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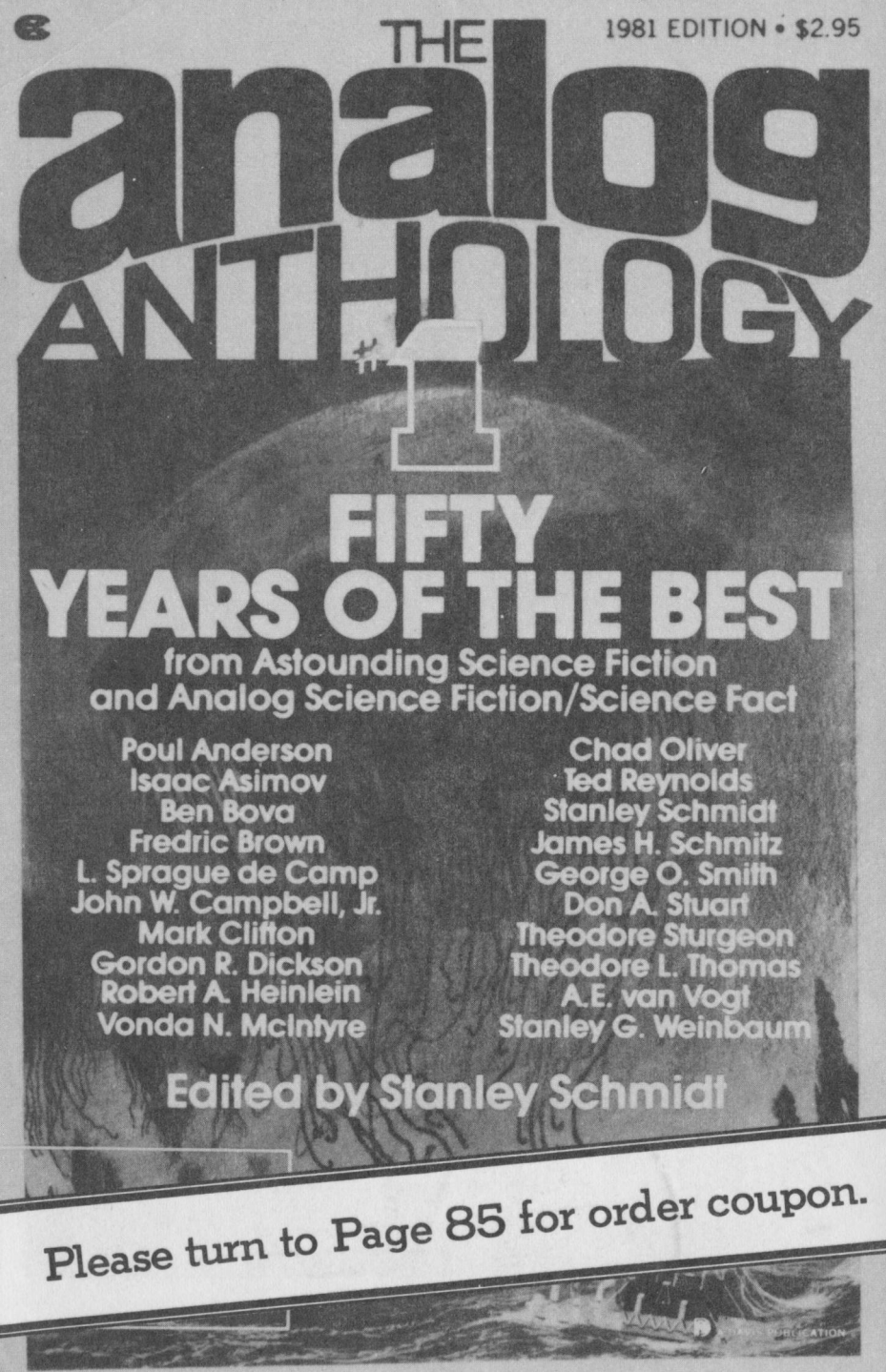
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Editorial

To Let The Punishment Fit The Crime

Stanley Schmidt

"My object all sublime
I shall achieve in time—
To let the punishment fit the crime—
The punishment fit the crime. . . ."
—Gilbert and Sullivan, *The Mikado*, Act II

To a mathematician, "fitting" usually means finding a function—an algebraic equation or a smooth curve on a graph—which in some quantitatively specified way best fits a set of related numbers. The process is of great practical importance to people like physicists and chemists. Quite often they collect experimental data which they expect to follow some reasonably simple mathematical relationship, but the nature of that relationship is obscured because the experimental numbers are also influenced by random fluctuations in the measuring equipment and its environment. To cancel out the effect of these disturbing influences, the scientist makes an educated guess as to the mathematical *form* of the equation describing the phenomenon under study, and then varies certain parameters in the equation to find the *specific* function which comes closest to matching all the actual data points. (Any straight line, for example, can be written in the form $y = ax + b$, where a and b are constants; each choice of a and b determines a different straight line.) Figure 1 shows a typical set of experimental data points and the curve, in this case a type called a "Lorentzian," fitted to them by a computer using the "least squares" method.

Now . . . what does "fitting" mean to a legislator or a judge?

At first thought, "letting the punishment fit the crime" might seem to have nothing to do with fitting a curve to a set of data. But why shouldn't it? After all, legal systems commonly recognize

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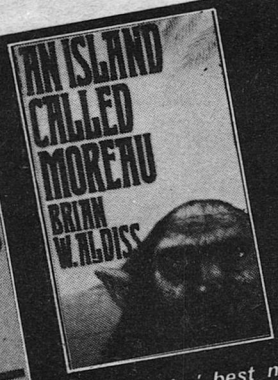

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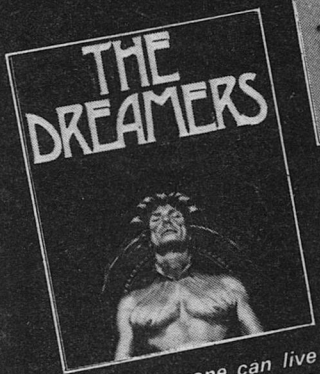

When everyone can live life to its fullest by dreaming the dreams of others—what is left to live? Only the Mnemonist—a man linked permanently to a computer—knows. By the author of *The Listeners*.

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that punishable violations come in various degrees of severity, and penalties vary accordingly. If the system is to be equitable and effective, the punishment

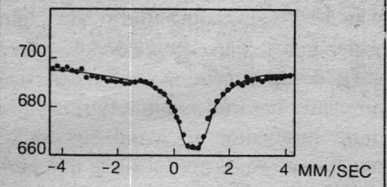

Figure 1. Fitting a mathematical curve to a set of physical data.

should be related in a well-defined and consistent way to the seriousness of the infraction. In other words, if you can come up with a pair of variables which quantitatively express "seriousness of violation" and "extent of punishment," there should be a simple mathematical relationship between them. In many cases, the most reasonable form of that relationship would seem to be a simple linear one, a direct proportionality: a crime which is twice as serious as another receives twice the punishment.

Finding a variable which at least roughly describes severity of punishment is relatively easy, at least in those cases where punishment takes the form of a fine or a prison sentence. It's not too hard to swallow the identity that double the fine equals double the punishment. (However, it's not really as simple as it sounds, for equal fines may not be equal punishments. A $50 fine exacted from a teenager with a $5 weekly allowance is a serious matter; to his father with a $2000 a week salary and a good stock portfolio, it's negligible.)

Finding a variable to describe seriousness of violation is a little harder and will vary with the nature of the offense. But that doesn't mean the attempt isn't worth making. Physics, chemistry, and biology have the problem of choosing most appropriate variables, too; indeed, it's an important part of the fitting process in those sciences. In physics, for example, momentum (mass times velocity) turned out to be a particularly useful variable for measuring "quantity of motion" because it follows a particularly simple mathematical law in all collisions—unlike, say, mass times velocity cubed. In medicine, body temperature turns out to be a pretty good variable for describing certain aspects of overall physical health of a warm-blooded animal.

In law, one of the simpler cases to quantify might seem to be the ever-popular speeding ticket. Traffic laws and courts do, in fact, make some attempt to impose stiffer penalties for those who drive *'way* over the speed limit than

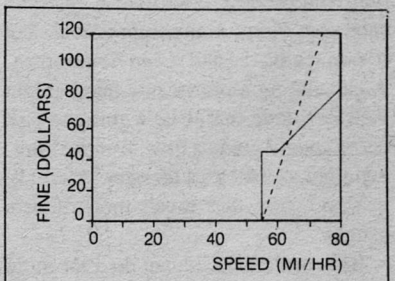

Figure 2. Solid Curve: A real punishment-versus-crime fit with room for improvement in choice of both "crime" variable and "punishment" function. Dotted curve: A possible alternative more accurately reflecting the measurable seriousness of the crime.

those who drive only slightly over. But do they do this in a meaningful way?

During a recent trip across Pennsylvania, I was repeatedly reminded by signs along the road that the following schedule of fines was in effect: $45 for speeds between 56 and 60 mi/hr, $65 for 70 mi/hr, and $75 for 75 mi/hr.* If you plot punishment (in dollars) versus crime (in mi/hr), and assume that it varies smoothly between the points given, it looks like the solid curve in Figure 2.

Hardly a straight proportionality, is it? Part of it comes close—if you change your "crime" variable from "speed" to the more appropriate "excess speed above limit." But even that doesn't seem quite right. It effectively moves the whole curve to the left, but it leaves you with a step function at the "low-crime" end. A barely perceptible "crime"—1 mi/hr over the speed limit, which I suspect is less than the intrinsic error in many speedometers—receives more than half the maximum fine! I don't know how often that's enforced (not very often, is my impression), but it's on the books and it *can* be enforced. A calculating motorist in a hurry might well conclude that if he's going to risk being caught going a little over the limit, he might as well go a *lot* over. After all, it won't cost that much more if he's caught.

But a car going 75 can do a lot more damage than one doing 55, while the additional damage potential at 56 is virtually nil. Now, the alleged purpose of a speeding fine or other punishment is to discourage people from doing things which are potentially harmful. A system which makes some people unduly jittery about doing something which is *not* significantly harmful, while offering little more motivation to avoid something much more so, is not fulfilling that purpose very well.

It seems to me that the variable with which we are trying (rather clumsily) to correlate punishment is "amount of damage that can be done by the violation." This, in other words, is what "seriousness of crime" variables try to approximate. In the case of speeding, it has a good direct correlation with a well-defined physical quantity. Maybe other legal quantities do, too, if we would bother to look.

The amount of damage that can be done by a car hitting something is largely determined by the kinetic energy it has to transfer to the object hit. The kinetic energy is $\frac{1}{2} mv^2$, where m is the mass of the car and v is its speed. We have arbitrarily defined all speeds up to 55 mi/hr (or some other limit, v_{lim}, in certain zones) as "acceptable," so what we are really after is the *additional* damage potential due to exceeding that speed—which is the excess kinetic energy, $\frac{1}{2} mv^2 - \frac{1}{2} mv_{lim}^2$. If you want to be completely consistent in this, the fine will be affected not only by speed but by the mass of the speeding vehicle—a fully loaded 18-wheel truck is a much more dangerous weapon than a Volkswagon bug and would be fined as

*No, I *didn't* get a ticket to motivate these musings; nor do I have anything against Pennsylvania; nor am I debating the reasonableness of the 55 limit. I'm just discussing the internal logic of the system at hand, as a convenient example.

such. If you'd rather avoid that complication, and disregard the mass of the vehicle, the relevant speed variable is not the speed itself, but $v^2 - v_{lim}^2$. Make your fine directly proportional to that—$F(fine) = k(v^2 - v_{lim}^2)$, where k is some constant—and you do have a good approximation to "punishment proportional to crime." If you plot F as a function of $v^2 - v_{lim}^2$, it *is* a straight line through the origin. If, for purposes of comparison, you plot it instead as a function of v, it looks like the dotted curve in Figure 2. Here I have chosen the scale factor k so that the fine for 65 mi/hr is the same as under the present Pennsylvania system. But at 56 mi/hr, it's about $5—the light slap on the wrist that the slight violation actually warrants, and probably too little to be considered worth enforcing at all, under most circumstances. At 60—about the level where most actual enforcement seems to begin anyway—it becomes large enough to be significant for both officer and violator. Above that, it climbs rapidly; at 75 it's up to about $120. The fellow who figures he might as well go 75 as 56, when the fine is less than twice as large, might think a little harder about it when that figure is more than twenty.

In other areas, of course, appropriate variables may have a less obvious correlation with straightforward physical quantities, and there are also other considerations that can't be ignored. The psychological difference between the perpetrators of accidental manslaughter and premeditated murder, for example, is large and essential to deciding how to treat them. There is also the matter of being able to revise the fit. New data often force scientists to make radical changes in the curves they have constructed—as in the expansion of Newtonian physics to Einsteinian. It's hard to imagine circumstances in which they would be unable to do this, but in punishment-fitting it's not hard at all. Using the "strict proportionality" argument, capital punishment seems perfectly appropriate for a first-degree murderer—but if new data turns up which proves him innocent, there's no way to incorporate it, and you (and he) are stuck with your original wrong fit. Opponents of capital punishment sometimes object to its "irrevocability"; proponents respond that imprisonment is no less irrevocable—you can't give back the years that were spent behind bars. True, but you *can* give back the ones that were still *scheduled* to be spent there, while there is *nothing* you can give the person who has been executed by mistake. Imprisonment won't let you get a *perfect* fit to improved data, but at least you can get an *improved* fit. After execution, new data can't be incorporated at all. It's a bit like saying Newton's laws are etched in stone and while the Michelson-Morley experiment may be embarrassing, we'll just have to ignore it and go on using our old physics, even when we know it's wrong.

Finally, we might ask whether "potential damage" is the only variable—or the best variable—for measuring "seriousness of crime." The answer may well be that it's only one of many that a viable society could be based on. Our own society has become extremely protective, with a multitude of laws de-

signed to protect us not only from each other but from ourselves. We have speed limits, motorcycle helmet requirements, building codes, and so on, designed to insure that mishaps don't have much chance to happen. (They still do, of course, but let's assume that they happen less often than they otherwise would.) No doubt many of us prefer it this way, but it can be seriously questioned whether it's really to the long-term benefit of the species to remove too many of the evolutionary influences that used to act on it. Certainly there are significant numbers of individuals who would be willing to accept more personal responsibility for the risks they take, including those risks resulting from allowing others to do likewise. There are, for example, people who can operate motor vehicles safely at considerably higher speeds than those usually accepted, and for whom a given speed does *not* constitute as great a danger to others as it might for someone else. We have chosen not to let them do so (though only a few years ago this was not true on the highways of some states), so that the rest of us won't be endangered by people who think they are more competent than they are. In view of some of the lunatics I see on roads, I must confess to taking a certain amount of comfort from this. But I can also imagine societies based on other types of social contract than ours—for example, one whose members have voluntarily agreed to accept more risk and responsibility than we do, with a penal system based on *heavy* punishment for *actual* damage instead of moderate punishment for potential damage. There might, for instance, be no penalties for speed *per se*, but prison terms ranging up to life without parole for property damage, personal injury, or death actually *caused* by speeding. Or there might be penalties for potential damages, but weighted not only according to the possible extent of that damage, but according to its probability of occurrence.

Would such a society be more or less healthy than ours? I'm not sure—but the present degree of personal mobility should make it possible to start an-

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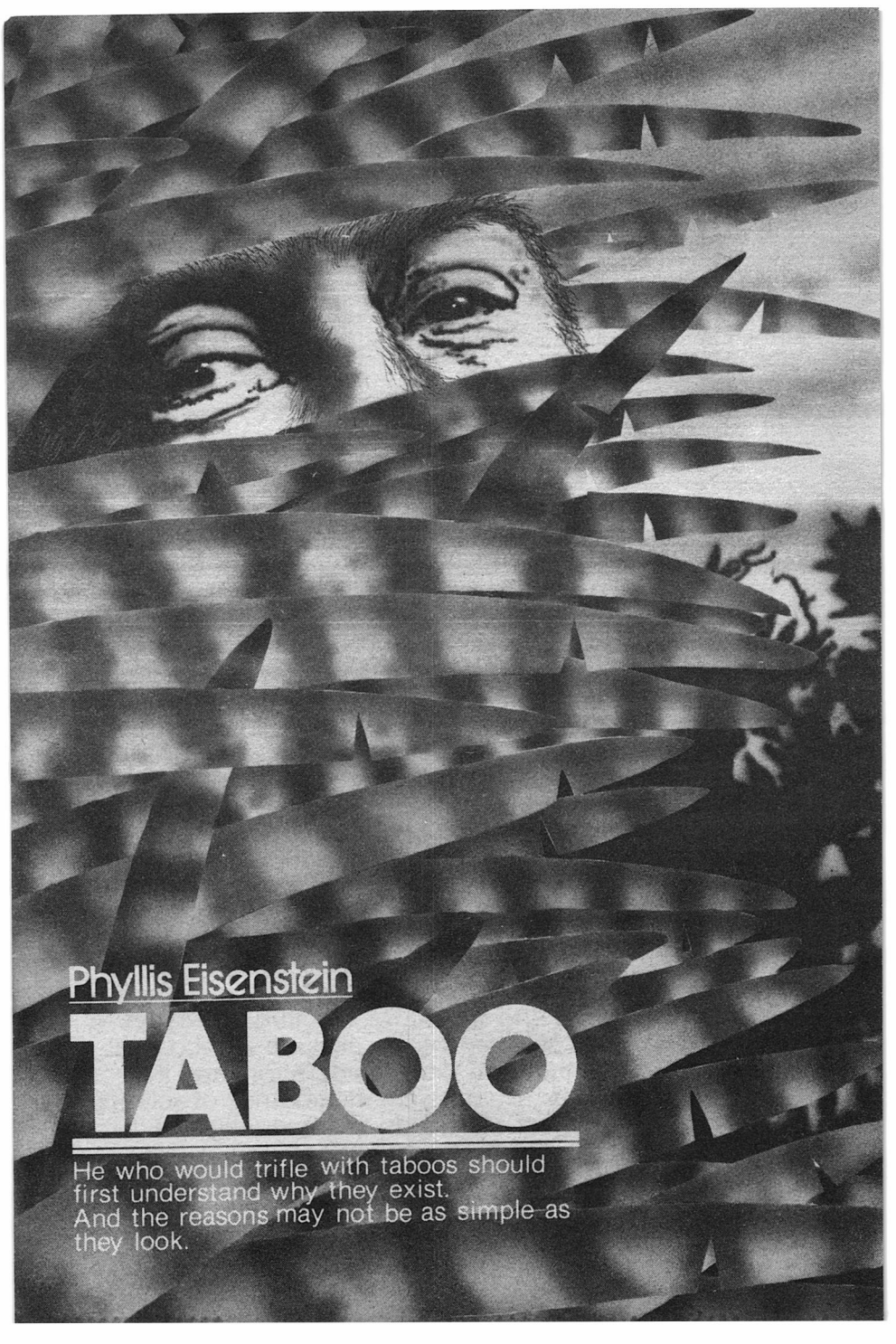
swering such questions at least partly by observation rather than guesswork. Groups of people who would like to live apart, under a different set of rules, can try it, and the rest of us can watch. Residents who don't like the experiment can leave. There have been a few such experiments in the past, but they are perhaps easier to arrange (except for artificial legal restrictions) now than ever before. And the colonization of space, with the possibility of rather thorough physical isolation of communities which will be established from scratch anyway, should considerably broaden the possibilities for such research. Dare we hope that it will eventually provide a real scientific foundation for the social and political fields? ■

● The split between appropriate scientific education and the rest of the educational process has now produced, in the most scientifically advanced countries, a reaction against science and technology. We have the situation of a decided reduction in the proportion of young men who wish to go into physics, with outbreaks of anti-rational cults, in which individuals who were never taught what science is really about confuse it with the mistakes of irresponsible and uncontrolled technical development leading to worldwide dangers of scientific warfare, pollution, population explosion and famine. This rejection can be, at least in part, attributed to a split in our educational procedures in which methods appropriate to replicating the past were applied in fields where the main purpose is to expand and thus change our view of mankind and the future. If a student wishes to be a scientist, he is still required to exclude a good deal of relevant human life from his consideration, and the average person feels he can reject the findings of science the way he could reject the words of some religious leader recorded hundreds of years ago.

