the memorable phrase, “all who vote against are decadent pig-dog lackeys of imperialist war-mongers.” With the Chinese voting as a bloc, the substitute language passed 3 to 0.

⁹ See footnote 4.

¹⁰ The language is Bro. Harrigan’s

¹¹ Ibid.

¹² What other phrase could better express the urgency of the prayer and also eliminate the rampant sexism of the term “Amen”?

THE REFERENCE LIBRARY

Spider Robinson

We Who Are About To, Joanna Russ, Dell, 170 pp., \$1.50

Michaelmas, Algis Budrys, Berkley, 253 pp., \$7.95

Kampus, James E. Gunn, Bantam, 308 pp., \$1.75

Hrolf Kraki's Saga, Poul Anderson, Ballantine, 261 pp., \$1.95

Moonstar Odyssey, David Gerrold, Signet, 160 pp., \$1.50

There are quite a few of us reviewing sf these days, and when you strip away style and vocabulary you discover that we all say pretty much the same *kinds* of things about books. While there are infinite shades of reaction to a given book, in the final analysis you a) liked it, b) disliked it, or c) something in between.

In categories a and b there are a whole series of catch phrases on which to rely. For a, you speak of "tight plotting; holographic characterization; competent craftsmanship; good story," and then you pick a couple nits to demonstrate discrimination. For b, invert procedure. The work, such as it is, involves hauling the Dictionary of Synonyms down from its high shelf.

But in the overwhelming majority of cases, my own reaction-spectrum lies somewhere in c, and that's where a reviewer really works hard. It's difficult to precisely describe ambiguity. There are few catch phrases.

But there is one, that you hardly ever see. Considering how cerebral our genre is, it's startling how seldom you hear a reviewer say, "I didn't unnastan it."

Perhaps it's precisely *because* sf is so cerebral these days, so hungry for serious consideration and academic respect, so desperately fleeing the drooling spectre of Buck Rogers, that we have blundered headfirst into the chasm of what my pal Steve Thomas calls the E.N.C. Syndrome (Steve is fascinated by nomenclature: it was he who coined the term "rectofossal ambiguity," speaking of ambiguity) ("fossa" is the Latin for "a hole in the ground." Does that help?). "E.N.C.," of course, refers to the emperor's new clothes, and the syndrome finds its most perfect expression in the statement, "If I don't understand it, it must be Art." *God* knows that sf is not the only art form to become entangled

in the E.N.C. Syndrome—but it's right up there with the worst of 'em. Remember the *first time* you admitted to someone that you didn't understand what the hell was going on in *Dhalgren*? The timidity with which you confessed to your English teacher that you couldn't make head nor tale of *Barefoot in the Head*? The secret shame with which you bounced off a Phil Dick novel? The uneasy suspicion that maybe you just weren't intellectually rigorous enough to grow, that the New Wave was leaving you behind with the rest of the low brows?

Reviewers in particular, me among them, will go to incredible lengths to avoid saying plainly, "I don't get it." Perhaps we fear that saying this will establish us on some fixed point, *below* the upper levels, on the intellectual hierarchy, and thus disqualify us as critics. Surely a critic ought to be someone who understands everything?

Cow custards.

Oh, I admit that lack of understanding may be as much the critic's fault as the writer's. Miles Davis, for instance, consistently confuses the critics—and then turns out to have been three years ahead of his time just as consistently. On the other hand, Miles's latest bag seems (again) like gibberish to me, and I'm honest enough to admit it. Maybe in two or three years I'll like it—but there's no sense in pretending I do *now*.

Similarly, there may come a day when I figure out where Joanna Russ is coming from. But right now I say it's spinach and I say the hell with it.

It's damned embarrassing. Two different men whom I know personally and respect professionally have each

paid out cold cash for the right to print *We Who Are About To . . .* Samuel R. Delany says on the cover, "Elegant and electric, this tour de force has got to be the finest sf novel I have read in a handful of years." (how many years, or fractions thereof, can you fit in your hand?) Consequently I read it not once but twice.

And I'm damned if I can *imagine* what there is in this book that I was supposed to enjoy.

I know: "enjoy" is one of the most indefinable words in the language. In the sense I mean, it is possible to enjoy, say, a musical discord, or the salt in a cookie, or a roller-coaster ride. But there is a threshold effect. Try a whole album composed of nothing but discords. Try a mouthful of salt. Try a day or two on a roller-coaster.

And those are the 3 most persistent images *We Who* leaves in my mind. I recognize the value of irritants—but a steady diet of them is . . . irritating. And this is a book which from beginning to end consistently induced irritation, evoked dis-ease (pun intended), without any point or purpose that I could discern. If this be stupidity, I stand foursquare with the dum-mies.

I rather like the basic notion behind the plot. There is an old familiar cliché in sf whereby A Handful of Average Humans Are Shipwrecked On A Strange Planet, and proceed to survive in style by use of salvaged gadgets from their ship and Boy Scout lore. In fact a Handful of Average Humans (how many average humans can you fit in your hand? And did you know that the average human has one breast and one testicle?) Shipwrecked On A

Strange Planet would, in all likelihood, bloody well *die*—and I applaud efforts to debunk the cliché. But if it's a choice between total sweetness and light or total sourness and dark, I know which I'll pick.

Plot summary, for those of you who missed *Whee Hoo* in *Galaxy* last year: a h.-full of a.h.'s are s.w.'ed on a s. p. The story is told through the eyes of the only character with brains enough to realize that survival is probably impossible (note the qualifier). But the rest of the ninnies keep bleating to her about survival and the generations a-comin'. She suffers this in contemptuous silence for a while, but shortly the others become persistent, even begin to openly suggest that all the women should bear children, without benefit of civilized obstetrics (as over half the women now living on Earth routinely do). No threats of force are even implied, but she is intelligent (read: cynical) enough to know that all people, especially all normal (read: nonintellectual) people, are potential oppressors. They represent, on several levels, a threat to her God-given right to go to hell in her own way (if you are a passenger on a lifeboat, do you have a right to decline to row?). So, to prevent the indignity of being coerced into living, and the annoyance of watching fools try to live, she manipulates a situation which will produce the necessary adrenaline, murders them all, and spends *more* than the last half of the book rambling into her pocket-recorder (you and me) while starving herself to death. In the end she fails to do *that* successfully—lacking the guts even for passivity, she takes painless poison. To paraphrase Gordon Dickson—

“Lord, she was a coward.”