Margaret Mead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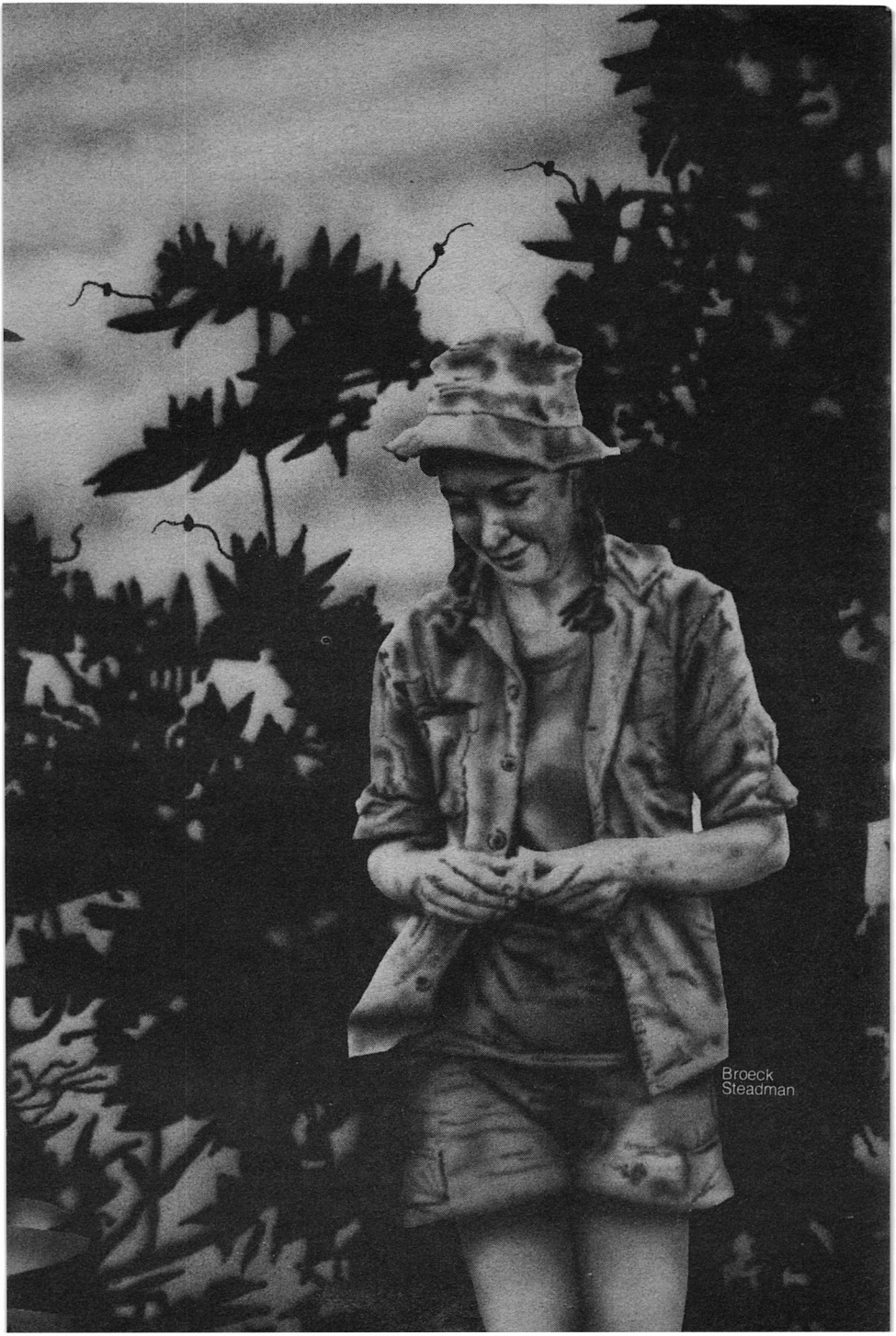
TABOO
He who would trifle with taboos should first understand why they exist.
And the reasons may not be as simple as they look.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"I still can't tell them apart," said the Captain. He was a tall man, and he stood ramrod straight, ignoring the sweat that dripped down his cheeks. His crisp uniform was beginning to wilt under the cloud-mottled blaze of the yellow-white primary the natives called The Day Light.

"You're not here often enough," said Martina.

"I'm here too damn often," said the Captain.

She looked at him with a mixture of sympathy and exasperation. He came from a temperate climate and suffered intensely from the hypertropical heat. But he refused to shed his uniform and his dignity on these regular visits to the Station; he never wanted anyone to forget that he was in command. And, because he was in command, the natives insisted upon a lavish welcoming ceremony every time he arrived, just as they would for a visiting chief of their own sort. They were dancing now, to the syncopated beat of drums, having burned the ritual incense and pronounced the ritual blessing already. The Captain still had some time to stand in his enveloping, sweat-soaked uniform before he could officially acknowledge the greeting and retire to the air-conditioned haven of the Station.

Like the other field personnel, Martina Hopewell looked more like a beachcomber than a scientist with the Interstellar Survey. She wore shorts and a light shirt, her bare arms and legs protected from excessive ultraviolet and infrared by a thin film of chemical sunscreen. On her head was a broad-brimmed hat woven of local reedlike plants by Jack Evanson, the senior biologist. The Captain refused such a hat, so Martina held a reed parasol over him, the uniform cap being a poor shield against glare and sunstroke. Shade made only a small difference in the heat, which was a muggy forty degrees Celsius even here, in the middle of winter at the southern tip of the Southern Continent. The parasol also served another purpose—it gave Martina status in the natives' view. Their hairy bodies and deep-set eyes needed no protection from sunlight, so they assumed it was merely an item of chiefly regalia and anyone holding it must be important.

Status had enabled her to talk to just about everyone, even the local chief himself, who claimed to be honored by her attention. She knew he would be a lot less honored if he understood she was female, but so far the natives had not figured out the difference between human men and human women. Jack said that was because of their own greater sexual dimorphism—female Jinrah were much hairier, with smaller, more compact bodies and shorter, stubbier limbs. None of them came near the Station, though. The natives participating in the welcoming ceremony all looked alike to the Captain because they were all male.

The dancers sank to the ground at last, their haunches toward the visiting human in a pose of submission. Only the chief remained standing, asserting his equality. He saluted stiffly, arms upraised, three-fingered hands spread to show his lack of weapons. The Captain did the same, and the ceremony was over.

Inside the Station, the four other members of the ground Survey team

waited in a semicircle while the Captain drank a large tumbler of water and swabbed his face and neck with a towel. They lounged in their chairs, sunbaked limbs dark against the khaki of their loose, skimpy clothing. They would have preferred not to dress at all indoors, but Jinrah sometimes entered the Station, and the women didn't want their sex suspected.

"Damn them," muttered the Captain. He turned on Martina. "And damn you for not finding some way around that damn ceremony. You're supposed to understand the way those creatures think!"

She shrugged, taking a chair at one end of the semicircle, beside her assistant, Chris. "Sorry, sir, but the ceremony is too important to skip. It reconfirms us as a sovereign entity. Exempts us from their rules. I don't think we could function at all if they decided we were . . . subjects." She crossed her long legs. "Might I suggest, sir, that you could avoid this discomfort by sending down the Exec instead of coming yourself?"

"Would they give him the fanfare?"

"As your representative, yes. Or . . . they might assume he was you."

The Captain scowled at her, and then his lips twitched in a small smile. "Can't tell us apart, hmm?"

"It's just a matter of familiarity, sir." Martina glanced at her coworkers. "I know they can tell some of us apart. At least, they don't try to talk to anyone but Chris and me."

"The rest of us are too busy to stop and chat," said Jack. His facile fingers were weaving a patch into a damaged hat. "It's not as if we haven't picked up *any* of the language."

"Yeah, you're a pretty good linguist," said Chris, "for someone who only talks to plants."

Jack shot her a warning look.

"Children . . ." began Martina. She was senior on the ground and tried not to get involved in the bickering bred by enforced intimacy. Of all of them, she spent the most time in the field, perhaps because she was the least bothered by the heat.

"Yes," said the Captain crisply. "That's why I'm down here instead of the Exec. Because I want to know firsthand what you children are up to. And before the briefing officially begins—do I hear any . . . vacation requests? Anybody getting so sick of anybody else that a tour up in the ship is beginning to look good?"

They eyed each other, two men and three women who had spent the last eight standard months together on this planet. There was no sexual combination they had not tried, no friendship that had not fallen apart, no enmity that had not been patched up among them. They had gone full circle with each other and started all over again, more than once. They were due to spend another four months together.

Chris spoke at last. Her pale eyes were slitted. "I guess I can take even Jack for a while longer." She looked at the Captain. "Anyway, what would any of us do on the ship? Our jobs are down here."

"It's my duty to ask," said the Captain. He turned to Martina. "What do you think?"

"We won't kill each other."

He looked from one to the next, all the way around the semicircle. "I'm glad to hear that. You know I think you're all pretty young for this job. I asked for . . . more mature personnel. Central vouched for your skills and your personality profiles. But stress does strange things to people. It's a black mark on my career, too, if something happens. Should I waste my breath asking you all to keep on cooperating?"

"We'll be all right," said Jack. The others nodded.

"Very well," said the Captain. "Let's have your reports."

Martina started, ticking items off on her fingers. "We need more vehicles; we're getting too many breakdowns, and that means delay. We need more frequent shuttle service; specimens are backlogging too heavily. We need Engineering to manufacture more beads for the natives; we don't have nearly enough to meet the demand."

"Every damn native on the planet is going to be wearing a string of marbles," muttered Jack.

Martina said, "It makes my work easier."

"Well, I suppose it's better than the crew sitting around playing cards up there."

"Sir," said Martina to the Captain, "trade goods have always been fundamental to Xenological work. We can't expect information for free." She glanced at Jack sidelong. "And we aren't able to offer them medicines yet."

He pursed his lips sullenly. "If you'd get me a couple of females in here, it would go a lot faster. I can't pin down physiology with only one sex to study."

"You'll just have to do it in the field, Jack. They're not going to come in."

"You could sweet-talk them into it. How about the chief's oldest daughter? She'd go to the farthest moon for you."

"The farthest moon isn't taboo."

Jack snorted. "Taboo. Stuff and nonsense. They're just being stubborn. I'll bet if you offered her enough beads, she'd forget about her damn taboos."

Chris said, "Don't be dumber than you have to, Jack. If we show disrespect for the natives' taboos, we lose their confidence. By serving *your* ends, we throw ours away."

"Too scared to try, that's what you are," he muttered.

Chris and Martina exchanged glances, their mouths set in angry lines.

Jack threw the hat on the floor and stood up. "These damn taboos are constantly getting in my way, Captain. There's got to be some kind of compromise." He planted his fists on his hips. "Do you know that I can't even gather samples of some plants because they're taboo?"

The Captain looked to Martina. She spread her hands in a gesture of impotence. "They have these sacred groves, with these trees, you see—"

"They're not trees," said Jack. "They're not woody at all."

She sat up stiffly in her chair. "You've gone near them? Against my express orders?"

He waved with one hand. "No, but I've got binoculars, haven't I? I can tell woody from herbaceous without touching the damn things."

"All right," said Martina, forcing herself to relax. "They have these *plants*, which are sacred. Each family

has its own grove, taboo to everyone else, including us. *Taboo*. Means we can't go near them. We certainly can't *pick* any. The groves are very clearly marked." She folded her hands in her lap. "Captain, you must understand how significant taboos are. I can't stress strongly enough how vital it is that we observe them."

"And if we don't?" asked the Captain.

"They'll boot us out," said Chris. "Or worse."

"Worse?" said the Captain.

"They've been very friendly so far," said Martina, "but they do have weapons." She leaned forward in her chair. "Listen, sir—the concept of taboo seems to be universal to intelligent life. There are just some things that every culture says are off limits to *someone*. Our culture has them, too—don't fool yourself into thinking taboos are only a property of primitive societies. And they're always taken very seriously. Violation of Jinrah taboos could jeopardize our relationship with these creatures forever."

Jack made a rude noise with his mouth. "So what? There are plenty of other natives on this planet. We could move the Station."

"What?" yelped Chris. "That's easy for *you* to say. You don't need to establish any rapport with *plants*. You don't give a damn about all the work *we've* put in, making up to these guys. I'll be damned if I'll start over just for a lousy *plant!*"

Martina looked at the Captain. "I'm sure you'll agree, sir, that it's hardly fair."

He turned to the team members who had sat silent so far. "What about you?"

Paul Bordes, the geologist, shrugged. "I don't have to worry about relating to rocks, either. But I can see the xenologists' point. Jack has been griping about this plant for weeks now. But I don't see that it's so important."

"Everything's important," said Jack.

"Precisely," murmured Martina.

"Perhaps it's growing wild someplace where it isn't taboo," said the Captain.

"I'm hoping so," said Jack. "I'm looking for it. But I think I won't find it. I think it's a domesticate. I'd like to prove that. They don't have any other domestic plants, you know. Ask our xenologists—the Jinrah live by hunting and gathering."

"This group seems to be experiencing incipient plant and animal domestication," Martina said carefully. "In fact, this may be a crucial time in their cultural development. Another good reason for not abandoning them."

"You just want to write a book on them, and make yourself a reputation," said Jack.

"And your motives are so much more lily-pure, aren't they?" snapped Chris.

Martina laid a hand on Chris's arm. "We're all doing valuable work here, Jack."

"And we're all supposed to be helping each other," he replied. "Only you're giving me precious little help."

"I hope we're keeping the natives friendly. Or would you rather do your specimen-gathering with a pair of security guards behind you?"

"A little show of force, and they'd be afraid to come near us."

"That wouldn't be much help to *us*, would it?"

The Captain came to his feet abruptly. "Sit down, Evanson," he said. "There will be no show of force and no intimidation of the natives. You'll just have to keep searching for a wild version of your plant, or you'll do without."

Jack glared at the Captain and would not sit. "They lavish attention on those plants. You should see them, cultivating, fertilizing, hovering over them. They *pray* to those plants—I've seen it. What kind of plant would you pray to, Captain?"

"They're sacred," said Martina. "Maybe some kind of incarnate god. Fertility, maybe. I haven't found out yet. They don't like to talk about them. Taboo subjects are always difficult to deal with."

"Drugs," said Jack. "There are plenty of cultures with sacred, drug-producing plants." He held his hands out to the Captain in appeal. "Hallucinogens? Euphorics? Analgesics? There's no telling how valuable that plant could be to us."

"Looking for a new high, huh?" Chris said disgustedly. "The old ones aren't good enough for you any more."

"Hush," Martina whispered. To Jack, she said, "I don't deny the value of what you want to do. Knowledge is always valuable. But plants have been worshipped in many places without being drugs. It's the symbolic freight that the culture gives the plants that makes them important. Anything else is a side issue. There may not *be* anything else. We certainly don't have any evidence that the Jinrah consume any part of their sacred plants. We don't have any evidence that they do anything but meditate over them." She turned her eyes to the Captain. "I understand his desire, sir. Really, I do. But it's a matter of weighing evils here, and as senior scientist at this Station, my recommendation must be that he be instructed not to touch those sacred plants."

The Captain looked at Jack. "I'm afraid I must agree with Dr. Hopewell's decision."

Jack turned his back on the Captain and stalked off to the bathroom, closing the door hard behind him.

The others looked down at the floor as the Captain said, very quietly, "Are you sure that one doesn't need a vacation?"

"He'll be all right," said Martina. "He's frustrated about the females and taking it out that way. I can understand."

The Captain frowned. "What is this about the females?"

Martina sighed. "They came into the Station for the first couple of weeks, but then the elders decided that the Station was taboo, and now they won't even come near."