Now, if you want to pay a buck and a half to spend several hours inside the personal tape recorder of a coward, snob, homicidal sociopath, and egotistical blowhard with “more sense” than to try and survive against hopeless odds (which, after all, is what you and I are doing just now), listening to her talk herself to death, you go right ahead.

But if you do . . . I just plain won't unnastan.

The prose *is* elegant and electric, considered as specimens of grammar and style. You get the feeling that if the protagonist (I will not call her a heroine) had become a novelist (say) and ever found something worth writing about, she'd have written a terrific book.

Wisely do the Catholics say that despair is the only unforgiveable sin. It *doesn't* just hurt yourself. The one who suffers *least* from a suicide is the corpse.

Wisely also does Stephen Gaskin say that what you put your attention on, prospers. I believe that reading this *once* was putting too much of my attention on despair, and the diseased mind-set which produces it—and I urge you strongly not to make the same mistake.

Let's see: do I want to talk about ambiguity some more or not? Well, yes and no . . .

What it is, you see, is Algis Budrys's *Michaelmas* . . . and I don't know exactly what to tell you about it.

I saw a church one time when I was a kid, on vacation in Maine with my family. I don't remember where. All I

remember are the Stations of the Cross on the walls inside. Every Catholic church has 'em: 14 scenes from the last 24 hours of the life of Jesus, for meditational and liturgical purposes. These were striking: each "picture" consisted of perhaps three or four strokes, the curve of a straining shoulder or a mouth gaping in agony, and *your imagination filled in the whole rest of the picture*. So skilled and subtle was the artist that hints sufficed.

I admire Algis Budrys's skill tremendously. *Rogue Moon* in particular has significantly affected my own writing style of late (if Algis is listening and is interested, I read *Rogue Moon* just before sitting down to write "Stardance"), and one of the things I admired most about that story was the Crackling Undercurrents, the conveying of tension by implication, the depiction of impact by description of the ripples. The subtlety.

And here Algis has given me a book so subtle that I don't think I unna-stan.

Let me say right out front that the prose in *Michaelmas* is a sheer joy to read, impeccable in construction and literacy, at once spare and elegant. It provides some marvelous witty aphorisms and sophisticated observations, does most of the work for which other writers would employ stage directions, and carried me along quite smoothly even when I wasn't sure just where the hell I was going. The light touch throughout: characterization by dialogue rather than by description; *show* rather than tell. Sketch a shoulder here, a grimace there.

But this *isn't* Stations of the Cross. I don't already *know* the story. It may

be a fine jest to refer to a lady as "spathic", but only a geologist will get the joke ("spathic": a term used in describing certain minerals, meaning, "having good cleavage"). And either I missed a number of subtleties, or the plot of *Michaelmas* has giant holes in it.

Laurent Michaelmas is the man who has been secretly running the world ever since the 1980s or so, with the aid of a supersophisticated computer named Domino. Michaelmas originally built Domino (single-handedly) as a device to cheat the telephone company, and before long it "jest growed" to the point of human-plus intelligence and total access to all the data in the world. Domino literally knows all, sees all, and tells all to Michaelmas; is the only one of its kind in all the world; and is utterly unsuspected by humanity at large. Michaelmas's purpose in using Domino is, quite simply, to save the world. With total access to anything he could possibly need to know, Michaelmas can forestall conflicts by conning the conflictors into agreement, see that marching orders get lost in the mail, preserve world peace, and see that individual initiative is encouraged, all from behind the scenes. He is totally knowledgeable, utterly incorruptible, boundlessly compassionate, ultimately wise and a helluva nice guy, just the sort of man you'd have entrusted the world to if you'd been asked.

Maybe we'd better stop there for a moment.

Onward: in his spare time, when he wasn't busy being not only *a* but also *the only* computer genius, able to outfox CIAs and NKVDs and KGBs with ease, Michaelmas became the

most famous newsmen in the world. It seemed like a handy cover for the secret controller of the world to have (certainly time-honored; "mild-mannered reporter" and so forth), and so he acquired a totally new set of skills and talents (not the least of which is charisma) and became the undisputed best-in-the-world at *that* too. He is more than capable of subvocally communicating with Domino while keeping a pokerface for the cameras, or even while carrying on a multilevel Frank-Herbert-like conversation with a stranger: he time-shares as well as, maybe better than, his touring Turing machine. (Sorry, Ben.)

Now here we clearly have an extraordinary individual. And yet in the end, he solves his greatest challenge with a pistol and a bludgeon . . . and the bludgeon is his computer terminal.

About the central problem he solves so primitively, there isn't much I can say without spoiling all the surprises, and in spite of all these gripes you see flying around I would recommend that you at least buy the eventual paperback. But when you have bought and read it, I wish you'd come explain to me what the hell Limberg (what a great name for a villain) and Cikoumas's goals *and* motivations were, how come Limberg brought a no-class neb-bish like Cikoumas into the conspiracy in the first place, how Fermierla came to make such a literally cosmic error, what good World War III would have done *any* of them, and what Zusykses is going to say when he gets home? Oh yes, and was Gervaise honest or not? I'm damned if I can figure it out. Oh, and one more: what ever *possessed* Michaelmas to visit upon Campion

(an intelligent antagonist) such detailed vengeance as to make Michaelmas's true nature and abilities transparently obvious? I won't tell you Campion's punishment or why he merited it, but take my word for it—Campion couldn't possibly have mistaken it for anything but hostile action by someone in control of an unsuspected master computer net. I know, Michaelmas's judgment could have been clouded by his personal anger—but is this the guy that made monkeys out of the CIA? I believed Michaelmas's wit . . . but I often doubted his wits. And to doubt them is to doubt him.

I repeat: buy the paperback. You have no idea how stupid I feel recommending a book I didn't un-nastan, but that's my opinion and I'll stick to it. I may not have *understood* the climax—but even so, it brought me to the edge of my seat and left me breathless. And the character of Michaelmas was exquisitely drawn. With anybody else, I'd probably say the book was elegant nonsense—but since it's Budrys, I must just not have understood.

Maybe you're sharper than I am.

Ambiguity marches on. Next we have a book with which I found myself agreeing again and again—and which I cannot in all conscience recommend to you without grave reservations.

At least not as a piece of fiction. James Gunn's *Kampus* is brilliant in spots, often startling, occasionally devastating. But it can lay only the barest claim to being a *story*.

What it is, of course, is a classic case of PK overdose.

PK is the term we experts use (ever since I coined it, thirty seconds ago) to describe the virulent strain of satire first developed by researchers Pohl and Kornbluth, working in collaboration in the 50s, and subsequently patented by them. It is a strain which nearly transmutes sf into fantasy, by laying the satire on so thick that the suspension-of-disbelief called for requires something rather stronger than three-inch steel cable. Now wait!—I can see some students and older readers rising up in wrath to tell me that Fred and Cyril didn't invent satiric sf by a Hoover dam sight. No, they didn't—but *their* brand was something new. It didn't mock or jeer, or even snarl: it went for the throat, and tore it out and stomped on it and then urinated on the remains. It was the blackest humor that sf had ever seen at that time, and the consistent surprise was that they always managed to wrap a good, entertaining story around it.

It is that last which Gunn fails to do with *Kampus*. Oh, he tries to make his polemic look like something more—and the result is a first-chapter that reads like a Harlan Ellison parody (in a single, nine-line paragraph we get eleven bastard words: “silksmooth,” “firmyielding,” “moltengold,” “buttonhard,” “breathhastened,” “roughsmooth,” “moistpink,” “spinblurred,” “joysmeared,” “throbcentered,” and “lovelost”—a device which Gunn uses heavily in Chapter One and then abandons forever.) Subsequent chapters are less ambitious.

The polemic itself is more than worthy of your attention, especially if you happen to be connected in any way with the academic world. Gunn

teaches (English, I believe) at the University of Kansas, and apparently he has been forced to listen to too many student “philosophers” rationalizing irresponsibility for too many years. *Kampus* is the resulting trumpet-blast of rage and hate and despair. It is worthy of note that he spends one chapter satirizing the shameless self-prostitution of universities themselves, and ten chapters satirizing the idiot, “if-it-feels-good-do-it” pseudophilosophies of some of the willful know-nothings who attend or graduate from them—but regardless of the bias, all the balloons he pricks needed puncturing, and his lancet is wondrous sharp.

The problem is that it's dressed up like a story and sold as fiction. The unwary reader has every justification for mistaking the protagonist for a character, and may consequently be confused and disappointed when he fails to act in any believable or consistent manner—as Socratic foils always do. The other characters are not even cardboard, but a kind of ghastly papier-mache compounded of bile—with the exception of the only two admirable characters in the book, who become just real enough to be impossible to reconcile with the insane world they inhabit. One is murdered, and his brains literally sucked up through straws by his students; the other accomplishes nothing whatever.

In short the whole thing is laid on so thick it'll break your back. After a while I just stopped reading.

Oh yes, and I find it extremely odd that as perceptive an editor as Fred Pohl should have put on the cover of the book a painting which so utterly misses the point. Gunn's book satirizes

the extrapolated results of whole-hog permissiveness in universities; the cover depicts a tyrannical-looking professor surrounded by grim, tough leather-clad cops. A clean, 180° miss. What the hell, Fred?

Well, maybe the idea was to entice the radicals and revolutionaries into buying it—and then blow their minds. Not an altogether bad idea, actually.

But it would have worked better if *Kampus* were better-disguised propaganda.

When you leave ambiguity behind, is that uniguity? (Where's Steve Thomas now that I need him?)

Whatever it is, that's what I'm into now. At last, at long last all the dozens of *mes* who gather together to sit in judgment every time I read a book are in unanimous agreement—and all those dozens of thumbs are pointing upward. *Hrolf Kraki's Saga* is one of the most enjoyable books I've read in years, a genuine treat from start to finish (where's my bag of catch-phrases?).

I don't generally care overmuch for heroic fantasy, for sword and sorcery kinda stuff. Oh, I like a lot of Conan and Kull, and I grew up with John Carter just like everybody, and by dint of skimming whole chapters I was able to quite enjoy *The Lord of the Rings*. I own the complete Szolti/Vienna Philharmonic recording of Wagner's Ring Cycle, and I remember King Arthur with fondness. But I can't say that swordplay and spell-casting are my pipe of tea: I can't, for instance, follow a game of *Dungeons and Dragons* without extensive explanations.

But gosh, this is good stuff.

The story of Hrolf Kraki is one of the oldest Norse sagas in existence, contemporary with Beowulf (who gets a walk-on here, under the spelling "Bjovulf"). "But," as Poul Anderson says in his excellent foreword, "it did not have the same good luck as the tale of Sigmund, Sigurdh Fafnir's-Bane, Brynhild, and Gudhrun: to get a sin-ewy prose narrative and to inspire poems which have survived in their entirety. Hence, today it is nearly forgotten."

So Poul decided to correct the omission—and did one *hell* of a good job, producing a work of historical import, literary significance, and tremendous appeal. I am not a scholar of things Norse, and cannot authoritatively judge its authenticity—but I'm convinced. Poul's use of language is stunning: archaic enough to convey the flavor of the times (and incidentally point up a lot of the Scandinavian roots of English) and yet gripping enough to hold the attention of the modern reader (read: dummy). Like Heinlein's *The Moon Is A Harsh Mistress*: in a remarkably short time you find yourself thinking in a strange dialect. If this be my weird, I reckon it no great scathe.

And the prose aside, what a fine story! It's a grand sprawling soap opera spanning several generations, set in a dark and savage age where, as Poul says, "Love, loyalty, honesty beyond the most niggling technicalities, were only for one's kindred, chieftain and closest friends. The rest of mankind were foemen or prey." I was captivated by the yarn, from start to finish. (Jeez, the bag's empty—what'll I do now? Oh yeah, pick a nit.)

My only small itch: for 150 pages the book read like a simple retelling of more-or-less factual oral history—to which fantastic elements were ascribed, *added*, by the narrator (a woman of 10th Century England). When, on page 151, the story clearly and irrevocably became “pure” fantasy (a guy gets turned into a werebear, and eventually sires sons who are half-elk and part-dog respectively), it startled me just a hair. It may not bother you a bit.

I read *Hrolf's Soggy Cracker* (have you noticed how I love to corrupt the name of the book I'm discussing?) (Do you understand why I didn't do it with *Michaelmas*?) over the course of one of the busiest weeks of my life. Everytime I got a spare minute I pulled *Hrolf* out of my back pocket, lifeline to sanity, and thank God it was enough to see me through.