"But . . . why?"

She shrugged. "It's something about enclosed spaces, as near as I can tell. They won't go into caves, either. They seem to have classified the Station as a cave. It's just the females, though. The males come in quite readily. Especially when we have gifts."

"The equipment isn't very portable, sir," said Jack's assistant Fiona. She was obviously embarrassed by her senior's behavior, could hardly raise her eyes from the floor. "We had hardly

started studying them when the females stopped coming by."

"Well . . . did it hurt them or something?"

"I don't see how it could have. But . . . maybe it was frightening."

"They're skittish?"

"They're shy," said Martina. "But friendly enough, when you get to know them."

"Yes," said Fiona. "They're not afraid of us outside. They just . . . won't come in."

"Believe me, sir," said Martina, "we've tried to lure them in. But you can't overcome taboos with gifts of glass beads."

"Then try something more valuable."

"Captain, beyond a few items of personal adornment, we haven't got anything they want." She hesitated. "Unless you're talking about high-technology valuables, like weapons."

"No, no, we can't do that." He shook his head. "All right, Dr. Hopewell, you're supposed to know what you're doing. I won't second-guess you. I'll arrange for more beads to come down on the next shuttle. Anything you haven't mentioned so far?"

"No. I've made an official list of the things I've already mentioned. I guess we can get on with the inspection."

The rest of his short stay was devoted to a perfunctory examination of the three laboratories, Geology, Biology, and Xenology. The Captain nodded as if interested in the most recent findings in each, but the workers all knew that his primary purpose in shuttling down from orbit every month was to check on their psychological condition.

His routine completed, he strode to the door of the Station and stood for a moment before it, obviously bracing himself for the dash to the shuttle. "I'm certainly grateful they don't have farewell ceremonies," he said to Martina. Then he glanced toward the bathroom, from which Jack had not emerged. "Maybe you'd better see if he's all right in there."

"He's probably taking a bath. He says it helps him think." She gestured to Fiona, who knocked on the bathroom door softly, calling her senior's name.

The reply was muffled but audible: "I'm soaking my head."

Fiona ventured a smile. "I think that means it's okay."

"He has a temper," Martina told the Captain. "And we've been here . . . a while."

The Captain nodded. "That's why I asked for a more experienced team."

"There's only one way to get experience, sir. And we all have temperament problems, now and then. Or do you mean to tell me that it's all sweetness and light aboard the *Ariel?*"

"There are a lot more of us, Dr. Hopewell," he replied, "and we're used to being isolated together."

"Well, I think we'll manage for another four months. It isn't really very long, is it?"

"No." He checked his chronometer. "Well, they'll be expecting me back, so I'd better get started. Damn, I wish this planet weren't so hot!"

"It could be worse," said Martina. "We could have to wear protective suits."

He eyed her skimpy clothing, the lithe, dark limbs. "You like it here,

don't you? You're the only one who's never complained about the heat."

She smiled slowly. "I won't be sorry to get away from it in four months. I like skiing, too."

"So do I. Maybe sometime . . .?"

"Maybe. Have a good flight, Captain."

After he had gone, Paul and Fiona sat down on the floor to practice yoga. But the two xenologists moved aimlessly about the Station, unable to channel their restless energies.

"Why does he *do* this to us?" said Chris, a little too loudly. She cracked her knuckles, all of them at once. "It's like he doesn't trust us."

"He doesn't," said Martina. "We haven't proved ourselves yet."

"Well, old Jack is doing a good job of proving himself. I don't know why you tried to cover for him."

"We all covered for him, didn't we? Or have you changed your mind about sending him upstairs?"

"No. I guess not. I couldn't do that to his career. But I wish he'd stop . . . being so difficult."

"Give him another chance," said Martina. "You're not exactly easy yourself."

"Well, I'm glad I'm not working for him," she said, looking at Fiona, whose eyes were closed, whose breath was slow and steady. Then she tossed aside the notes she had been shuffling. "I've got to go out. There's too much work to waste any more time in here today."

Martina nodded. One by one, the others drifted out to their own researches, even Jack, who seemed to have been calmed by his bath. Martina was the last to leave, almost at sunset. As she secured the door of the Station, she thought of the Captain and looked up into the twilit sky. She could see the bright spark that was the *Ariel*, its motion imperceptible to her eye. In eight months, the shipboard cartographers had mapped the entire planet in a hundred different ways—climatic zones, resources, topography—while the rest of the crew looked after the ship itself. Did tempers ever really flare, she wondered, where the air was a dry and constant twenty-four degrees Celsius?

Midwinter at sixty degrees south latitude was not just the coolest place and time on the whole planet, it was also the heart of the rainy season. In summer, the Jinrah told her, the air was dry as dust, and the rivers disappeared from their beds. But the Survey team would not stay long enough to experience summer. Now the atmosphere was muggy during the day, sliding into human lungs like warm soup. At night came the rains. They started slow, growing gradually from a drizzle to a hard-hitting, windless downpour. Hot rain, leaving pervasive humidity to hang in the air once more as the sun rose. And the temperature differential between day and night, in spite of the rain, was very small.

The natives made large shelters, one to a family, of poles holding up thick thatch. Fifteen or twenty such structures, scattered over several hectares, comprised the political unit over which the chief ruled—a village of sorts. The Jinrah slept in these shelters to escape the rain but rarely used them during the day. Shade had no significance for the Jinrah. But sometimes they indulged Chris or Martina by sitting under the thatch by daylight to talk. More often,

though, they were too busy to sit still. There was always something to do among them, even for the smallest child, even for the visiting xenologists. Martina had gotten especially good at cracking nuts with a stone.

This night, she went to the chief's shelter. He was always warily respectful toward her, acknowledging the power of beings who could fly through the air, and acknowledging her high status among those beings. Unlike the natives of some planets, he was sophisticated enough to understand that humans were not gods. Or maybe, Martina thought, that was just a lack of imagination.

Most of the chief's family group was gathered in the shelter, mending weapons by flickering firelight. As she approached, the chief raised one hand in the ritual greeting for a same-sex individual of marginally lower status than himself. Martina made the appropriate reply, a momentary crouch, with a bob of the upper body. After this formality, the wives, co-husbands, and children were free to speak to her.

She selected a spear shaft from the stack beside Ferilara, the chief's oldest son, and a flint blade to lash to it. The blade had obviously been broken at one time, and meticulously reworked to usefulness. "The eldest," Martina said to him in the Jinrah language, "understands the heart of the stone."

"He has practiced all his life," said Ferilara. "If the visitor from the sky would practice, he would understand also."

"True," said Martina. She had tried flint chipping but given up quickly, her fingers bloody. In school, studying Earthly stone weapons, she had never really comprehended their sharpness. She had more respect for them, and for their makers, now.

Aro, one of the chief's wives, ambled up to Martina. She was the second-youngest adult member of the group, younger even than Ferilara, and she was smaller than the average female Jinrah, the top of her head barely clearing Martina's elbow. The other adults were indulgent toward her because of her size, taking heavy loads away from her and helping with her work. *Pampered*, thought Martina; *almost spoiled*. To offset these privileges, she had taken on, or been given—Martina had not determined which—responsibility for the chief's eldest daughter, Shi'lor. Shi'lor was in a transition stage between childhood and adulthood, and she needed someone to look after her observance of a whole new set of rituals and taboos.

Aro said, "Did the visitor from the sky see the daughter Shi'lor in his journey here this night?"

"No," said Martina.

Aro hesitated, then crouched even lower. "The rain falls. It is not good to be out in the rain."

Martina looked past the fire, saw the speckling of firelight on the fine drizzle. "It will fall harder later," she said. "But why is Aro not with Shi'lor?"

Aro made a little snuffling noise. "Shi'lor was with her sacred sister and did not need her guardian. Aro was hungry."

Martina put the spear down. Her sacred sister was the single plant of all the family grove that belonged only to Shi'lor, toward which many of her rituals were directed. So Shi'lor was out in the rainy darkness, alone. She was

lively, friendly, had introduced Martina to many of the other Jinrah. "If Aro wishes to search for Shi'lor, the visitor from the sky will go with her."

"The rain falls," said Aro. "It is not good to be out in the rain."

Ferilara stood up, towering over Aro. "If the visitor from the sky wishes to search for Shi'lor, perhaps using the light that fits in the hand, Ferilara will go with him." He hefted one of his repaired spears. "The eldest son has no fear of the rain."

Martina glanced at the chief. "Is this acceptable to all?" she asked.

"This is acceptable," he replied.

"The searchers will go to the sacred grove," said Ferilara. "Perhaps they will meet Shi'lor on the way."

Martina pulled out a pocket flash to light their way. Ferilara scarcely needed it; his eyes were able to accommodate blazing sunlight and overcast night. But the glow might attract Shi'lor's attention. She would know, if she saw it, that a friend was nearby.

"Does Ferilara think Shi'lor might be injured?" Martina asked, trying to step on hummocks of vegetation rather than in sucking troughs of mud.

"It may be so," he replied. He strode swiftly, heedless of the uncertain footing. His eyes were restless, flicking right and left, piercing the blackness far beyond Martina's ability. Jack had said those eyes were more versatile than any Earthly cat's. "She is foolish to stay in the sacred grove past sunset. The eldest son thinks she is not ready for adulthood, in spite of his father's decision."

"She carries a weapon," said Martina. "The visitor from the sky has seen it. She understands its use."

"There is no weapon against the rain."

Martina turned that over in her mind, trying to make sense of it. "The eldest speaks . . . as if the rain were an enemy and not just water falling from the sky. How can the rain harm her?"

"It is not good for a female to be out in the rain."

"In what way is it not good?"

"In all ways."

"But for males it is good?"

She was looking at him, not at where she was walking; she stumbled, and he had to catch her by one elbow to keep her from falling flat on her face. "The searchers are safe in the rain," he said, "if they spare an eye for their feet." She could almost hear a smile in his voice.

She had run up against another taboo. She had suspected it from Aro's words. "It is not good" seemed to be the catch-all phrase that meant off-limits, no discussion allowed. Until now, observing that the Jinrah built shelters and hardly ever went out in the rain, she had assumed that they merely did not like getting wet. Well, who did? The Survey team only went out in the rain because they needed every minute of field time they could squeeze from their year on this planet.

The rain was intensifying now, water collecting on the ground faster than it could drain away. Every dip was a puddle, and Martina and Ferilara splashed through, sometimes up to her ankles in warm fluid, sometimes deeper.

Ferilara saw Shi'lor first. She was crawling.

He broke into a run, his long legs quickly outdistancing Martina's. When

she reached the two Jinrah, he was helping Shi'lor to her feet. The female was a wretched sight, her thick body hair soaked and standing out in mud-clotted clumps, her limbs hanging limp and listless. She seemed to be in a stupor.

"She fell," murmured the bedraggled Shi'lor. "The ground was very wet, and she fell into the water." At Ferilara's urging, she trudged a few paces toward home, but she was too slow for his taste, so he slung her across his shoulders, letting Martina carry his spear back to the chief's shelter.

The whole family was horrified. The adult females huddled together as far from Shi'lor as possible, clutching at each other and their female young. The males, however, hovered over the miserable creature, loudly abusing her for her stupidity. Ferilara stoked up the fire so that she could dry herself, but he had to help her, rubbing his hands over and over her hair. She did not seem to take any interest in anything around her but lay passive, her eyes closed.

Martina waited quietly until the chief hushed his chattering male relatives with a gesture. Then, in front of his three wives, two co-husbands, four sons, and three other daughters, he pointed to Shi'lor and said, "You are a child." She presented her haunches to him in submission, and he turned away. He spoke Aro's name. She crept a little forward. "The chief is angry with Aro," he said. "Aro was foolish to leave the eldest daughter alone so close to sunset, so far from the shelter."

Aro crouched. "The youngest wife thought Shi'lor wise enough to come home before dark."

Loudly, the chief said, "The youngest wife was *hungry*."

She presented her haunches.

"The youngest wife," said the chief, "will be hungry tomorrow and the next day. And the eldest daughter will have another guardian when her time comes again." To underscore his words, he kicked Aro, and she rolled over into a tight ball. No one else moved. "We sleep now!" declared the chief.

Martina faded away into the rain.

In the morning, she told her teammates what had happened.

"Another damn taboo," muttered Jack. "They take these things so damn seriously."

Martina frowned over her coffee. "She seemed . . . dazed. Sick."

Jack perked up. "Sick? I haven't seen any sick Jinrah."

"I haven't seen any in her state before."

"Do you think she'll let me take a look at her?"

"I don't know. Not here, of course."

"Of course. Do you know where she is now?"

"I can make a couple of good guesses."

He crossed to the Biology lab to pick up his field kit. "Let's go."

They found her at the shelter. She was crouching by the ashes of the fire, staring at nothing, just as listless as the night before. The rest of the family had dispersed.

Martina squatted beside Shi'lor and touched her shoulder tentatively. "The visitors from the sky greet you," she whispered. "Will the eldest daughter look at them?"

She did not raise her head.

Martina glanced at Jack, then looked back to the Jinrah. "The visitors from the sky are Shi'lor's friends."

Shi'lor raised her hands to her face, and her voice was muffled by her fingers. "The eldest daughter is a child again. She fell into the water."

"Was she hurt by the fall?" Jack asked slowly in the Jinrah tongue. His recognition vocabulary was large, but his command of grammar was limited, his sentences short and direct.

"It is bad to fall in the water," Shi'lor whispered. "It is bad to be out in the rain."

Martina patted her shoulder soothingly. "Shi'lor will be more careful in the future. The visitors from the sky understand this."

"Ayeeee!" Shi'lor wailed, lifting her face out of her hands. Her teeth were clenched, her eyes shut tight. "Shi'lor was an adult and now she is a child again. Ayee!" It was a piercing, mournful sound, one that Martina had never heard before.

"Does Shi'lor feel pain?" Jack asked anxiously.

The Jinrah stood up abruptly, shaking off Martina's hand. "Shi'lor was an adult," she wailed, "and now she is a child again!" Opening her eyes, but wailing still, she started away from the shelter at a dead run.

"Come on!" shouted Jack, and without waiting to see if Martina followed, he raced after the Jinrah female.

"Maybe we should just leave her alone!" Martina yelled as she loped after Jack. "Slow down! You'll get heatstroke!" But he paid no attention.

The ground was still soft from the night's rain, though the puddles had all sunk away. Jack had no obvious trouble keeping up with Shi'lor, but Martina slid and staggered and breathed heavily of the hot, humid air, gradually falling behind. Eventually, the two in the lead topped a small rise and disappeared from her view. When she reached the rise herself, she could see them in the distance. They had stopped, the human a few paces behind the Jinrah. They had stopped at the bank of the river. Martina redoubled her pace, wondering wildly if the despondent Shi'lor intended to throw herself in.

"Shi'lor!" she shouted. "Shi'lor! The eldest daughter must not do anything foolish! Jack, don't let her!"

He caught her arm as she passed him, and he jerked her to a halt. "Xenologist!" he said, and he was panting, too. "Don't you recognize a ritual when you see one?"

Shi'lor stood at the brink of the river, looking down into the dark and sluggishly moving waters. She was very still.

"Shi'lor . . . " whispered Martina.

Shi'lor placed both hands on her chest, grasped the long, thick hair, and pulled downward sharply. With a sound like ripping cloth, a flap of flesh peeled away from her chest to hang, like a rag, from its bottom edge, which was level with her lowest ribs. A moist and lumpy pink oblong about ten centimeters on a side was thus exposed. The moisture was too pale to be Jinrah blood. After a moment, the lumpy part of the oblong fell into Shi'lor's hands. She pushed it outward, away; it fell into the river with a small splash.

"That was a fetus!" yelped Jack. "She has a pouch! She has a damn

pouch!'' He looked down to the river's surface. The discarded thing was floating slowly away. ''I've got to have it,'' he said. He began to walk along the river, casting an occasional glance back at Shi'lor. ''I'll see you back at the Station!'' he shouted to Martina.

''Jack, I don't think you should be seen retrieving it! She's thrown it away. It might be taboo.''

''I've got to have it!'' he said.

''It might be like digging up a grave!''

''You don't know that!'' He walked faster. ''But I'll be careful. Don't worry! It better not sink for a while. . . .''

Martina hurried to Shi'lor, hoping to distract her from the thing that floated in the river, and from Jack. But she needed no distraction. She was not looking at either of them. She was not looking anywhere. Her eyes were closed, her hands hanging limp at her sides. She had pressed the flap of skin back in place, and Martina could not see where the rips had been.

After a long time, Shi'lor turned back the way she had come and began to trudge toward home. Martina followed silently. The two parted company at Shi'lor's family's sacred grove, which was well marked by a fence of low shrubs all around, and by the tufts of Jinrah hair fastened to the branches of those shrubs. Martina watched her Jinrah friend pass between two shrubs and cross the bare ground between the fence and the grove. She watched as Shi'lor approached her own personal plant, her sacred sister, and knelt before it, placing one hand on each side of its thick stem and leaning her forehead between them. She would stay that way for a good part of the day. The Jinrah performed such rituals frequently, though without any discernible regularity.

Martina spent the rest of the day talking to other Jinrah. She did not mention Shi'lor's most recent action, though she wanted to know what it meant, because she was afraid she might say something that would get the poor thing in trouble. She waited for someone else to bring up the subject of rain and its dangers and Shi'lor's foolishness. But no one did.

When she returned to the Station, she could tell from Jack's state of excitement that he had retrieved the fetus. He insisted no one had seen him. He made her look at it, a blobby little thing no larger than her finger; she would not have recognized it on her own.

''Some xenologist you are,'' he said. ''You didn't even know they had pouches.''

''There's no female in this area carrying a child in a pouch. They carry them in their arms. And later on their shoulders.''

He grunted. ''Must be a pretty short gestation in the pouch. Or else . . . we're here in the wrong season. I'll bet the children all came out of the pouches last summer; they're too old for them now. Damn. I wish we could stay till summer to prove that.''

''What makes you think it?''