Thanks, Poul. Work like that is *appreciated*.

David Gerrold hand-delivered a review copy of *Moonstar Odyssey* at the 1977 Boskone (which was as delightful as always) and I'd of sworn he said it was the first book of a trilogy. Now I read in *Locus* that he's “planning a sequel,” and another editor tells me *he* just bought *another* first-of-a-trilogy book from David. So either he's been typing himself into apoplexy lately (as opposed to apoplexia, which is the inability to read to your father), or just possibly it was drunker out than I thought that night.

Notwithstanding, *Moonstar Odyssey* stands just fine on its own.

It's something of a departure from the David Gerrold I know, and an extremely successful one: he shows

muscles here I didn't know he possessed. This is what is called a novel of character: the character and her setting essentially *are* the whole book, and the plot, in the sense of stage directions, is minimal. They're the very devil to sell, because you can't show the editor a plot-outline chock-fulla adventure and surprise and diagrammed subplots—he has to take you on faith, assume you can write, can create a character and a world big enough to fill a book by themselves. Whoever took a chance on David deserves a rising vote of thanks (rising only to half-mast because he was too silly to send me a review copy, of course)—for given his head, David has produced a rare and beautiful book. Edgar Pangborn might have written such a book, at David's age, if he were David's age today.

There's a hell of a lot of sanity in *Moonstar Odyssey*, a hell of a lot of careful thought and profound insight. The first 3 pages alone, describing Satlik birthing customs, are worth the purchase price to me, and I've already read LeBoyer's *Birth Without Violence*. What David has tackled here is human sexuality itself—in much more depth than Ursula LeGuin attempted in *Left Hand of Darkness*. He postulates a human-offshoot race born potentially male or female—but unlike LeGuin's Gethenians they make a final choice between Reethe the Mother and Dakka the Son and Lover at the end of puberty, after deep spiritual search and physical experiment. Even after that irrevocable choice, all are referred to as “she”—which keeps you just precisely enough off-balance (without ever confusing you) to follow an extremely real youth

named Jobe from her ambisexual childhood to her rite of passage with an open mind. I found the perspective from Jobe's vantage point fascinating and illuminating, and I sincerely hope you do too.

Be warned. If you are a Mack Reynolds, Keith Laumer fan, if you believe that one is either a man or a woman but NEVER (heaven forbid) something partaking of both, if you insist on seeing the line between yin and yang as a barbed-wire border, this book will probably offend or disgust or seriously threaten you. In other words, you should read it too.

The protagonist, Jobe, is a person out of step with her world, for whom The Choice is an unusually sharp antinomy. And one of the disturbing factors on her is cultural influence from Terran humans, who have just opened trade with Satlik, Jobe's world. The sexual customs they bring to Satlik are of course patently insane . . . and yet darkly fascinating. Matters soon get further complicated by disaster on a planetary scale, "accidentally" caused by a careless Terran.

I won't say this is a perfect book, even of its kind. What plot there is, for instance, almost seems to intrude. David's assembled forces that he didn't really need for this book; the sequel will tell whether they were necessary at all. Yet the book stands well on its own, and does in fact end—doing so, however, on a note of looking forward that makes me hanker for at least one more book. A trilogy would be just fine.

Not a perfect book—but I think it's Hugo class. Where Sturgeon and LeGuin and Heinlein and Russ and

Bryant (Ed and Dorothy) have broken ground in shining the speculative light on human sexuality, David Gerrold has by God dug him a mine.

Some more ambiguity before I go. **Caviar**, Theodore Sturgeon, DelRay, 182 pp., \$1.50

The Word For World Is Forest, Ursula K. LeGuin, Berkley, 169 pp., \$1.50

Caviar is a collection of short fiction by Theodore Sturgeon, and I liked every story—but somehow you expect more than *like* from Sturgeon.

One story, for instance, is only fair: "Ghost of a Chance," a one-joke with a silly punchline, saved by excellent characterization. Three are merely good ("Prodigy," "Medusa," and "Blabbermouth")—they have the Sturgeon touch, but they're clearly pulp-type plots. One ("Twink") is very good. But three of them are just excellent, without any flaw I can discern. "Shadow, Shadow On The Wall" is a fantasy involving a young boy named Bobby and his evil stepmother, and every word is perfect. "Bright Segment," the leadoff story, is neither sf nor fantasy, never ran in a magazine, and appears here only because it is by Sturgeon and it is utterly exquisite in its every aspect, with one of the most memorable protagonists in fiction (who is never named, because no one in his world has the slightest interest in knowing his name).

And of course "Microcosmic God" is a grand classic of the genre (though I should point out that it is also the headliner story of *Not Without Sor-*

cery, which is *another* recent Ballantine reissue), and that brings me to the hilarious part. The story, as you almost certainly know already, concerns a mad-genius scientist who creates a race of miniature people with accelerated time-rates and life cycles, so that he can study their evolutionary development. The book's cover painting is clearly meant to illustrate this story, with a bearded scientist looking down skeptically on the antlike antics of his creations—and the face is unmistakably that of Lester Del Rey. What makes this *really* funny is that the editor who commissioned the painting (from Darrell Sweet) is Lester's wife Judy-Lynn.

The title is apt: caviar is a delicacy made from the eggs of the sturgeon. But unlike the real thing, this book tastes pretty good.

I feel funny not giving *The Word For World Is Forest* an automatic huzzah. It's by Ursula K. LeGuin, after all, and if that weren't enough, it won a Hugo in 1973. And yet I put it down with ambiguous feelings too.

I can't seem to put a finger on just what's wrong with it. I think it's more a case of just not enough *right* with it. The thesis—that a nontechnological race is not necessarily inferior—is okay, but not very startling. The plot—humans enslave aliens, aliens display hidden talents and wipe out humans—has been done about a million times. The new wrinkle here is the nature of the hidden talent—a much-better developed racial unconscious than humans have—but not much gets done with the idea. The characterization is okay, but again rather standard-issue (albeit well-drawn standard is-

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sue), only one step removed from cardboard.

The whole thing was rather standard-issue, unfolding effortlessly and painlessly, with no stumbling places and no real distinctions. I can't believe she worked herself up to a sweat on it.

Look, I *liked* the book. I *enjoyed* it. I was intrigued by the concept of the importance of dreaming for the Athsheans (look at what the psychedelic experience—learning to dream while awake—has done for the consciousness of this generation). But LeGuin's books aren't usually the kind you can read in a noisy subway car—and this one is.

In addition, you should keep in mind that this is exactly the version that won the '73 Hugo, with no additions or deletions. But the category for which it won its Hugo was Novella. It's short for a dollar and a half. ■

BRASS TACKS

Dear Mr. Bova:

. . . Special kudos to Raccoona Sheldon. [June '77] An intriguing theme, and with an entirely new twist.

But one of the letters draws my ire. Timothy Stocks states that: ". . . the relative rates and incidence of starvation and disease in India and South America . . . after the introduction of British and American economic control . . . went up."

This may be true, but the cause *isn't* economic control. Rather, it stems from a decrease in infant and child mortality. This decrease allows more infants to survive to adulthood, without a corresponding advance in agricultural methods to feed the new adults, and *their* children. And until the Indian and South American governments legislate some effective, mandatory birth control legislation, the problems of disease and starvation will continue to follow their age-old course.

Just one more thing—Trudy E. Bell's article was great. And she is right—if it turns out that a planet once existed between Mars and Jupiter, it should be called Krypton. If anyone is interested in doing something about (this), write me, and we'll see what we can do together . . .

JOHN L. MITCHELL, JR.

1234 A Boylston Street
Chestnut Hill, MA 02167
*Glad you enjoyed the Women's Issue.
As for mandatory birth control in
poor, overpopulated nations, the peo-*

ple of India voted Indira Ghandi's government out of office largely because of mandatory birth control programs that she initiated. It's fine for us to tell other people what they need; but they will continue to strive to get what they want.

Dear Ben,

. . . Raccoona Sheldon's short story "The Screwfly Solution" in your June issue got to me. For my taste, it was a great story, combining the best of the "Old Wave" SF approach (a logical extension of scientific facts as they are presently understood) with the best attribute of the "New Wave" approach (close scrutiny of effects on individuals' reactions and relationships). Additional bonuses accrued through integral involvement of sexual considerations at two levels (the human being interpersonal relationships and the deus-ex-machina), and by proving that four letter words can be used very effectively if they are limited to appropriate stress situations in which the accentuated emphasis is both normal and (almost) expected. Bouquets to the lady . . .

L. H. HOGUE

1024 Tamarak Dr.
Las Cruces, NM 88001
New Wave, Old Wave, the important thing is that the story dealt with believable people who faced an overwhelmingly powerful problem. That's what makes good fiction!

Dear Mr. Bova:

I just finished reading the July issue of Analog; I could not agree more completely with your editorial. To avoid a catastrophic energy crisis in the

United States, one which has the potential to be felt elsewhere in the world, "We need a combination of many new technologies to handle our pressing energy needs. But more than that, we need the drive, the dedication, the leadership that only the President of the United States can provide."

To get from our present situation to a self-sufficient energy economy, the nation needs to perform basic research in alternate energy cycle technology and hardware and to expand the role coal and uranium play in the generation of electricity.

The scientific, technological, and industrial communities must coordinate their thinking and activities under a strong national energy program. Those communities must have both time and adequate funds to develop energy technologies of the future and the research must begin now. Solar, geothermal, wind, magnetohydrodynamic and ocean thermal gradient generation technologies, in addition to other technologies in the laboratories, offer hope for the future. Previous experience indicates that new technological developments frequently take as much as thirty years to become fully commercial. Our near term hopes will have to be based primarily on the expanded use of coal and on nuclear generation.

To assume one of the two leadership positions, the coal mining industry will have to greatly increase its mining capabilities. To do this, the industry needs both large amounts of capital and the cooperation and active assistance of the government and the environmental groups. Coal will also have to play a larger role in the manufac-

turing of goods as natural gas and oil reserves continue to decline.

Uranium, used as fuel in commercial light water reactors, has the capability to greatly assist coal in powering a healthy economy, especially when combined with breeder reactor technology. Although capital expenses for a nuclear plant are higher than those for a comparatively-sized fossil fueled plant, the total generation cost for the nuclear plant is 10% to 20% below that for the fossil plant. The environmental impact of the nuclear plant, as noted in all of the recently filed Environmental Reports for nuclear projects, is much less than for a fossil-fueled plant.

The nuclear industry is one of the most tightly regulated industries ever devised by man. From the mining of uranium to the safe storage of used fuel, closely monitored programs make the industry also one of the safest. No member of the public has ever been injured or killed by the commercial operation of a nuclear power station.

To meet federal Energy Adviser James Schlesinger's proposal of 300 additional nuclear stations by the end of the century, utilities will have to raise more capital and be permitted to trim the present construction of nuclear stations time from more than ten years to about six or seven years.

If the nation is to improve its economy and maintain its position as a world leader, we need strong conservation programs, more nuclear stations, more coal-fired stations, more research funds for new technologies, leadership from our president, and everyone's cooperation.

J. U. BOTT

Nuclear Licensing Manager
Public Service Indiana
1000 East Main St
Plainfield IN 46168

Coal is an important part of our energy future . . . until the advent of commercially practical fusion power-plants. The problems of mining and burning coal without destroying the environment, however, are real, and serious, and—so far—unsolved.

Dear Mr. Bova:

After reading your letter to the editors of TIME criticizing the movie "Space Wars" I find it necessary to point out your error in judgment.

As a person you have a right to your own personal opinion. However, your opinion as editor should reflect the interest of science fiction readers, not writers. Space Opera (of which "Space Wars" is a cinematic example) is a valid and very enjoyable form of science fiction. The long lines for "Space Wars" indicates that millions of people enjoy this type of fiction. Perhaps, if Analog were written based more on what people enjoy reading, rather than on what a few professionals feel should be expected from science fiction, your circulation would increase.

I hope you will consider this criticism as a plea for improvement of the genre rather than as a request for abdication.

LOWELL G. JOHNSON
167-32nd Avenue North West
New Brighton, MN 55112

Er . . . the name of the movie was "Star Wars." And as a science fiction reader, writer, and editor I still think the film is little more than an expensive comic strip. Its only relation to

science fiction is to degrade our genre in the eyes of the public.

Dear Ben Bova:

As you and your readers know, more and more high schools are teaching science fiction courses these days. I am presently involved in a research study to discover what they teach and would like to contrast that information with what dedicated s/f readers think.