He flicked a thumb toward the dead lump of tissue. ''You know what this fetus died of?''

She shrugged. ''Being aborted, I guess.''

He shook his head. ''It was dead before she tossed it in the river. It died the night before. Of cold.''

''Of cold? In that hot rain? It was like

a steambath."

"To us. Maybe even to her. But remember, she said she fell. She got wet all over. What happens when you get wet? The water evaporates, cooling you off. The hair and the pouch are some protection, but not from a real drenching. No wonder the rain is taboo for females. It kills their babies."

Martina stared at him. "And that's why . . . they won't come in here any more? Because of the air conditioning? Because . . . their babies died after the females were exposed to it?"

"You've got it. The adults aren't bothered by chilling, but the fetuses are sensitive. That's why they stay in the pouches all winter. That's why the babies probably come out of the pouches in the nice, hot summer. By the time next winter rolls around, they're mature enough to take it."

Frowning, Martina leaned against his lab table. "How many do you think we killed before they . . . figured it out?"

He pursed his lips. "I don't know. But I *do* know something—we're going to turn off the air conditioning."

Martina shrugged again. "What's the point? The damage is done already. And for those who haven't been hurt—well, they're safely away thanks to the taboo."

"I want them to come in," he said. "I want to learn about female Jinrah physiology in this lab. So the air conditioning goes *off*. Now."

"Jack, you can't be serious. The others won't stand for it. It's just too damn hot. We've got to have a place to get away from it."

He crossed his arms over his chest. "All right. We'll turn it back on at night, for sleeping. But during the day, *off*."

"Jack—"

"This is important, damn it! It's a matter of fulfilling our assignment. Do you want me to have to report that I couldn't do my job because my coworkers wouldn't tolerate a little discomfort?"

"All right," said Martina. "We'll take a vote."

"We will *not* take a vote. You're in charge here. You have the authority to do this. Do I have to go over your head to the Captain? Then *he'll* have to make a report."

"Jack, this isn't going to be easy."

"The sooner we start, the sooner I can wrap up the Jinrah studies and we can go back to being cool. Now, do I get what I need or not?"

She sighed. "Very well. Tomorrow—no air conditioning."

The other team members complained loudly, but Martina stood with Jack and they acquiesced at last. From then on, during daylight, the Station was hot. The Jinrah males thought it was quite pleasant. The females still did not come in.

Jack pleaded with Martina. "*Talk* to them. *Explain* it to them."

"I have, Jack. Really I have."

"Then why won't they come?"

"They're afraid."

"But there's nothing to be afraid of!"

"They don't understand that."

"Then explain it again."

She shook her head. "And *you* don't understand either. You don't understand the nature of a taboo. I told you they weren't always rational."

"But this taboo *was* rational!"

"Well, yes. Something in here killed their babies. But when I tell them it was the *cold*, they don't understand what I'm talking about. They think it was the spirit of the rain."

"Well, tell them we got rid of the spirit of the rain. Tell them we exorcised it."

She shook her head. "Only the sun can get rid of the spirit of the rain. The sun, making summer. *We* don't qualify. They know we're not supernatural creatures."

"Yes, we are."

"Jack . . ."

"Tell them we have an in with the sun, that he's made summer for us in here."

"Jack."

"It's only a little lie."

"Jack, I can't work with people who think I'm a god."

"Not you. Me. I'll take all the credit."

She let her shoulders lift with her sigh. "I've spent a lot of time convincing them that we're ordinary creatures like themselves."

"Well, so one of us isn't so ordinary."

Her hands curled into fists. "Jack, there will be no intimidation of the natives!"

"I don't want to intimidate them."

"Making them believe that even one of us is a god is intimidation! Their whole attitude toward us will change. I won't be able to continue my work!"

Jack glared at her. "So it's your work against mine again, is it?"

"Yes, it is! And as long as I'm in charge here, proper relations with the Jinrah will have priority over . . . over curiosity!" She turned her back on him and stalked across the room. "And turn the damn air conditioning back on. Now!"

Jack spent the next few days not talking to any of the others. He took long walks, brought back samples of plant and animal life, and examined them silently in the Biology lab. He ate his meals alone. He slept alone. The others gave him a wide berth, even Fiona, waiting for him to get over his sulk.

Martina broke the impasse.

"I thought you'd like to know, Jack," she said, standing about three meters from where he worked with the electron microscope, "that two of the Jinrah are sick."

He looked up slowly. "You mean like your friend Shi'lor?"

She shook her head. "Two males. Brothers. They're sick, really sick. Respiratory symptoms. Their families think they're going to die."

"What kind of respiratory symptoms?"

"Don't you want to see for yourself?"

"All right." He switched off the scope and reached for his field kit. "Show me."

Her initial visit to the sick brothers had been the first time Martina had seen an entire family gathered in their shelter in the middle of the day. The chief was there, too, and many other Jinrah from the surrounding territory. All but the family crouched in a large ring about the shelter, swaying gently right and left in unison. This, they told Martina, was a sign of mourning for those about to die. The family itself was gathered about the ailing males, who lay side by

side, moaning softly between fits of racking coughs. The swaying ring opened to let Martina and Jack in, and the family glanced at them without much interest as they approached.

"The visitors from the sky share your sorrow," said Martina.

"May the visitor from the sky be permitted to touch them?" asked Jack. Three of the husbands waved assent, and he took that as permission enough. He knelt by one of the brothers and opened his kit. He took skin, saliva, and mucus samples, made external measurements of homeostatic functions, peered into eyes and mouth. "He looks bad," he said to Martina. "He's having a lot of trouble breathing."

"Any idea what could have caused it?"

He shook his head. "Diagnosis would be a shot in the dark. But maybe after I've looked at this stuff in the lab, I'll get some clues." He moved to the other brother, repeated his procedures. "What do the Jinrah say about it?"

"They say someone violated the taboo on his family's sacred grove."

He glanced up at her, a look of disgust on his face. "Terrific. With that attitude, I can see why they haven't developed any folk medicine."

Martina shrugged. "They believe those sacred plants control their lives. They're always going into the sacred groves to . . . to commune with them."

"Why aren't these guys in their sacred grove, then? If the plants are so important the rest of the time, they ought to be twice as important when their owners are sick."

"They *were* in their sacred grove," said Martina. "That's where they got sick."

"Well, that doesn't speak very well for the good old sacred plants, does it?" He stood up. "They're not going to last much longer, breathing like that."

"Can't you do something?"

"I wouldn't dare. I'd be more likely to kill them than to help." He turned away from the sick natives. "I don't know enough, not after only eight months. Not about the Jinrah themselves, anyway." He met Martina's eyes briefly. "Maybe if you hadn't interfered with my studies of them, I'd be in a better position to do something."

She felt her hands clench into fists, but she said nothing, only let him walk away, pass through the ring of mourners and continue toward the Station. She stayed, watching and waiting with the others. Her first chance to observe Jinrah funerary ritual.

She knew the brothers had died when the family members began to wail. The sky was beginning to darken by then, and the non-family females had gone home, leaving only males in the mourning ring. Someone kindled a fire, as if the night were an ordinary one, and by its light Martina could see the Jinrah faces all around as the rain began to fall. All night they stayed there in the wet, wailing and swaying, and Martina stayed with them. At dawn the females returned. Shortly afterward, the chief raised his hands, a signal for silence, and the wailing and swaying stopped.

"Who has done this?" he shouted. "Let that one come forth and be punished."

No one moved.

"Who has done this?" he repeated.

No one moved.

"Was it a child? Was it by accident? Or was there malice intended?"

No one moved. No one spoke.

"Let the message be spread," said the chief. "Let those who are not here be told, so that the guilty one may come forth. The time of sadness is over."

The ring of mourners dispersed at that, but the family remained at the shelter. One of the husbands asked politely if Martina wished to observe the private part of the ritual. After eight months of her presence in the area, they all knew she was interested in rituals. And so she accompanied the family on its long hike with the two bodies. About fifteen kilometers from the village, they left the brothers on a small platform raised from the ground by poles. There had been bones on the platform, remnants of previous occupants, but they dumped them off. All around the platform were other bones, and, not far away, another platform with more bones. Martina wondered how long it would take for scavengers to pick these new bodies clean. Not long, she guessed, in this heat.

When she returned to the Station, well before sunset, only Jack and Fiona were there; engrossed in their work, they hardly seemed to notice her. She gulped a glass of protein concentrate and fell into bed. The next thing she knew, Jack was shaking her.

"Those two Jinrah," he was saying. "What happened to them?"

She blinked a few times, then rubbed her gritty eyes. She felt disoriented, her head thick. "What time is it?"

"A lot later than you usually get up. I got tired of waiting for you. What happened to those two brothers?"

She yawned and stretched. "They died."

"Where were they buried?"

"Weren't buried. They were exposed at what looked like a traditional place. Had lots of Jinrah bones around."

"Where is it?"

"Why?"

"I'd like to do autopsies."

Martina came fully awake. "What?"

"Autopsies. It's too good an opportunity to waste."

"Wait a minute. I don't know how the Jinrah would react to that."

"They don't have to know. I'll put the bodies back when I'm finished."

She sat up. "Jack, you're talking about grave-robbing."

"I thought you said they weren't buried."

"Don't quibble with me! You're talking about appropriating the corpses of sentient creatures without asking anyone's permission. I call that grave-robbing."

"Well . . ." He glared down at her. "What of it? They obviously don't care about the bodies. They just left them there, didn't they? Exposed?"

"Of course they care!"

"Then I'll do it at night."

She reached a hand out toward him but did not touch him. "Listen, I'll ask the family's permission. Maybe they'll give it. They know you're interested in how they function."

He shook his head sharply. "If you warn them, they might set a guard."

"Jack, if they catch you, I don't know what they'll do. It could be dangerous. Cultures that honor their dead with elaborate mourning rituals nor-

mally don't take kindly to violation of the funerary site."

His lips formed a thin, hard line. "Taboos again, huh?"

"Jack, you've got to tread lightly here. We just don't know what could happen."

His right hand raised in a fist, and Martina moved sideways warily, her eyes on it. He said, "I'm sick of these damn taboos."

Her reply was soft: "They've given me problems, too."

His fist arced downward, striking the front of his thigh. "I need an autopsy. I need confirmation."

"Of what?"

"I think I know what killed them."

Martina sprang to her feet. "You do?"

"Maybe. It looks likely. Very likely."

"What?"

"An allergic reaction. Death produced by massive respiratory involvement. Maybe by impairment of other organs, too. I really need a look inside, Martina."

"Allergic reaction? How did you figure that?"

"I found foreign proteins in their saliva."

She spread her hands in puzzlement. "Isn't that a reasonable place for foreign proteins? They'd come in as food, wouldn't they?"

"Not these foreign proteins. They're not typical Jinrah food. They're human."

"Human?"

"Human blood proteins. Among them, antigens A and Rh."

"How would they be exposed to human blood?"

He shrugged. "You tell me. Did somebody cut himself and bleed on the two of them? Or were they vampires?"

"Have you tested any other Jinrah?"

"A few, while you slept. I couldn't find any other . . . contamination." He eased away from her, moving toward the door of her cubicle. "You know, we carry our blood proteins in our saliva, too. Maybe you drooled on them."

Martina clasped her hands behind her back, tightly. "Do you mean that they're allergic to *us?*"

He shrugged again. "Only three of us carry both A and Rh antigens—you and me and Paul. Which of us spent time with the dead Jinrah?"

Martina felt her spine straightening. "So I'm to blame, am I?"

"Maybe. Maybe not. If you want to give me a blood sample, I can cross-match it for some of the other proteins and tell you for sure."

"I've been around other Jinrah, a lot more than either of those two. I don't see them dropping like flies."

Jack said, not apologetically, "I could be wrong. An autopsy could prove me wrong. Or right."

"I'll think about it," said Martina.

He stepped across the threshold of her cubicle, pausing there. "Oh, I can tell you something that the Jinrah *do* eat, contrary to your observations. Those sacred plants. Their saliva is full of sacred plant protein."

Her eyes narrowed. "Jack, how do you know anything about sacred plant protein?"

A small smile quirked his mouth. "I have some samples."

"You found some wild ones?"

"Do you really want to know?"

"You disobeyed my orders, didn't you?"

"I did my job."

She walked toward him, pushed him through the doorway before her. "I want to see them."

"You wouldn't recognize them any more. They've been processed."

"What were they, then?"

"A couple of small twigs, with leaves."

"From how many separate plants?"

"Two."

She grasped his shoulder, let her fingers dig in hard. "Two plants, you said?"

He caught her wrist but could not pull her loose. He squeezed then, and they stood there for a long moment, hurting each other silently.

"Show me the two plants," she said at last.

"They're taboo, aren't they?"

"Show them to me from a distance. I want to know exactly which plants they were. Now."

"All right." He let her wrist go, and then she let his arm loose. There were red fingermarks on her skin, and bright beads of blood on his. "I'll have to bandage this first, though," he said. "I wouldn't want to bleed on anyone."

He led her to a sacred grove a few kilometers from the Station and pointed out the plants he had sampled. From beyond the fence of shrubs, she examined them with softly humming binoculars. She could see nothing amiss. The plants looked no different from their neighbors—tall, slim-boled, studded with clusters of small leaves.

"Each owner probably knows every damn twig of his plant," she muttered. She wanted to shout at Jack but managed to restrain herself by clutching the binoculars fiercely. "They *knew*, Jack. Just by looking. They knew the taboo had been violated."

"*If* those plants belonged to the dead Jinrah. Do you know that?"

"Not yet. But I'll find out. In the meantime, I forbid you to autopsy those bodies. I forbid it as your superior, and if you disobey my orders, the Captain will hear of it immediately. Do you understand?"

Sourly, he said, "Yeah. I understand."

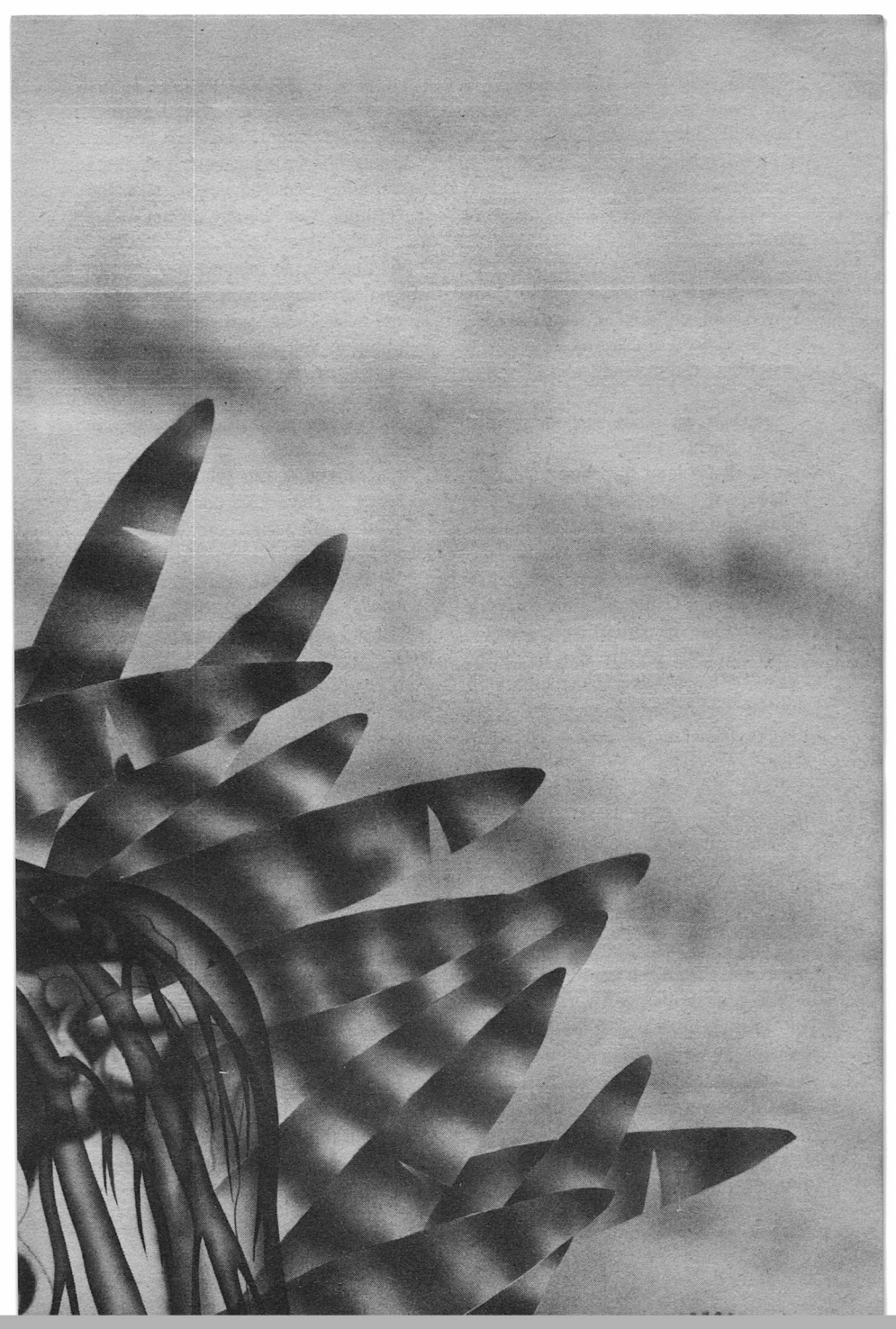
"Work on your damn sacred plants some more. You wanted them so much. And don't steal any more pieces of them. Is *that* understood?"

"Steal?"

"That's what you did, wasn't it? These plants are private property. Damn you, have some respect for *me*, even if you don't for the Jinrah."

"Yes sir," he said, touching his forehead in a mock salute.

She turned away from him in disgust and went to search for the chief. She found him on his family's foraging ground, gathering berries. He listened to her request, to her assurances that she would not try to approach the plants, only wished them pointed out from afar, and at last he agreed to relay it to a member of the bereaved family. Coming from the chief, the request had the weight of a command, and soon Martina was standing outside the same sacred grove, this time with a husband of the family. Carefully, he indicated the plants that Jack had sampled.



"They belong to no one now," he said, "and no one belongs to them. They will wither and die soon, and leave no children behind. It is a sad thing, to die without children."

"Why will they have none?" Martina asked.

"The dead had none."

"How will that prevent these plants from having children of their own?"

"They have no Jinrah brothers to carry their seed to females of their own kind."

"Is there no other way for them to bear young? Can their seeds not be carried by animals or the wind?"

He made a negative gesture. "Other plants may depend on wind or animals. The sacred ones depend on the Jinrah."

She thought: *Hand pollination. Domestication.* "Could not some other Jinrah take over the care of these plants?"

His negative gesture was more vigorous. "From birth to death there is only the one sacred brother or sister. It has always been so. It cannot be otherwise."

Rules, she mused. *Every society has its own inflexible rules.*

When she returned to the Station, Martina found the chief and his co-husbands waiting for her in front of the door.

"The chief has a request to make of the visitors from the sky," he said.

She waited attentively.

"There is none among the Jinrah who violated the sacred brothers of the dead," he continued. "Therefore, the Jinrah must ask who among the visitors from the sky did the deed."

Martina stood very still. "Why do the Jinrah think that a visitor from the sky is guilty of this? Could not some animal have stumbled into the sacred grove?"

The chief made a negative gesture. "Against this we place the evil-smelling bushes all around. But we have seen that the visitors from the sky do not notice the smell."

Martina tried to remember if she had smelled anything strange while standing by the bushes. No, just the usual thick humidity of the air, the scent of moist earth and growing things, and the faint, pleasant perfume of the Jinrah themselves. "Could not the rain have harmed them?" she asked.

He gestured again. "The rain holds no harm for the sacred ones."

"Can it not bruise and break their leaves?"

"That is no harm," said the chief.

"No? Then what is harm?"

"Harm is the touching of wrong flesh."

"Perhaps the chief and the visitor from the sky are not speaking of the same kind of harm."

"There is only one kind of harm. Two Jinrah are dead. Their sacred ones, also, will die. There is no other kind of harm. Ask among your fellows. Let the violator come forth for punishment. The Jinrah wait."

She hesitated. She wanted to suggest that some enemy had chosen to harm the Jinrah this way. But she could not take the responsibility of causing a quarrel between this group and a neighbor.

"What is the punishment?" she said at last.

"The violator must be weighted with stones and thrown into the river."

"A heavy punishment," she said softly.

"Two Jinrah are dead," said the chief.

"And if the visitor from the sky cannot bring forth any violator?"

"Then the visitors from the sky are not worthy of Jinrah trust and must leave, never to return."

Martina made a gesture of obedience. "This one will question the others." She went inside.

The air conditioning hit her like a hammer, and she began to shiver. Jack was in the Biology laboratory, and when he saw her, he beckoned with one hand.

"This is phenomenal," he said. "I've found Jinrah proteins in the plant material." He displayed several photomicrographs, pointed out shapes, colors. "The plants must absorb them from Jinrah skin during those meditation rituals. The animal protein is actually incorporated unaltered into the structure of the plant." He shook the pictures in front of her face. "Maybe it works the other way around, too. You've always said they don't *eat* the plants, they don't smoke them, they don't sniff them. But they get that protein into their saliva somehow. Maybe they absorb it directly through the skin and use it as is. It could be in their blood, all their body tissues; if only I could autopsy those two corpses—"

"*Jack*," said Martina quite loudly. "They know." She looked into his face. "They know it's one of us."

He scowled. "Nonsense. They couldn't possibly."

"They know, and they're waiting outside to punish the guilty party."

"No one saw me," he said. "They can't know."

"They seem very sure of themselves."

"They're just looking for a scapegoat."

"Jack, *you did it!* What difference does it make what kind of detective work led them here? They're *right!*"

"You didn't tell them, did you?"

She shook her head. "I said I'd ask around."

"Well, go ahead and ask. Then go out and say that none of us did it."

She folded her arms across her chest. "You said the plants absorb protein when the Jinrah touch them."

"Yeah."

"What about when *you* touched them?"

"What about it?"

"Don't play cagey with me. What did the plants absorb from you? Antigens A and Rh?"

"There's no human protein in any of the specimens."

"Not the specimens, Jack. Not the leaves and twigs you took with you. The rest of those two plants, that you left behind in the sacred grove. While snipping your samples, did you possibly brush a few of their other leaves with an elbow or a shoulder? Or maybe with the sweaty back of a hand?"

"I suppose I might have. . . ."

"And did the Jinrah then absorb those proteins from their plants? Or eat them, or *whatever* they do? Did they? What do you think, Jack? It was your suggestion."

He shrugged. "I suppose if the plants and the Jinrah do trade proteins, some of mine may have entered the cycle, yeah."

She raised an angry fist at him. "Do

you wonder then that the plants are taboo? Everybody has his own plant, from birth to death. No one else touches it. Not even animals. No other animal protein gets into that plant, just the owner's. Maybe they'd be allergic to each other, too."

"Then anyone could have broken that taboo and killed them."

"*Anyone* didn't. That's what taboos are for." Her face was grim. "It was murder, Jack. And you're the murderer. They're waiting outside to punish you."

He backed away from her slowly. "Punish. You said that before. What did you mean by it?"

"Primitive cultures have a primitive notion of punishment. The penalty for murder is death."

"Well, they can take their penalty and sit on it for all I care! Tell them to go away."

"They told me that if I don't bring out the guilty one, we must all leave and not come back."

"Nonsense."

"It'll be a serious blow to my work."

He grunted. "Always your work, isn't it?"

"It'll mean these Jinrah will never trust another human being."

He laughed, and there was a biting edge to his laughter. "So you want to turn me over to them to keep their trust, is that it? What are they going to do? Stone me? Burn me at the stake?"

"They say they'll tie rocks to you and throw you in the river."

"Terrific. Well, I hope you're not too disappointed about my not going."

"You *are* going."

His face flushed. "Be serious."

"You have to. You have to die so that the rest of us can stay. Fiona will carry on your work. I'll call the Captain down to witness your death. I think the chief will appreciate that official touch."

The Captain was sweating in the shade of Martina's parasol. "He's a little too quiet about it, isn't he? Shouldn't he be struggling a little more?"

"Jinrah wouldn't be struggling," said Martina. She watched impassively as the husbands of the bereaved family tied Jack Evanson's hands behind his back, tied his ankles together, and secured the stone that weighed more than he did. Almost all of the Jinrah of the chief's domain were looking on.

"How long before we can drag him out?" asked Fiona. She was standing with the rest of the Survey team, a little behind Martina and the Captain.

"They'll watch most of the afternoon. The chief said it would be a sign of respect."

Chris said, "They just want to make sure."

"I told them it wouldn't take long," said Martina. "I think they believed me. They've always believed me before."

Quietly, the Captain said, "You feel guilty about this, don't you?"

"They don't lie among themselves, Captain. And I don't think they've ever lied to us." She pursed her lips for a moment, then continued more firmly. "We're not finished here. There's so much to do, and only four months left. We can't afford to go somewhere else and try to establish rapport with another group."

"It was the right decision," said the Captain. "The intelligent decision."

"There he goes," said Chris.

It took four Jinrah males to throw Jack and his stone into the river. He sank immediately, a few bubbles marking the place where he vanished beneath the surface. Then the water was still.

"Do you think you and I should stay, too?" asked the Captain.

Martina nodded. "They'd expect it."

As the humans stood there, the Jinrah formed a ring about them and sat down on the ground. They began to sway in unison, right and left.

"They're mourning him," said Martina. "They're mourning him for our sake." She felt tears grow in her eyes. "Just as if . . . we were their own kind."

The Captain looked at her. "That's a good attitude, isn't it? For your purposes."

She nodded.

"Then Jack can never say he went through all of this for nothing."

She blinked the tears back and sighed. "I hope he learns his lesson from it. I hope he won't give future superiors the trouble he's given me."

"You should have sent him up to us long ago."

"And have him complain about me to Survey Central when we got back? I didn't need that."

"He'll do it now."

"I don't think so. He's in too much trouble himself."

"You may be right." The Captain rocked restlessly from foot to foot. "This is worse than those welcoming ceremonies. I do wish we could go inside the Station."

"Just think about Jack, down there in the cool water."

"That water's warm, isn't it?"

"The river's fed by underground springs. Right here it's a little below human body temperature. I'm sure Jack's much more comfortable than we are."

"Have you ever worn a gill-pack?" asked the Captain.

"No. I don't do much swimming."

"It's like having a mouth full of crumpled paper. The longer you wear it, the less comfortable it is."

"Better than a lung full of water," said Martina.

"Oh yes. Of course."

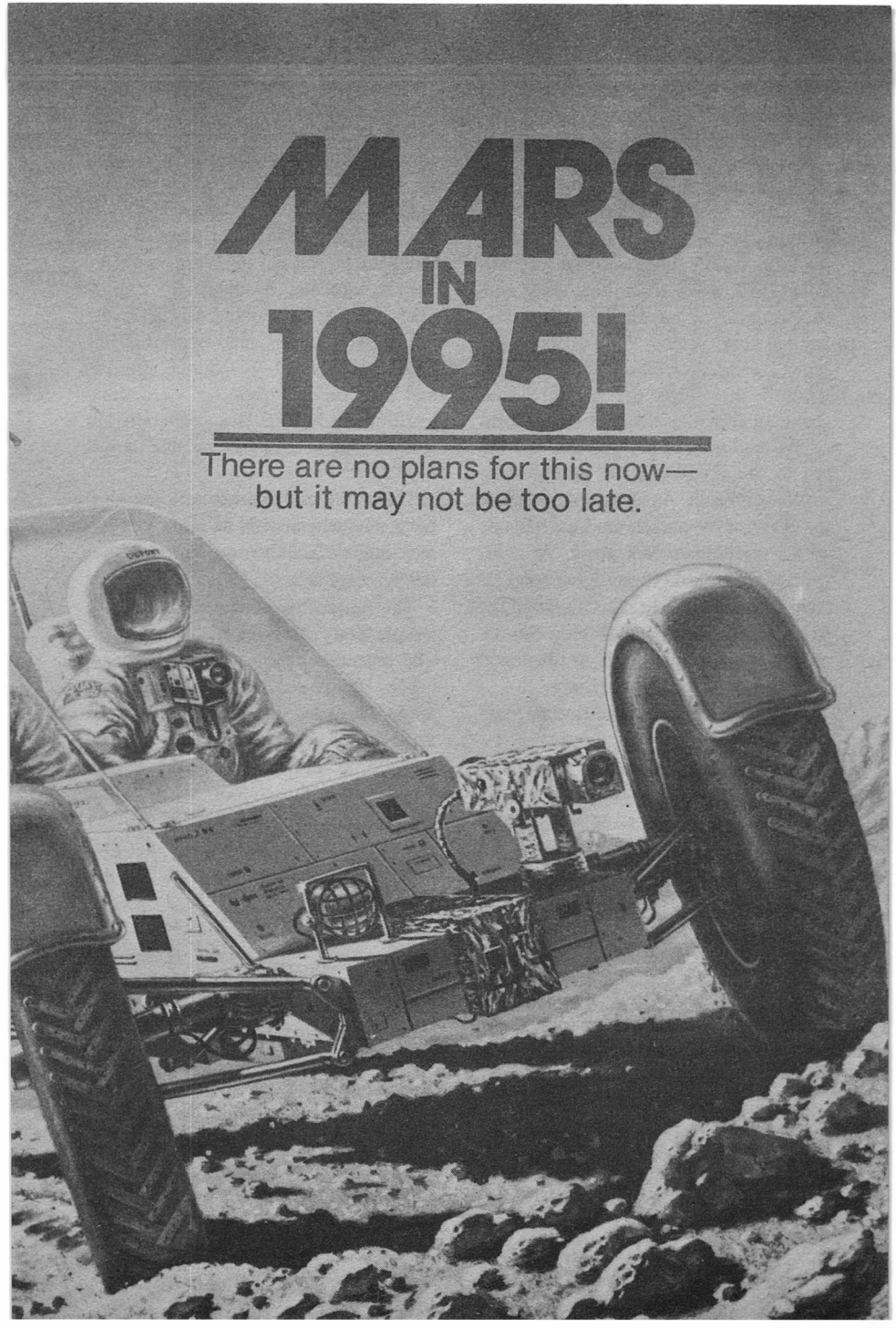
Martina shifted the parasol to her other hand. The chief was looking at her. Some minutes had passed, enough for a Jinrah or a human to drown in. More than enough.

Martina began to wail. ■

● A writer's problem does not change. He himself changes and the world he lives in changes but his problem remains the same. It is always how to write truly and, having found what is true, to project it in such a way that it becomes a part of the experience of the person who reads it.

ERNEST HEMINGWAY


David
Hardy
NASA/esa


MARS
IN
1995!
There are no plans for this now—
but it may not be too late.

Imagine, for a moment. It is Tuesday, 8th November 1994.

For the past two months, in a series of eight early morning launches from the Cape, shuttle vehicles have been bringing the component parts of the expedition into a precisely defined, low Earth orbit. Now three long ships ride in formation about the Earth, watched from a safe distance by the check-out crew aboard the final Shuttle Orbiter. Aboard the ships the crews watch changing computer displays assure them of the readiness of all systems, and listen to the reports of the ground controllers on Earth. As the sun sinks below the curve of the planet, the final seconds of the countdown tick away. At zero, four engines in the base boost stage of each ship burn into life, accelerating the ships away from the watching Shuttle and up and out from Earth, as illustrated here (page) by David Hardy.

The first manned expedition to Mars is on its way.

In 1970, at the height of its success with *Apollo*, NASA outlined its plans for a manned expedition to Mars before the end of the century. That was the pessimistic scenario—actually they hoped that the first expedition would take place about 1987. Their plan was for two nuclear-powered spacecraft assembled in orbit, carrying a dozen men and two landing craft on a 600-day journey which would not only visit Mars but swing past Venus on the way back to speed the total journey. Gordon Dickson dramatized the concept in these pages, in a novel called *The Far Call*.

The problem was that the key item in this whole proposal was the NERVA nuclear stage, and NERVA was cancelled in 1972. With that cancellation went all NASA's plans for extending its manned exploration program. Not only an expedition to Mars, but plans for a return to the Moon were shelved indefinitely. Now, in 1980, only the Shuttle remains of NASA's original plans for an "Integrated Space Transportation System," and even that has been emasculated by limited funding and the constant need for "economic justification." The U.S. capability in space today is actually less than it was in 1970.

Under the circumstances, a proposal for a manned mission to Mars in 1995 may appear less than modest. I do not believe that it is so.

The *Apollo* missions were the key to the planetary missions of the seventies. The precursor robots, *Ranger* and *Surveyor*, developed the technology that made *Mariner*, *Viking*, *Pioneer*, and *Voyager* so successful. And the manned expeditions allowed us to judge the effectiveness of those robot explorers. For the first time we had a detailed geology of another world, and we saw the outline of the questions we needed to ask elsewhere.

If *Apollo* was so successful on the Moon, might not a survey of Mars be equally rewarding?

Let me put it another way. Mars missions have been taking a breather since *Viking*, but lack of activity is a matter of economics rather than interest. At the moment there exist proposals for

—a Mars rover, using *Viking* hardware but capable of travelling across the landscape in search of interesting features.

—a remotely piloted Mars aircraft, powered by a small hydrazine engine, and capable of far-ranging aerial surveys.

—a sub-surface "penetrator" capable of digging several feet below the surface of Mars to get a look at its internal geology.

—surface-sample return missions, capable of launching a kilogram or two of "Mars dust" back to Earth for analysis.

—a mission to the edge of one of the Martian icecaps, looking for the effects of melting ice on the soil. (There are three or four other interesting areas the scientists would like a close look at as well.)

—and a sample return mission from one of the Martian satellites, now thought to be captured asteroids, to return material which may date from the very earliest days of the formation of the planets.

The question is this. *Viking* cost about $400 million a shot. Would a manned mission capable of carrying out all these different tasks be worth ten times as much—say $4,000 million?

Could we even manage it for such a cost? After all, *Apollo,* even at 1970 prices, cost six times as much. And if we were to develop all the equipment specifically for a Mars mission it would undoubtedly cost more than *Apollo*. But consider the developments already on the drawing board, or even turning into hardware, which could be available by 1990.

By 1990 the Space Shuttle will be nearly a decade old. Already the Shuttle is booked solid into 1984, and if it is half as successful as we all hope, by the end of the decade there will be considerable pressure to uprate it. NASA has already studied plans to replace the solid rocket boosters on the Shuttle with recoverable liquid-propellant boosters, and that would increase the payload capacity of the orbiter to about 45 tonnes (100,000 lbs.). But by that time the mass-carrying limitations of the Shuttle will be overshadowed by its volume limitations. For really heavy cargoes the highly sophisticated, recoverable Shuttle Orbiter is a handicap.

The winged Shuttle Orbiter is designed not only to launch payloads into orbit, but to bring them back. The European-built *Spacelab* is designed to exploit just that capability. And the Shuttle gains its economies because that same recoverable Orbiter brings back the really expensive parts of the launch vehicle each time—the complex electronic guidance and control systems, and the expensive main engines (which have a lifetime cost of about $30 million each!). However, if all you want to do is to launch large cargoes on a one-way mission, it would make more sense to package engines and "avionics" in a small ballistic capsule, something like the *Apollo* command module, and use all the structural mass as payload instead. With liquid rocket boosts, this "Heavy Lift" Shuttle could launch as much as 132 tonnes in one go. Furthermore, the diameter of the payload would no longer be constrained by the 4.3 meters (18 feet) of the Shuttle cargo bay.

If by the 1990s we are thinking of building really large structures in space,

Viewed from a porthole in the #1 vehicle, the other two ships come "out of the Sun" as they leave Earth orbit.

we shall need the Heavy Lift Shuttle.

We shall also need an improved upper stage for the Shuttle.