I would like *Analog* readers to tell me which ten novels and two short story collections they would put on a reading list for high school students with little or no background in the subject. Assume the students are reasonably literate and are between fourteen and seventeen years of age. Drop me a post card. Compulsive communicators can write letters telling me why they selected the titles, but that isn't necessary for what I'm attempting.

Thanks in advance.

DOROTHY N. BRODERICK
111 South Highland, Apt. 3
Ossining, NY 10562
And send a copy of your list to the Editor!

Dear Mr. Bova:

Your July editorial shows incredible economic naivete on your part. Your company has raised the price of Analog much faster than the "despised" oil companies have raised gas prices, so your "holier than thou" attitude is ridiculously out of place.

The manufacture of the solar energy collectors that you propose for lighting Washington monuments will consume more energy than they will save over the next ten years (if they last that long) and will clutter up the

park with unsightly structures that environmental freaks will tear down as fast as they can be constructed.

As for Carter's energy program, it is purely a bureaucratic power grab without basis in fact . . .

ANDREJS BAIDINS

1104 Windon Dr.

Wilmington, DE 19803

Touche, in part. Analog's price has risen steeply over the past few years, partly because of the worldwide inflation caused by steepening energy costs. But such pessimistic prognostications about solar energy remind me of the gloomy predictions that airplanes will never be practical as transportation and rockets can never be useful for anything but fireworks.

Dear Ben:

Just a quick note to thank you for running the brilliant "Ender's Game" by Orson Scott Card in the August 1977 issue. This novelette is the best thing that has appeared in your magazine this year (excepting, maybe, Martin's "After the Festival") and it should be a prime contender for a Hugo!

PERRY GLEN MOORE

1326 Burton Valley Rd.

Nashville, TN 37215

"Ender's Game" was Card's first published story. But it is neither his last nor his best.

Dear Ben,

While thumbing through some back issues of Analog I came across the story "Epicycle" (November '73) and resulting letters. This, you recall, was set in 1984 and concerned the first woman scientist sent into orbit with a Shuttle payload of experiments—with

the background of the struggles of the scientist concerned to overcome male chauvinism in the space effort and get the job. You may already know that applications for payload specialists for the European contribution to the Shuttle—Spacelab—are now being gathered in, and specifically worded advertisements include a note that male or female applicants are welcome. Seems we've come a long way in a couple of years, and that the struggle to be first to break the Western spaceman chauvinist barrier won't be so hard after all! (Of course, I've applied for a job myself, but along with several thousand others in the UK alone—and there's only one such *scientist* job going at present in the whole of the European Space agency countries.)

Remember that article "Science fiction is too conservative"? True in the social sciences as well.

JOHN GRIBBIN

Perhaps scientists should form a lobby that convinces the Government that they are a minority group, and should be given a "fair quota" of jobs!

Dear Ben:

Thanks.

"Ender's Game" is undoubtedly the best story I have read in over a year. It owed its success to the combination of elements employed by Orson Scott Card. There was excitement during each of the nullo battles. There was challenge for the reader as each of the tactical problems presented itself. I suspect that Mr. Card is a wargamer from way back like myself. We military brats/amateur tacticians appreciate the attention to detail.

But this was more than an exploration of tactical maneuvers. There were people involved and that's where this story really happens. Ender is an especially tragic figure in spite of his successes. Or, rather, because of them.

Ender is blessed/cursed by the "gifted child syndrome." He is a performer forced into a continual series of encores. Once he excels he is forced to top himself. The battles are not fought against an enemy. Ender wages war against himself. Each new battle forces him to dig down farther into himself and pull out another rabbit.

The magic stops being fun after a while, though. This I know. A comparison can be drawn to myself. I play tennis and play it well. Once I had dusted inferior opponents I was trapped. I was under pressure, from within and without, to go on winning. The level of play advances as the struggle is more difficult. But I fell short of Ender's performances. I have lost and not taken it well. I have won close decisions and berated myself for not dominating the enemy. While I bend steel rackets, Ender's knuckles bleed.

Ender's life is even more tragic since, while I can collapse from physical exhaustion, his fatigue is mental and inescapable. Further, he cannot even conceive of lying in a field of clover without looking for his next white slip.

However, there is a brickbat in the bouquet. Ender lacked a quality of command at the end. Namely, when he asked about the people that he had killed he failed to realize that his suicide run had also taken the lives of friendly crewmen aboard the ships in

his command. In a wargame it is easy to bring yourself to make one hell-bent-for-leather run at your opponent. Anything to win the game. I did not expect any concern from Ender, though. There was evidence that he had been hardened when he consigned some of his men to be living shields. It would have been totally in character for Ender to have employed the same tactic under live fire.

Ender was a tragic character and one that I'll remember for a while.

RONALD C. THOMAS, JR.

5623 Katherine St.
Panama City, FL 32401

The purpose of the original war games was to make decisions about real battles, and to train the decision-makers.

Dear Mr. Bova:

Your editorial, "Pay As You Go," articulates beautifully a basic belief of the Libertarian Party: 'People should not be forced to sacrifice their lives or property for the benefit of others; they should be left free by government to deal with one another as free traders, and the resultant economic system, the only one compatible with the protection of individual rights, is the free market.' If only some administration, some day, would realize that the Laws of Economics, like the Laws of Thermodynamics, eventually grind violators to dust.

As John C. Himself used to say: "You can't get something for nothing (First Law of Thermodynamics); You can't break even (Second Law); And you can't even get close (Third Law)."

(I had the honor to be the Libertarian Party's nominee for Governor

ana log

A Calendar of Upcoming Events

1 February

BIS Lecture Series—Jupiter at Kent Room, Caxton Hall, Caxton Street, London S.W.1, England. Info: B.I.S., 12 Bessborough Gardens, London, England.

2-17 February

American Association for the Advancement of Science annual meeting at Washington, DC. Info: AAAS Meetings Office, 1776 Massachusetts Avenue, Washington, DC 20036.

3-5 February

FAANCON 3 (British SF relaxacon) at Lansdowne Hotel, Manchester. Registration £1.50. Info: Gerald Lawrence, Tower 6-13-16 Owens Park, 293 Wilmslow Road, Fallowfield, Manchester, England. M14 6HD.

10-12 February

ROC KON (Arkansas regional SF conference) at Holiday Inn, North Little Rock, Ark. Guest of Honor—Wilson (Bob) Tucker, Featured Fan—Michael Riley. Registration \$8 until 7 Feb 78, \$10 at the door. Buffet—\$5. Info: Box 9911, Little Rock, AR 72219.