At the moment if you want to launch a payload into an orbit above the low altitude achieved by the Shuttle, you must use a solid-propellant upper stage carried along with your package in the Shuttle bay. The most advanced of these is the Inertial Upper Stage, a big two-stage solid capable of coping with a range of early missions. But the original Shuttle plans called for a liquid propellant "Space Tug" which could be recovered and used again and again, and which could launch large payloads into high orbit. In the late 1980s there are expected to be a number of large, heavy payloads which will need just such an Orbital Transfer Vehicle to launch them into geostationary orbit.

NASA and Rocketdyne have already tested components of an Advanced Space Engine designed for just such an Orbital Transfer Vehicle. They have measured exhaust velocities in excess of 4690 m/sec, which is about four percent better than the Space Shuttle Main Engine, and eight percent better than the J-2 engines which powered *Apollo* towards the Moon. Funding of the vehicle itself probably only awaits freeing of funding currently tied up in the Shuttle.

If you want to transfer really big payloads into geostationary orbit, then by the 1990s a much larger Orbital Transfer Vehicle will be required. Preliminary studies of the size of vehicle needed to support a solar power satellite demonstration model, for example, indicate a vehicle of perhaps 130 tonnes mass, based in low Earth orbit, serviced by the Heavy Lift Shuttle, and capable of lifting fifty tonnes into geostationary orbit. This Heavy Boost Stage is about the size of the Saturn IVB stage, and would use four Advanced Space Engines for propulsion.

All these developments would supply the essential propulsion requirements for a Mars mission. The final development is needed to give the astronauts a home. And that development is taking place in Europe.

The *Spacelab* modules currently coming off the production line are intended to ride inside the Shuttle cargo bay, dependent upon the orbiter for power and life-support. But the German and Italian builders are already planning follow-on developments which would give *Spacelab* free-flying capability. A 25 or 50 kilowatt extendable solar array module would provide power to give *Spacelab* a useful life in space of weeks rather than days. And provided with a suitable docking mechanism, a number of *Spacelab* modules could be coupled together to provide the basis for a permanent space station.

The U.S. has lost the lead it established in orbital bases with *Skylab* to the Russians. *Salyut 6* has not only demonstrated the advantages of a station that can be restocked with supplies from a smaller launch rocket, and visited by a succession of crews, but it has also been used to progressively push back the record for human endurance in free-fall. At the moment that record stands at 184 days, but for Valeri Ryumin that is the second long-duration flight in two years. Cautiously but steadily the Russians are

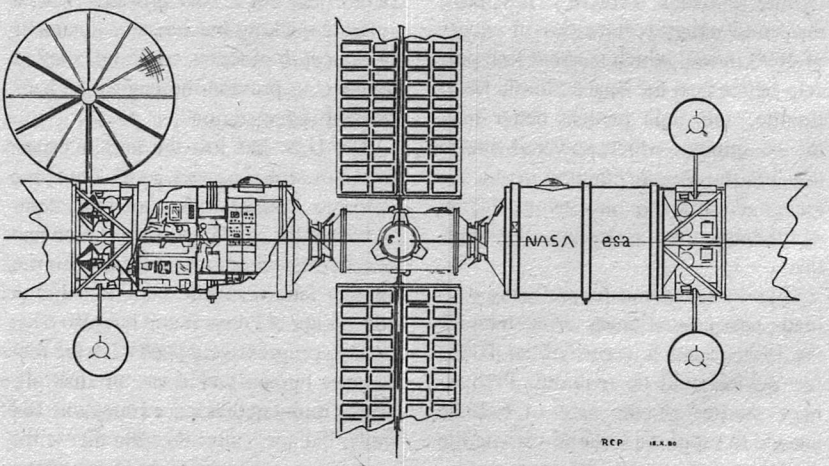
pushing back the endurance record to the sort of times needed to make a round trip to Mars.

Now let us go back and look at how those developments might seem, viewed from the vantage point of November 1994 as the launch window for a Mars mission opens.

The three vehicles in orbit each have a Heavy Boost Stage at the rear, to provide the push that will take them out of Earth orbit and *en route* to Mars. Above this, in the case of two of the vehicles, will be a pair of smaller Orbital Transfer Vehicles (OTVs) carrying about 26 tonnes of propellant apiece, which will be used to carry the vehicles into orbit about Mars, and later to return them home. These two we may refer to as the "Orbital Assemblies" because no part of them ever gets closer to Mars than a parking orbit. The third vehicle has a single OTV stage, because it has a one-way mission. At the forward end of this vehicle is the stubby conical shape of the "Mars Excursion Module"—or lander—which provides the whole focus of the mission.

The lander module is the one component which is specific to this mission. I shall describe it in detail in a moment, when we look at the Mars landing itself. But it is one reason why we need the Heavy Lift Shuttle. The diameter of the heat shield needed to protect it on entry into the Martian atmosphere is 7.5 meters (25 ft.)—far too large to ride inside the Shuttle cargo bay. Instead it will have to be lifted into orbit on a one-way stack carrying propellant for the Heavy Boost Stage.

The Orbital Assemblies which will provide home for the crew of five for most of the next two years will be based



The two orbital modules docked together, showing a cutaway of Orbiter One.

on the free-flying *Spacelab* module. Each module will have a docking unit at the forward end, and a services pallet at the rear, and inside will contain two or three staterooms, toilet and kitchen facilities, and a "day room" carrying the scientific and support equipment and a control center monitoring all three ships. The two Orbital Assemblies will duplicate all essential functions, and in emergencies be capable of sheltering all five crew members, but the first Orbital Assembly will carry an extra load of scientific and support equipment, while the second will carry a four-way docking unit which also carries the 25 kilowatt solar array which is the primary source of power for the mission.

During assembly and check-out all the vehicles will have been docked together and manned by a "check-out" crew who will have arrived with the first components. Now, with the arrival of the expedition crew, the vehicles will be separated and oriented to fly parallel to one another, in formation. The crew will run through their final checks, and signal "ready for launch."

Even with four Advanced Space Engines powering the Heavy Boost Stage the acceleration of the three ships will be slow—less than one-third of a "g" at burnout. The first burn will take a little under fifteen minutes, and even that will not be sufficient to free the expedition from Earth's gravity well. Instead it will inject them into a long ellipse with its apogee about 36,000 kilometers (22,000 miles) above the Earth and with a period of just over ten hours. At the peak of its orbit each ship will make a short corrective burn of about twenty seconds to shift the orbital plane the few degrees needed to line it up with Mars, and then—five hours later—as the ships swing back close to the Earth once again, the third and final burn, about six and a half minutes in length, will place the ships on their trajectory to Mars. Now the three ships can cast off from their Heavy Boost Stages, dock together in "cruise configuration," extend the solar arrays and settle down for the long coasting flight.

If the Heavy Boost Stage can be built to the exacting specification proposed by NASA, it will even be able to recover the stages at this point, turning them end for end and using the residual propellant to brake back into the original parking orbit. The smaller OTVs, however, will be designed to be expendable.

For the first few days after the launch the expedition crew will be busy settling in, checking the status of their ships and moving stores to the right places. Outside, the Earth and Moon will steadily diminish in apparent size until they are simply points of light against the background of stars, and at the same time the "lag" in voice communications with the ground will grow until two-way conversations are no longer possible. Then the expedition will have crossed another invisible frontier—just as *Apollo 8* did when it went behind the Moon for the first time.

Thirty weeks out from Earth, Mars will begin to show a visible disk. The crew will carry out a careful check of their ships, and disassemble the "cruise configuration" for the Mars capture maneuver. As the three ships sweep by,

only a few hundred kilometers above Mars, the first of the OTV stages will burn to brake the expedition into a long elliptical orbit about the planet. The OTV capture stage of each of the Orbital Assemblies will be completely emptied by this maneuver, and will be discarded, but the OTV for the Lander Assembly will retain about six and a half tonnes of propellant for later maneuvers in orbit about Mars. When the component vehicles dock together again they will appear as in David Hardy's painting on the cover of this magazine. (Here the lander has separated.)

The orbit taken by the expedition has a period of 13½ hours, and at its closest approach is about 4000 kilometers (250 miles) above the Martian surface. Since the Martian "day" ("sol" in *Viking* parlance) is about 24½ hours long, this means that on each alternate orbit Mars will have turned once completely beneath the ship, plus two and a half hours. In about ten days the expedition will have the opportunity for a close look at all the possible landing sites—and since the chosen site must lie below the point of closest approach, they will have about 20 hours to make a decision to "go."

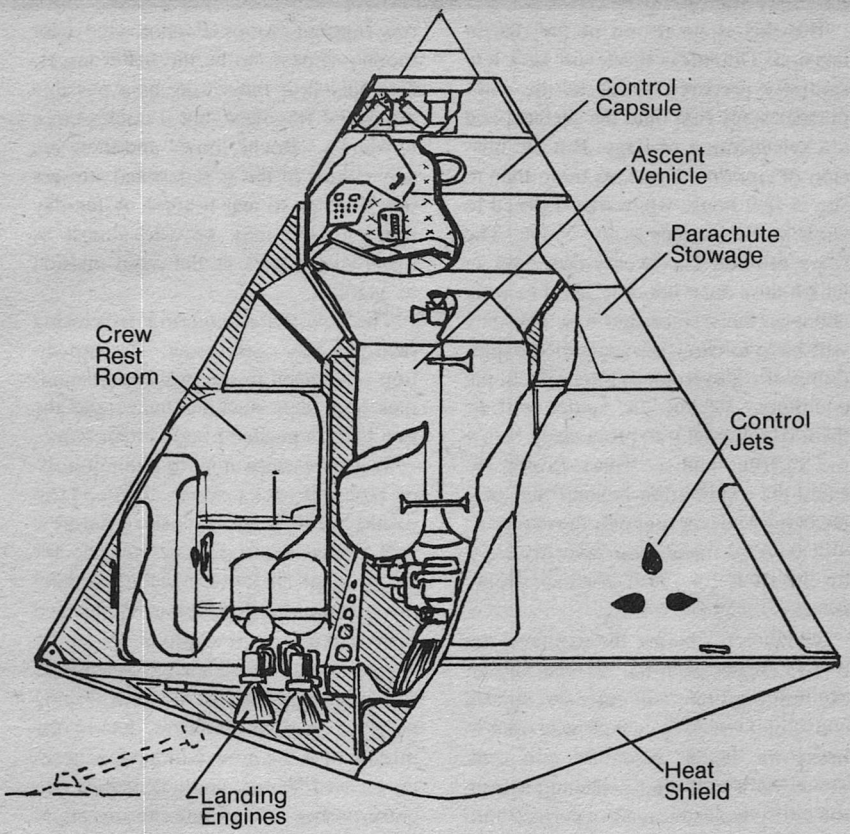
The primary exploration vehicle is, of course, the manned landing module. But in addition the expedition will carry an array of robot vehicles to aid its mission. It will carry a small "communications relay" satellite to be boosted into a "Mars synchronous" orbit above the probable landing site to relay data back to the orbiting ships when they are hidden by the bulk of Mars. It will carry half a dozen small "penetrator probes" which can be dropped at selected sites to sample conditions on and immediately under the surface. And it will carry three "surface sample return" probes to dig up a sample of the local "regolith" and launch it back into orbit for recovery by the expedition's orbital vehicle.

Perhaps the most ambitious surface sample return will be to capture a sample from the edge of the Martian icecap. *Viking* type missions launched from Earth have been studied for this mission, but the fact that the expedition can maintain direct two-way contact with the descending vehicle greatly eases the design problem.

Finally the crew will make a decision on a site for a manned landing.

The lander module looks a little like an enlarged *Apollo* command module from the outside. Its size is governed by the size of the two-stage ascent vehicle carried in its core. It will also carry, clustered about the ascent vehicle around the base of the cone, power supplies and life support equipment to maintain the crew of three for up to 30 days on the Martian surface and about a tonne of scientific equipment.

To land the module, the crew will wait until the orbiting vehicles reach the highest point in their orbit on the far side of Mars from their target and then use the external retro-pack to brake by some 36 m/sec (118 feet per second). The point of closest approach to Mars will now be only about 50 kilometers (30 miles) above the surface, and on the next swing it will shed most of its orbital energy in the familiar wake of superheated air and ablated heat-shield. As



Cutaway of Mars Lander, showing the ascent stage and the landing systems.

it slows to subsonic speeds, it will deploy a large parachute, jettison the heat shield and extend its landing legs, while the crew search for a level place to put down.

Five hundred meters above the surface the braking rockets will ignite, and the module will shed its parachute. For the last few seconds the lander becomes a "hot helicopter," totally under the control of its pilot like the *Apollo* Lunar Module, as they look for level ground to touch down on. The contact light will flash on, the thunder of rockets will die, and men will have landed on another world.

But this is no re-run of the *Apollo* mission. Doubtless there will be a few carefully prepared words as the commander steps first onto the surface, and a token planting of flags. But the mission of *Apollo 11* was no more than to stay a few hours while men learned to work on the surface of the Moon. The Mars mission has twenty-five days in which they must not only learn to walk about on the surface, but in which they will have to carry out a detailed exploration of the surrounding terrain. In the equipment bay of the lander will be drilling equipment to probe deep below the surface, and a "Mars Rover" to carry the exploration beyond the local horizon. And, throughout, the explorers will have to make their own decisions on the spot, for Earth is about twenty minutes away by radio.

A day or so before the explorers are due to depart from the surface, one of the orbiting crew will enter the control capsule of the OTV which was used to brake the lander assembly into orbit about Mars and, after detaching it from the orbiting cluster, make a perigee burn to bring it down into a 435 kilometer (270 mile) circular orbit. When the surface crew launch themselves and their samples up from the Martian surface on top of the two-stage ascent vehicle, they will rendezvous with this waiting transfer vehicle. Then, after transferring themselves and their possessions aboard, the transfer vehicle will return them to the main ships.

Even now the expedition is not over. The transfer vehicle still has enough propellant to take the two orbital crew on a side expedition to one of the two tiny Martian Moons. Phobos—the inner moon—appears to be the better target. Not only is it interesting as a possible asteroidal fragment, but it circles close to Mars's "Roche limit" and there are some signs of the gravitational stresses that threaten to tear it apart. A ten-day mission here may provide almost as many discoveries as the main mission to Mars.

The mission is entering its closing phase in Mars orbit now. The expedition is reduced to the two orbital modules and their docking units, and the two OTV's needed to take them home.

Were the ships now to attempt a direct transfer back to Earth the round trip would last three years. Instead the crew will follow the trajectory outlined for the original NERVA mission, heading inwards past Earth's orbit to Venus, and then making a gravitational swing-by to rendezvous with Earth. This is by far the longest leg of the mission, taking nearly a year to complete, but in the middle of it the crew will have a close-up view of Venus, and will launch two entry probes to continue the investigation of Earth's less hospitable sister planet.

Finally, eighteen months after departure, the expedition will make its final burn to brake into a parking orbit about Earth. To save "delta-V" on this final maneuver, the ships will actually brake into a long, elliptical "24 hour" orbit. The "rescue" Shuttle will carry its own OTV to make rendezvous with the expedition ships. And then, weak from the long period in zero-gravity, the crew will be on their way down to their home planet and a heroes' welcome.

There are many in the space business who imagine that such an expedition belongs to the twenty-first century. By the mid-nineteen-nineties, they say, we may just be returning to the Moon. In the meantime our limited resources should be spent elsewhere. I believe that they are wrong.

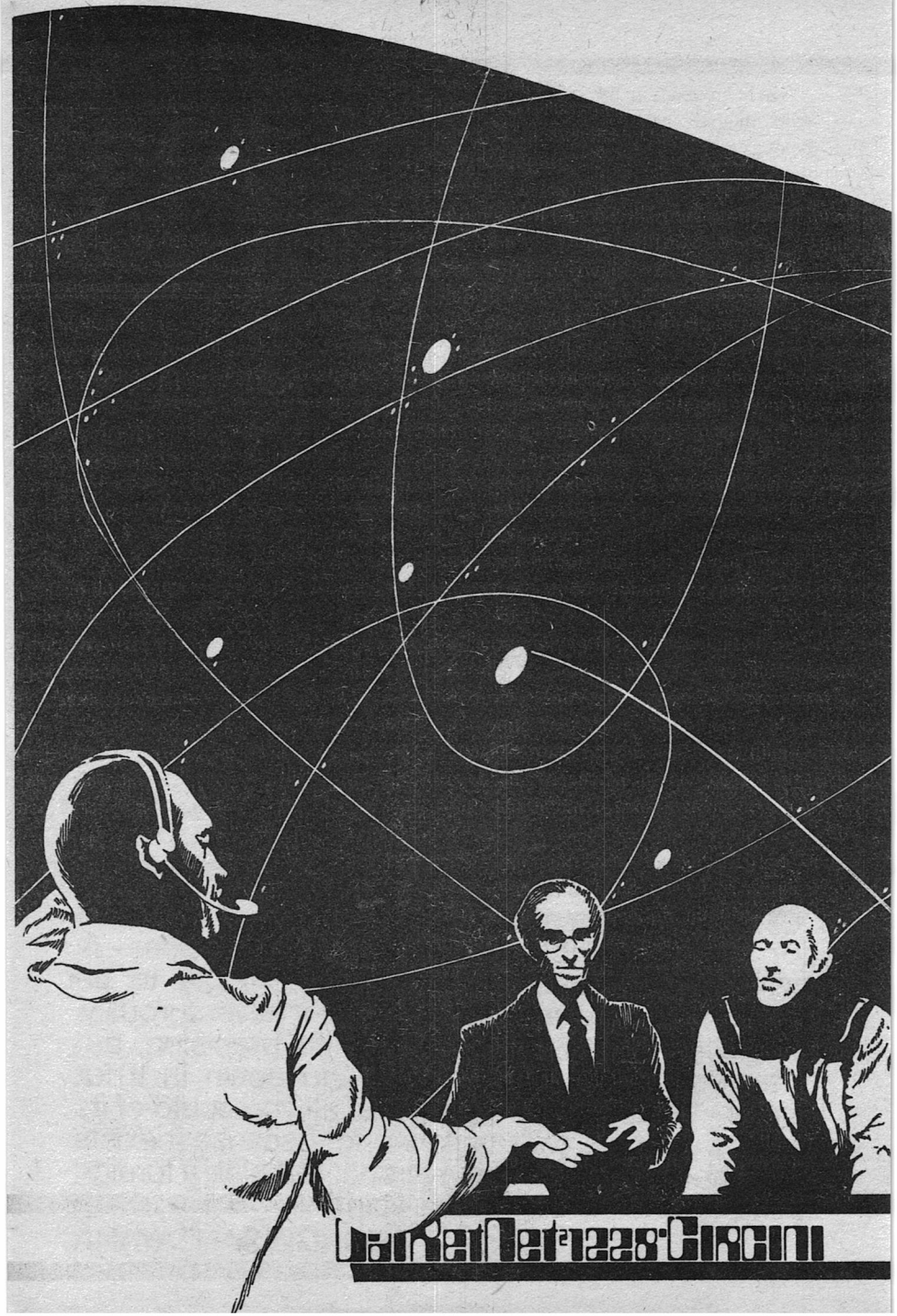
One of the reasons that I have been at pains to emphasize the extent to which the hardware required may be available is to show that the costs for such an expedition are largely a matter of accounting. If we wanted to mount a Mars mission now, and had to develop all the vehicles specially, then undoubtedly the cost would be many times *Apollo*. But the same developments would give us a permanent space-station, an effective means to transport large structures into geostationary orbit, a means to resume the exploration of the Moon, and a launcher for outer planet missions. If we cost only those items specific to the mission the cost is more modest—about $4 billion. And that we ought to be able to afford.

There has been a great deal written about the economics of space. An expedition of the sort described here actually illustrates another aspect to this—an aspect we space enthusiasts have always believed but never before been able to demonstrate: *given the right circumstances it is actually cheaper to send men than to try to do the same thing with dozens of robot expeditions.*

I end with a cautionary observation. I do not believe that it is reasonable for us to plan such an expedition before 1995. But the delta-V requirements for the late eighties are easier. I have already mentioned the long space missions carried out by the Russians aboard *Salyut 6*, and there are rumors that they have resumed development of their big launcher. The fact that we cannot do it any earlier does not necessarily mean that nobody can. ■

● The existence of this world—unless we lapse for a moment into an untenable scepticism—is certain, or at least, it is unquestioningly to be assumed. Experience may explore it adventurously, and science may describe it with precision, but after you have wandered up and down in it for many years, and have gathered all you could of its ways by report, this same world, because it exists substantially and is not invented, remains a foreign thing and a marvel to the spirit.

GEORGE SANTAYANA


Bank of Nebraska Circuit

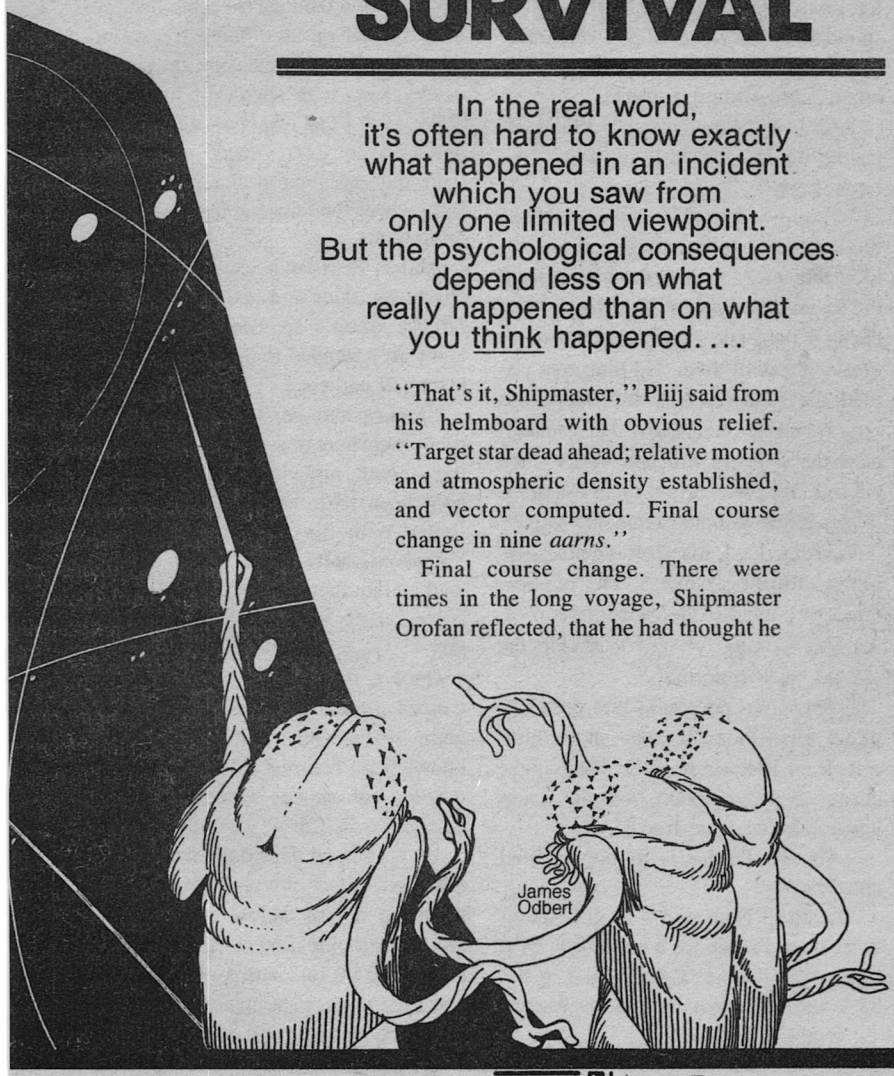
Timothy Zahn

THE PRICE OF SURVIVAL

In the real world,
it's often hard to know exactly
what happened in an incident
which you saw from
only one limited viewpoint.
But the psychological consequences
depend less on what
really happened than on what
you think happened. . . .

"That's it, Shipmaster," Pliij said from his helmboard with obvious relief. "Target star dead ahead; relative motion and atmospheric density established, and vector computed. Final course change in nine *aarns*."

Final course change. There were times in the long voyage, Shipmaster Orofan reflected, that he had thought he



would never live to hear those words, that he would be called prematurely to sit among the ancestors and another would guide his beloved *Dawnsent* to her final resting place. But he knew now that he would live to see the new world that the Farseers back home had found for them. "Very good, Pilot," he responded formally to Pliij's announcement—and then both Sk'cee broke into huge, multi-tentacled grins.

"Almost there, Orofan," Pliij said, gazing out the forward viewport. "Almost there."

"Yes, my friend." Orofan touched the viewport gently with one of his two long tentacles, feeling the vibration of the fusion drive and a slight tingle from the huge magnetic scoop spread hundreds of *pha* ahead of them. Nothing was visible; the viewport was left uncovered only for tradition's sake. "Do you suppose the sleepers will believe us when we tell them we carried them hundreds of star-paths without seeing any stars?"

Pliij chuckled, his short tentacles rippling with the gesture. "The rainbow effect through the side viewports is nice, but I'm looking forward to seeing the sky go back to normal."

"Yes." Orofan gazed into the emptiness for a moment, then shook himself. Back to business. "So. The course change is programmed. Are the scoop and condensers prepared?"

"All set. Thistas is running a final check now."

"Good." Nine *aarns* to go. Six of those would make for a good rest. "I'll be in my quarters. Call me if I'm not back here two *aarns* before insertion."

"Right. Sleep well."

"I certainly will." Orofan smiled and left the bridge.

It was, General Sanford Carey thought, probably the first time in history that representatives from the Executor's office, the Solar Assembly, the Chiron Institute, and the Peacekeepers had ever met together on less than a week's notice. Even the Urgent-One order he'd called them with shouldn't have generated such a fast response, and he wondered privately how many of them had their own sources at the Peacekeeper field where the tachship had landed not three hours ago.

Across the room a Security lieutenant closed the door and activated the conference room's spy-seal. He nodded, and Carey stepped to the lectern to face his small audience.

"Ladies and gentlemen, thank you for coming here this afternoon," he said in a smooth, melodious voice—a voice, he'd been told, which contrasted violently with his craggy appearance. "Approximately three hours ago we learned that there is a large unidentified object rapidly approaching the solar system."

Only a third of the nine men and women present kept the impassive—if tense—expressions that betrayed prior knowledge. The rest displayed a kaleidoscope of shock, wonderment, and uneasiness as Carey's words sank in.

He continued before the murmurings had quite died down. "The object is traveling a hair below lightspeed, at about point nine nine nine cee, using an extremely hot fusion drive of some kind and what seems to be an electromagnetic ramscoop arrangement. He's about eight

light-days out—under fourteen hundred A.U.—and while we haven't got his exact course down yet, he'll definitely pass through the System."

" 'Through,' General?" asked Evelyn Woodcock, chief assistant to the Executor. "It's not going to stop here?"

"No, his drive's still pointing backwards," Carey told her. "Decelerating to a stop now would take hundreds of gees."

From their expressions it was clear they weren't sure whether to be relieved or insulted by the Intruder's disinterest. "Then why is it coming here?" Assembly-Prime Wu-sin asked.

"Reconnaissance, possibly, though that's unlikely. He's coming in at a steep angle to the ecliptic—a poor vector if he wants to see much of the System. He could also be trying for a slight course correction by passing close to the sun; we'll know that better when we get more accurate readings on him. It's even possible the Intruder doesn't yet know we're here. At the speed he's making, the sun's light is blue-shifted into the ultraviolet, and he might not have the proper instruments to detect it."

"Unlikely," Dr. Louis Du Bellay of the Chiron Institute murmured. "I would guess they've done this before."

"Agreed, Doctor," Carey nodded. "It's a very remote possibility. Well. The Intruder, then, is not likely to be of great danger to us, provided we keep local traffic out of his way. By the same token, he's not likely to advance our store of knowledge significantly, either. With one exception: we now know we're not alone in the universe. You'll appreciate, I'm sure, the importance of not springing this revelation on the System and colonies without some careful thought on the part of all of us. Thank you for coming here; we'll keep you informed."

Carey stepped from the lectern and headed toward the door as his audience came alive with a buzz of intense conversation. As Carey passed him, Dr. Du Bellay rose and fell into step. "Would you mind if I tagged along with you back to the Situation Room, General?" he asked. "I'd like to keep close tabs on this event."

Carey nodded. "I rather expected you'd want to. I've already had you cleared for entry." He raised his hand warningly as the Security man reached for the spy-seal control. "No talking about this, Doctor, until we're past the inner security shield."

It was only a short walk to the central section of Peacekeeper Headquarters, and the two men filled the time by discussing Du Bellay's latest trip to the ancient ruins at Van Maanen's Star. "I heard about that," Carey said. "I understand it was your first solo tachship run."

"Yes. The Directorate at Chiron's been encouraging everyone to learn to fly—it's cheaper than always having to hire a pilot along with a tachship. Fortunately, they haven't yet suggested I do all my own digging as well."

Carey chuckled. "That's what students are for. Are those ruins really as extensive as people say?"

"Even more so. We've barely scratched the surface, and there's at least one more civilization under the one we're working on."

They passed the security shield to the clickings of invisible security systems,

and the topic abruptly changed. "How in blazes did a tachship stumble across something moving that fast?" Du Bellay asked.

"Pure dumb luck," Carey said. "A merchantman coming in from Alpha Centauri had dropped back into normal space to do a navigational check. They'd just finished when this thing went roaring past."

"They're lucky they weren't fried by the ramscoop fields," Du Bellay commented.

"They damn near were. A few million kilometers over and they probably would have been. Anyway, they recovered from the shock and got a preliminary reading on his course. Then they jumped ahead the shortest distance they could and waited the sixteen minutes it took the Intruder to catch up. They got another decimal in his course, confirmed he was heading toward Sol, and hightailed it here with the news."

"Hmm. Ironic, isn't it, that the great search for intelligent life should be ended by a puddle-jumping business ship whose navigator didn't trust his own computer. Well, what's next?"

"We've sent out a dozen tachships, strung along the Intruder's route, to get better data. They should be reporting in soon."

The Peacekeeper Situation Room was a vast maze of vision screens, holotanks, and computer terminals, presided over by a resident corps of officers and technicians. Halfway across the room was the main screen, currently showing a map of the entire solar system. From its lower right-hand corner a dotted red line speared into the inner system.

A young captain glanced up from a paper-strewn table as they approached. "Ah, General," he greeted Carey. "Just in time, sir: Chaser data's coming in."

"Let's see what you've got, Mahendra."

Mahendra handed him a computer-printed page. Carey scanned it, aware that Du Bellay was reading over his shoulder.

The Intruder was *big*. Compensating for relativistic effects and the difficulty of taking data at such speeds, the computer judged the alien craft at well over fifteen hundred meters long, two hundred meters in diameter, and massing near the two-hundred-million-ton mark. Its cone-shaped ramscoop fields spread out hundreds of kilometers in front of it. The drive spectrum showed mainly helium, but with a surprisingly high percentage of other elements.

Behind him, Du Bellay whistled softly. "Talk about your basic Juggernaut! Where'd it come from?"

"We've backtracked him to the 1228 Circini system," Mahendra said, referring to one of his sheets. "He didn't originate there, though—it's a dead system. We're trying to track him further back."

Carey looked up at the main screen. "Why isn't the Intruder's course projected beyond Sol?"

Mahendra frowned. "I don't know, sir." He swung a keyboard over and typed something. "The projection stopped when the course intersected the sun," he reported, frowning a bit harder.

"What?" Du Bellay said.

"Show us the inner system," Carey ordered.

Mahendra punched a key and the screen changed, now showing only out

to Mars. Sure enough, the dotted line intersected the edge of the dime-sized image of the sun. Without being told to, Mahendra jumped the scale again, and the sun filled the screen.

Carey squinted at it. "Almost misses. How dense is the stuff he'll hit?"

"The computer says about ten to the minus seventh grams per cc. Not much by Earth standards, but that's almost a hundred trillion times anything in the interstellar medium. And he'll pass through several thousand kilometers of it."

"Like hell he will," Carey winced. "He'll burn to a crisp long before that. I was right after all, Doctor—he hasn't noticed the solar system's in his path."

He glanced at Du Bellay, then paused for a longer look. The archaeologist was frowning into space. "Doctor?"

"Captain, does that console have DatRetNet capability?" Du Bellay asked. "Please look up data on that star you mentioned—1228 Circini. Cross-reference with unusual stellar activity."

Mahendra nodded and turned to the console. "Something wrong?" Carey asked Du Bellay. The other's expression worried him.

"I don't know. I seem to remember hearing about that star a few years ago. . . ." He trailed off.

"Got it, Doctor," Mahendra spoke up.

Both Du Bellay and Carey leaned over to look at the console screen. "I was right," Du Bellay said in a graveyard voice, pointing at the third paragraph.

" 'Planetary studies indicate a giant solar flare occurred approximately one hundred years ago, causing extensive melting patterns as far out as one point eight A.U.,' " Carey read aloud. " 'Such behavior in a red dwarf is unexplainable by current theory.' I don't see the connec—" He broke off in mid-sentence.

Du Bellay nodded grimly. "1228 Circini is ninety-six light-years away. It's too close to be coincidence."

"Are you suggesting the Intruder *deliberately* rammed 1228 Circini? That's crazy!"

Du Bellay merely nodded at the main screen. Carey gazed up at the dotted line for a long minute. Then he tapped Mahendra's shoulder. "Captain, get me Executor Nordli. Priority Urgent-One."

Orofan woke to hear the last wisp of sound from his intercommunicator. He reached for the control, noting with some surprise that the shading of the muted wall light indicated half past *cin*—he'd been asleep less than an *aarn*. "Yes?"

It was Pliij. "Shipmaster, we have a problem. You'd best come up immediately."

Was something wrong with his ship? "I'll be right there."

Pliij was not alone when Orofan arrived on the bridge. Lassarr was also there. "Greetings, Voyagemaster," Orofan said, giving the required salute even as his eyes darted around the room. No problem was registering on any of the displays.

"The trouble is not with the *Dawnsent*," Voyagemaster Lassarr said, interpreting Orofan's actions and expression with an ease the Shipmaster had never liked.

"Then what is it?"

"Here, Shipmaster." Pliij manipulated a control and an image, relativistically compensated, appeared on a screen. "This is the system we're approaching. Look closely here, and here, and here."

Tiny flecks of light, Orofan saw. The spectrometer read them as hot helium. . . .

Orofan felt suddenly cold all over. Fusion-drive spacecraft! "The system is inhabited!" he hissed.

"You understand our dilemma," Lassarr said heavily.

Orofan understood, all right. The *Dawnsent*'s scooping procedure would unavoidably set up massive shock waves in the star's surface layers, sending flares of energy and radiation outward. . . .

"How is our fuel supply?" Lassarr asked.

Orofan knew, but let Pliij check anyway. "Down to point one-oh-four maximum," the Pilot said.

"We can't reach our new home with that," Lassarr murmured.

"Correction, Voyagemaster," Orofan said. "We can't reach it in the appointed time. But our normal scooping gives us sufficient fuel to finish the voyage."

"At greatly reduced speed," Lassarr pointed out. "How soon could we arrive?"

There was silence as Pliij did the calculation. "Several lifetimes," he said at last. "Five, perhaps six."

"So," Lassarr said, short tentacles set grimly. "I'm afraid that settles the matter."

"Settles it how?" Orofan asked suspiciously.

"It's unfortunate, but we cannot risk such a delay. The sleep tanks weren't designed to last that long."

"You're saying, then, that we continue our present course? Despite what that'll do to life in this system?"

Lassarr frowned at him. "I remind you, Shipmaster, that we carry a million of our fellow Sk'cee—"

"Whose lives are worth more than the billions of beings who may inhabit that system?"