17-19 February

BOSKONE 15 (New England regional SF conference) at Sheraton/Boston, Boston, MA. Guest of Honor—John Brunner, Official Artist—Arthur Thomson (in absentia), Science Speaker—Marvin Minsky. Art Show, Hucksters. Registration \$6 until 1 Feb 78, \$10 at the door. Lifetime Boskone registration \$60. Info: N.E.S.F.A., Box G, M.I.T. Branch P.O., Cambridge, MA 02139.

17-19 February

WISCON 2 (Wisconsin regional SF conference) at Wisconsin Center, Madison, Wisc. Guests of Honor—Vonda McIntyre and Susan Wood. Art Show, Hucksters. Registration \$5 until 31 Jan. \$7 thereafter. Info: SF³, Box 1624, Madison, WI 53701.

24-26 February

LUNACON 78 (New York regional SF conference) at Sheraton Heights, Hasbrouck Heights, N.J. Guest of Honor—Bob Bloch. Art show, hucksters. Registration \$7.50 until 31 January, \$9.50 at door. Info: Walt Cole, 1171 East 8th St., Brooklyn, NY 11230.

28 February-2 March

CompCon 78 Spring (IEEE Computer Society) at San Francisco, CA. Info: Compcon 78 Spring, Box 639, Silver Spring, MD 20901.

*Items for the Calendar should be sent to the Editorial Offices, **four months**, in advance of the issue in which you want the item to appear.*

of North Carolina in the 1976 election, and along with Roger MacBride, the Presidential candidate, I battled the political inertia that has given us only two parties. As Roger did nationally, I came in fourth in the Governor's race; but we would have won if, instead of merely summing the number of voter warm bodies, we had summed IQs . . .)

ARLAN KEITH ANDREWS, SR., SC.D.
5732 Wyckfield Way
Indianapolis, IN 46220
The conclusion reached by the "Pay As You Go" editorial was that an "honor system" of funding necessary public expenditures won't work. We'll have to keep on paying taxes, because most people are too selfish to voluntarily support their community, their state, and their nation.

Dear Mr. Bova:

I was somewhat shocked and not a little nonplussed at the sweeping generalities you made in your editorial "Problem Grokking" in the September issue of *Analog*. I submit that in the future you grok the entire problem, too, as you would have the rest of us do.

To wit:

The illegal immigrants are usually paid the lowest possible wages by unscrupulous employers who don't give a damn what happens to anyone, as long as they can squeeze more profits out of their illegal labor force. From New York restaurants to California farms, illegal immigrants are working at wages that American citizens (and taxpayers) consider demeaning. (p.8)

You could very well be correct concerning New York restaurants and

other industries which use "wetbacks" in their operations at these demeaning wages. BUT from personal experience I know that such is not the case in all cases. I have a brother-in-law who runs a fruit orchard in the little town of Payson, just three miles from me. If it were not for the illegal immigrant, his crop of sweet cherries would still be hanging on the trees. First and foremost, it is next to impossible to get American citizens to pick cherries—that's beneath their dignity; even those on welfare, whom I would think would be willing to take any "honest" work to get off welfare roles, but don't, and won't. As for "demeaning wages" you neglected to take into account that wages paid are often a reflection of return on investment. My brother-in-law would be more than willing to pay \$7 to \$10 per hour to his workers, but when he gets a return of \$1.50-\$2 per hour, he can hardly afford those kinds of wages to anybody. Lest you think I exaggerate, remember from his cherry money he must: 1) support his own family, b) pay utilities, c) keep farm machinery in good repair, d) buy sprays, etc., e) all other overheads connected with farming, which are not light. Then, too, he must spread out his money so that in case something happens to next year's crop, i.e., frost, hail, etc., all of which can and do happen with some regularity, he can still provide for his family.

I will grant that the illegal immigrant does have the protection of laws, etc. for which he probably does not pay taxes, etc. (schools for his kids, etc.), but there seems to be no solution in sight. Mechanical harvesters do not yet exist for sweet cherries. Thus it

seems to me you have decried a situation without taking into account *all* pertinent factors (I'm not going to let you beat with the club of "It's impossible to find *all* pertinent factors"—I'll grant its verity, but you have overlooked, or at least played down considerably, some factors which need consideration, too).

I believe your solution in the paragraph following the one I quoted above is valid. If, indeed, illegal immigrants are taking jobs from American citizens who themselves would use them (aye, there's the rub), then indeed a hue and cry needs to go up across the land—but I'm not convinced.

A long time reader and subscriber.

MERLE LAMSON

11840 S. Woodland Hills
Salem, UT 84653

No matter what the employer's rationalization is, if the prospective labor force considers the wages "demeaning," the employer has a problem. Today that problem is solved by importing cheap labor—illegally. In essence, such employers are being subsidized by the American taxpayer, who foots the bills that come across the Rio Grande with the illegal immigrant laborer—bills that the law-breaking employer does not pay. Next time you buy a pound of cherries, stop to think of how much of your tax money is going into them.

Dear Ben:

First let me congratulate you on an excellent August issue. Next on your editorial on the inevitable subject . . . taxes.

"The government should pave the roads and man the militia," is a popu-

lar opinion. It seems the bulk of our taxes goes to projects the government has no business in.

There is something inherently wrong with a system in which you pay someone to spend your money. Today's world makes it necessary if only to fill a vacuum. But it's dangerous and should be suppressed as much as possible. I suggest a thorough cleaning of the greasy bureaucracy from our nation's floorboards.

DAVID KING

75 N. Villa Drive
Clearfield, UT 89015

Governments are gradually—very gradually—coming around to the concept of "sunset" laws, which are enacted only for a fixed term of years, and automatically expire unless specifically renewed. Taxes, however, will be with us for as long as people don't believe that the good of the community is their personal responsibility.

Dear Mr. Bova:

In your thought-provoking editorial in the September 1977 issue you suggest computer simulation to forecast the effects of each bill before Congress on the leading national indicators of economic well-being. You may be interested in knowing that this is done for many proposals before Congress. Often the forecasts are prepared for congressional committees, executive departments, and the Council of Economic Advisors.

For example Larry Klein, President of the American Economic Association, and two of his associates at Wharton Econometric Forecasting Associates prepared forecasts of the effects of the Carter Energy Plan and

alternative policies for the Finance Committee of the US Senate.

The forecast is that the Carter plan would result in more energy use, more inflation, less employment, and slower economic growth than rapid decontrol of energy prices would. The specific forecasts are:

	Average Annual Percentage Growth 1979-85	
	Carter Plan	Rapid Decontrol
Energy Consumption	2.51	2.33
Inflation (GNP Deflator)	5.93	5.36
Employment Growth (Real GNP)	1.42 3.59	1.55 3.83

George Schink who presented this portion of the forecast notes that the complexity of the Carter plan makes forecasts of its impact subject to a relatively large possibility of error. In my opinion people in the physical sciences often do not recognize the complexity of social systems and, therefore, tend to underestimate the difficulty of modeling them and to overestimate the certainty of forecasts obtained from such models.

The model underlying the Club of Rome studies which ignores the price system and other important social sub-systems is a good example of a naive model which results from ignorance of complex social systems.

The Wharton model is one of the best available for predicting the economic effects of government

policies. Its forecasts are useful in evaluating policy proposals, far better than just going on a gut feeling.

In the present stage of development of computer models of social systems it would, nonetheless, be a mistake to base decisions exclusively on their forecasts, even those of the most sophisticated models. Forecasts based on economic science are at about the same level of reliability as the physical science-based science (art?) of weather forecasting. Both beat less scientific methods; both are far from perfection.

Let me add my voice in support of Mr. Potts' editorial and Mr. Carew's letter urging consideration of the laws of economics in SF writing. In addition to Heinlein, Poul Anderson and Hayford Pierce are examples of excellent authors whose writings exhibit a good knowledge of economic principles.

On the other hand, the basic purpose of SF is entertainment. Writers like Issac Asimov and Arthur Clarke write stories which I enjoy reading. Whether their stories are consistent with the laws of economics (or of physics for that matter) is a minor point. The quality of the story is the important thing. On this most important criterion the authors represented in *Analog* always do well.

JOSEPH HORTON
CHAIRMAN

Department of Economics
and Business
Slippery Rock State College
Slippery Rock, PA 16057

The computer-model results should be made public, and not restricted to Senate Committee use. And Analog

will continue to publish the best science fiction stories we can obtain—even when they are “uneconomical.”

Dear Mr. Bova:

I would think that by this time, the fallacy of the proposition that there is a simple best solution to every problem would have been sufficiently demonstrated. I am referring to your editorial of the September 1977 issue.

I do agree that some problems may have simple solutions, ones that everyone involved will be happy with, but most do not. Take your examples of the franco-Queens cold war, and the vague platforms the political parties come up with, for instance.

Five years is a long time to suffer with Concorde's noise, unless you have the sort of personality that gets joy out of the financial ruin it will cause. Additionally, there is no guarantee that France and England will give up on Concorde after that time, especially when a country's and an administration's prestige is at stake. Remember, the airlines of both countries are owned and operated by their governments.

The computer modeling of a national economy, and the effects thereon of a party platform, or a proposed bill, is not a simple thing to do. While the “impossible is just something that has not been done before,” the sort of simulation you suggest is not within the capability of current technology, modeling techniques, or data-gathering methods. But if it was, what then? A simulation is not absolute and devised by a computer. It must be conceived and written by men. When two different groups write a simulation independently, given the same infor-

mation, it is quite possible that they will each come up with widely varying solutions. Interpretations of the model must be made. Imagine what would happen at campaign time. Each party would show its simulation results and how well they did, and how poorly their opponents did. The same goes for the bill proposals—a model can be “tweaked” until the results look good or bad.

And don't wait around for the self-programming computer, for even when it is developed, it will initially have to be programmed, and later, fed data, by biased humans.

Basically, what I'm trying to get at is that when a problem deals with people, there is usually no simple solution. If your point in the editorial was that science fiction authors should suggest solutions, then state it that way, but don't give your solutions to our problems as if they are the perfect answers. They don't exist, unfortunately.

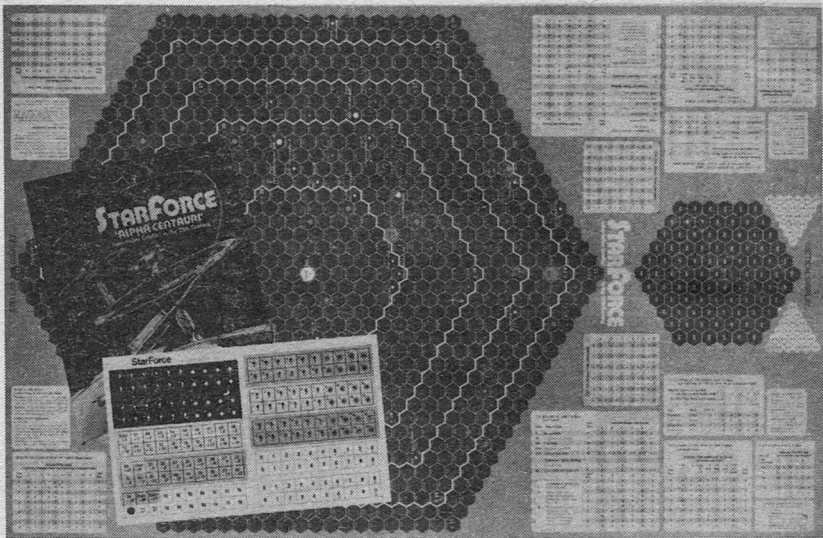
RUSSELL L. SCHNAPP

68-07 Main Street
Flushing, NY 11367

The Concorde suggestion was, of course, tongue-in-cheek, like the suggestion that Queens open JFK Airport to all the vandals in New York City, who would strip the Concorde down to its aluminum ribs before the plane stopped rolling along the runway. But there is no reason why the MIT group who did the computer modeling for THE LIMITS TO GROWTH could not produce a computer program for political platforms. Then, perhaps, some independent agency (or the news media?) could run the program and broadcast the results.

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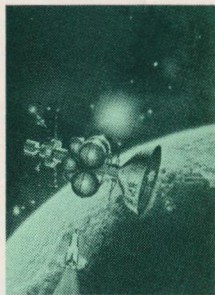
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OCTOBER 1976

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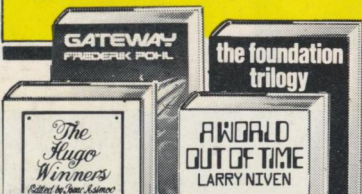
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