"You have a curious philosophy, Shipmaster; a philosophy, I might add, that could be misunderstood. What would the ancestors say if you came among them after deliberately allowing a million Sk'cee to perish helplessly? What would those million themselves say?"

"What would they say," Orofan countered softly, "if they knew we'd bought their lives at such a cost to others? Is there honor in that, Voyagemaster?"

"Honor lies in the performance of one's duty. Mine is to deliver the colonists safely to their new world."

"I'm aware of that. But surely there's a higher responsibility here. And we don't *know* the sleep tanks won't survive the longer journey."

Lassarr considered him silently. "It's clear you feel strongly about this," he said finally. "I propose a compromise. You have one *aarn* to offer a reasonable alternative. If you can't we'll carry out our fuel scoop on schedule." He turned and strode out.

Pliij looked at Orofan. "What now?"

The Shipmaster sank into a seat, thinking furiously. "Get me all the in-

formation we have on this region of space. Our own sensor work, Farseer charts and data—everything. There *has* to be another way.''

The group sitting around the table was small, highly select, and very powerful. And, Carey thought as he finished his explanation, considerably shaken. Executor Nordli took over even as the general was sitting down. ''Obviously, our first order of business is to find out why our visitor is planning to dive into the sun. Suggestions?''

''Mr. Executor, I believe I have a logical explanation,'' an older man sitting next to Du Bellay spoke up. Dr. Horan Roth, Carey remembered: chief astrophysicist at the Chiron Institute.

''Go ahead, Dr. Roth,'' Nordli said.

Roth steepled his fingers. ''The speed of a ramjet is limited not by relativity, but by friction with the interstellar medium. The mathematics are trivial; the bottom line is that the limiting speed is just that of the ship's exhaust. Now, if you use a magnetic scoop to take in hydrogen, fuse it to helium, and use the energy liberated to send this helium out your exhaust, it turns out that your velocity is only twelve percent lightspeed.''

''But the Intruder's moving considerably faster than that,'' Assembly-Prime Wu-sin objected.

''Exactly,'' Roth nodded. ''They're apparently using an after-accelerator of some sort to boost their exhaust speed. But this takes energy, requiring extra fuel.''

''I see,'' Nordli rumbled. ''They have to carry extra hydrogen which can't be replaced in the interstellar medium. So they periodically dive into a star to replenish their tanks?''

''It would seem so.''

''Dr. Du Bellay, you're an expert on alien cultures, correct?'' Nordli asked.

''To some extent, sir,'' Du Bellay said, ''bearing in mind we've so far studied only dead civilizations, and only a handful of those.''

''Yes. In your opinion, what are the chances of communicating with these aliens? And what are the chances that would make any difference in their actions?''

Du Bellay frowned. ''I'm afraid the answer to both questions is very poor,'' he said slowly. ''It's true that various scientists have developed so-called 'first-contact primers' in case we ever came across a living intelligent species. But it's also true that teaching any of our language to an alien would take considerable time, and we haven't got that time. No ship ever built could match speeds with the Intruder, so we would have to give everything to them in short, high-density data bursts. And even assuming they were equipped to receive whichever wavelengths we use, they have only seven or eight hours—in their time frame—to decipher it.''

''I have to concur with Dr. Du Bellay,'' Carey spoke up. ''As a matter of fact, we've already sent out a series of tachships to try precisely what he suggested, but we don't expect anything to come of it.''

''Perhaps we could signal our existence some other way,'' Evelyn Woodcock, Nordli's assistant, suggested. ''Say, a fusion drive pointed at them, blinking off and on. They couldn't miss

that.''

''And then what?'' Carey asked.

''Why—surely they'd change course.''

''With their own mission at stake? If it's a colony ship of some kind, its supplies are likely very tightly figured. If they change course, they may die. At the speed they're making we sure as hell can't offer to refuel them.''

''There's an even more disturbing possibility,'' Nordli said quietly. ''This refueling technique may be *deliberately* designed to sterilize the system for future colonization.''

''I think it's unfair to ascribe motives like that to them without proof,'' Du Bellay said. The words, Carey judged, were more reflex than true objection—the archaeologist looked as uneasy as everyone else.

''No?'' Nordli shrugged. ''It doesn't really matter. What matters is that the Intruder is threatening us with massive destruction. We must stop him.''

Wu-sin stirred. ''Executor Nordli, you're proposing what amounts to an act of war against another intelligent species. A decision of that magnitude must be approved by the full Solar Assembly at least; ideally by all the colonies as well.''

''There's no time to consult the colonies,'' Nordli said. ''As to the Assembly . . . you have two hours to get their approval.''

''And if I can't?''

''I'll go ahead without it.''

Wu-sin nodded grimly. ''I needed to know where you stand. I'll get their approval.'' He rose, bowed, and left the room.

Nordli turned to Carey. ''General, how do we proceed?''

Carey let his eyes sweep the others' faces as he thought. They were all on Nordli's side, he saw: Du Bellay, like himself, only because there was no other choice. How many lives were they planning to snuff out?—innocent lives, perhaps, who may not realize what they were doing? ''The trouble, Mr. Executor, is that the Peacekeeper forces really aren't set up for this kind of threat.''

''You've got nuclear missiles, don't you? And ships to deliver them?''

''There are two problems. First, hitting the Intruder would be extremely difficult. A shot from the side would probably miss, alerting them as to our intentions. A head-on shot would hit, all right, but the extremely high magnetic fields it would have to penetrate would almost certainly incapacitate any missile we've got. And second, there's no guarantee even a direct hit would do any good. Just because they don't have FTL drives doesn't mean they're primitives—only that their technology developed along different lines. And don't forget, that ship is designed to bore through the edge of a star at nearly lightspeed.''

''There's one further problem,'' Dr. Roth spoke up. ''Disabling or even disintegrating it at this point wouldn't help us any. The fragments would still hit the sun, with the same consequences.''

There was a moment of silence. ''Then we have to stop or deflect it,'' Evelyn suggested. ''We have to put something massive in its path.''

Nordli looked at Carey. ''General?''

Carey was doing a quick calculation in his head. ''Yes, either would work.

Slowing it even slightly would send it through a less dense region of the photosphere. Assuming, of course, that he stays with his present course.''

''What can we put in his path?'' Nordli asked. ''Could we tow an asteroid out there?''

Carey shook his head. ''Impossible. As I pointed out, he's far off the ecliptic plane. Moving an asteroid there would take months.'' Even as he spoke he was mentally checking off possibilities. Tachships were far too small to be useful, and the only heavy Peacekeeper ships in the System were too far away from the Intruder's path. ''The only chance I can see,'' he said slowly, ''is if there's a big private or commercial ship close enough to intercept him a good distance out from the sun. But we don't have authority to requisition nonmilitary spacecraft.''

''You do now,'' Nordli said grimly. ''The government also guarantees compensation.''

''Thank you, sir.'' Carey touched an intercom button and gave Captain Mahendra the search order.

There was a lot of traffic in mankind's home system, but the Peacekeepers' duties included monitoring such activity, and it was only a few minutes before Mahendra was back on the intercom. ''There's only one really good choice,'' he reported. ''A big passenger liner, the *Origami,* almost a hundred thousand tons. She's between Titan and Ceres at present and has an eighty-four percent probability of making an intercept point on time; seventy-nine if she drops her passengers first. One other liner and three freighters of comparable size have probabilities of fifteen percent or lower.''

''I see,'' Carey said through suddenly dry lips. ''Thank you, Captain. Stand by.''

He looked back up at Nordli. The Executor nodded. ''No choice. Have that liner drop its passengers and get moving.''

''Yes, sir.'' Turning to the intercom, Carey began to give the orders. He was vaguely surprised at the self-control in his voice.

''Well, Shipmaster?'' Lassarr asked.

Orofan kept his expression neutral. ''I have no suggestion other than the one I offered an *aarn* ago, Voyagemaster: that we change course and continue at reduced speed.''

''For six lifetimes?'' Lassarr snorted. ''That's unacceptable.''

''It won't be that bad.'' Orofan consulted his calculations. ''We could penetrate the outer atmosphere of the star without causing significant damage to the system. We'd collect enough fuel that way to shorten the trip to barely two lifetimes.''

''That's still not good enough. I have no wish to join the ancestors before our people are safely to their new home.''

''That can be arranged,'' Orofan said stiffly. ''You and any of the *Dawnsent*'s crew who wished could be put in the spare sleep tanks. If necessary, I could run the ship alone.''

For a moment Orofan thought Lassarr was going to take offense at his suggestion. But the Voyagemaster's expression changed and he merely shrugged. ''Your offer is honorable, but impractical. The critical factor is still the durability of the sleep tanks, and that

hasn't changed. However, I've come up with an alternative of my own." He paused. "We could make our new colony in *this* system."

"Impossible," Orofan said. "We don't have the fuel to stop."

"Certainly we do. A large proportion of this spacecraft's equipment could be done without for a short time. Converting all of that to fusion material and reaction mass would give us all that we need, even considering that we would overshoot and have to come back."

"No!" The exclamation burst involuntarily from Orofan. His beloved *Dawnsent*, broken up haphazardly and fed to a fusion drive?

"Why not?"

His emotional response, Orofan knew, wouldn't impress the other, and he fumbled for logical reasons. "We don't know if there's a planet here we could live on, for one thing. Even if there is, the natives may already be living there. We are hardly in a position to bargain for territory."

"We are not entirely helpless, however," Lassarr said. "Our starshield's a formidable defense, and our meteor-destroyer could be adapted to offense. Our magnetic scoop itself is deadly to most known forms of life." His tentacles took on a sardonic expression. "And if they're too advanced to be subjugated, we'll simply ask for their help in rebuilding and refueling our ship and continue on our way."

Orofan could hardly believe what he was hearing. "Are you *serious?* You'd start a *war* for the sake of only a million Sk'cee—a *million*, out of our eight hundred billions?"

Suddenly, Lassarr looked very tired. "I'll say this one more time, Shipmaster. The voyage, and those million Sk'cee, are my prime responsibility. I don't have the luxury of taking a broader view. By both nature and training I am highly protective toward my charges—if I were otherwise I wouldn't have been made Voyagemaster. Racial selfishness is sometimes necessary for survival, a fact those who sent us knew well. This is one of those times. I will do what I must, and will face the ancestors without shame."

There was nothing Orofan could say—the struggle to follow the honorable path was vital to him as well. But what did honor demand here?

Lassarr gazed at the blackness outside the viewport. "You have one-half *aarn* to choose between our current course and ending the voyage here," he said. "If you won't choose, I'll do so for you."

Heart pounding painfully, Orofan signed assent. "Very well."

One of the nicest traditions still remaining from the days of the old seagoing luxury ships, Chandra Carey thought, was that of the officers eating dinner with their passengers. She delighted in choosing who would join her at the captain's table, always making certain someone interesting sat at her side. She was therefore annoyed when First Officer Goode interrupted a lively discussion on genetics with a call suggesting she join him on the bridge.

"Mechanical trouble?" she asked softly into the intercom. No sense alarming the passengers.

"No, Captain. But you'll want to get up here right away." Goode's voice was

casual—far too casual.

Chandra's annoyance evaporated. "On my way."

She made her apologies and reached the bridge in ninety seconds. Goode was waiting, a message flimsy in his hand. "Get a grip on your guyline," he advised, handing her the paper.

A frown creased Chandra's forehead; it deepened as she read. "This is ridiculous. Drop my passengers and fireball it 'way the hell off the ecliptic? What for?"

"The explanation's still coming in—tight beam, with the line's own security code," Goode told her. "And it's under your father's name, no less." He took the flimsy back and headed toward the navigator.

"Dad?" Chandra stepped to the communications console and peered at the paper sliding slowly from the slot. Sure enough: PEACEKEEPER HEADQUARTERS, EARTH—TO P.L. ORIGAMI: FROM GEN. SANFORD CAREY. Beneath the heading the message was nearly complete, and Chandra read it with a mixture of fascination and horror.

"Well?" Goode asked.

She tore off the paper and thrust it into his hands even as she groped for the main intercom board. For a moment she paused, organizing the thoughts that whirled like Martian winds through her mind. Then she stabbed the "general" button.

"Attention; attention," she said in her most authoritative voice. "This is Captain Carey. All passengers and nonessential crewmembers are to report to the lifeboats *immediately*. There is no immediate danger to the *Origami*, but this is *not* a drill. Repeating: all passengers and nonessential crew report immediately to lifeboats. This is *not* a drill."

The "abandon ship" alarm sounded even as she keyed a different circuit. "Bridge to Power. I want the drive up to full ergs in twenty minutes. Start tying in for full remote to the bridge, too." She waited for an acknowledgment and switched off. "Navigator!" she called across the bridge. "Get me a course to the vector on that paper—" she stabbed a finger at the flimsy Goode had shown her. "I want a minimum-time path to the earliest possible intercept point that leaves us stationary. Any acceleration she can handle, and you can run the tanks. Everyone else: if you're not on flight prep, help get the passengers off. We fireball in twenty minutes. Move!"

The bridge erupted with activity. Chandra sank into her chair, rereading the message carefully. It was hard to believe that the long search was ending like this, with a kill-or-die confrontation that made less sense even than shooting a deadly snake. And yet, despite the danger and irony, she felt a small surge of excitement. The safety of the entire solar system had unexpectedly fallen into her hands—and her father himself was counting on her. She wouldn't let him down.

Glancing up at the chrono, she keyed the intercom. "Captain to lifeboat bays—status report?"

Lassarr returned to the bridge at precisely the appointed time. "The half-*aarn* is past, Shipmaster," he announced.

Orafan looked up from the sensor

monitor he and Pliij were seated at. "One moment, Voyagemaster," he said distractedly. "A new factor has entered the situation."

"I have it now, Orofan," Pliij muttered, both long and short tentacles dancing over the instruments. "Medium-frequency electromagnetic radiation, with severe shifting and aberration. I have a recording."

"Good. Get to work on it at once. And keep the sensors watching for more." Orofan stood and went to where Lassarr waited.

"What is it?" the Voyagemaster asked.

"Signals of some sort, beamed at us every few *aarmis*. The natives are trying to communicate."

Lassarr frowned. "Interesting. Any known language?"

"Unfortunately, no. But there's a great deal of information in each pulse. We may have a preliminary translation in a few *aarns*."

"Good. That'll help us if we need to negotiate for the *Dawnsent*'s repair."

Orofan blinked. "What do you mean? Whether or not we're stopping here is still *my* decision."

"Not any more. I've reconsidered and have decided this is our best course. Further planetary data is coming in, and it now seems likely that there are one or two planets here we could colonize."

Orofan forced calmness into his voice. "You can't do that, Lassarr. You can't commit us to an uncertain war; certainly not one of conquest. Even if they were primitives—which they're clearly not—we would have no right to take their worlds. This is not honorable—"

"Peace, Shipmaster." Lassarr favored him with a hard, speculative glare. "You protest far too much. Tell me, if the *Dawnsent* didn't need to be cannibalized for the required fuel mass, would you be nearly as opposed to stopping here?"

"Your insinuations are slanderous," Orofan said stiffly. "The ship is my responsibility, yes, but I've not been blinded to all else. My overall duty is still to the Sk'cee in our sleep tanks."

"I'm sure you believe that," Lassarr said, more gently. "But *I* can't afford to. The very nature of your training makes your judgment suspect in a case like this. The decision has been made. I've instructed the library to catalog nonessential equipment; disassembly will begin in two *aarns*."

"You can't do this," Orofan whispered.

"I can," the Voyagemaster said calmly, "and I have."

Trembling with emotion, Orofan turned and fled from the bridge.

"That's the last of them," Goode reported from his position at the *Origami*'s helm. He sounded tired.

Chandra nodded, several neck muscles twinging with the action. Two days of two-gee deceleration wasn't enough to incapacitate anyone, but it was more than enough to be a nuisance, and she was glad it was almost over. "That was what, the engineering crew?"

"Right—four lifeboats full. We're all alone, Captain."

She smiled tightly. "Fun, isn't it? Okay. Chaser Twelve just checked in; the Intruder's still on course. Our ETA on his path is four hours?"

"Just under. Three fifty-seven thirty."

She did a quick calculation. "Gives us a whole six minutes to spare. Tight."

Goode shrugged. "I would've been perfectly happy to take the whole trip at two gees and get here a day earlier. But creating fuel isn't one of my talents."

"I'll suggest a tachship tanker fleet to Dad when we get home," Chandra said dryly. "Okay. Number 81 should be our last boat. Fifteen minutes before we arrive I want you to go down and prep it. We'll want to cut out the minute the *Origami*'s in position."

"Roger."

Conversation lapsed. It felt strange, Chandra thought, to be deliberately running towards a collision: strange and frightening. It brought her back to her first driving lessons, to her father's warnings that she was never, *never* to race a monorail to a crossing. He'd hammered the point home by showing her pictures of cars that had lost such contests, and even now she shuddered at the memory of those horrible tangles.

And it was her father himself who had authorized this. She wondered how he was feeling right now. Worse that she was, probably.

Strange how, in the pictures, the monorail never seemed particularly damaged. Would it be that way this time too? She had no desire to kill any of the aliens aboard that ship if it could be avoided. This mess wasn't really their fault.

Six minutes. . . . She hoped like hell the Intruder hadn't changed course.

Captain Mahendra's hands rested lightly on the Situation Room's communications board, showing no sign whatsoever of tension. General Carey watched those hands in fascination, wondering at the man's self-control. But, then, Mahendra didn't have a daughter out there racing the ultimate monorail to its mathematical crossing.

Mahendra turned from the board, taking off his headphone, and Carey shifted his gaze to the captain's face. "Well?"

"Chaser Six reports both the Intruder and the *Origami* still on course. Chasers Eight through Thirteen are still picking up lifeboats. Almost all the passengers are back; about three-quarters of the crew are still out there."

Carey nodded. "How long will the *Origami* have before impact?"

"From now, three hours twenty minutes. Once in place, about six minutes."

Carey hissed softly between his teeth. "Pretty slim margin."

Mahendra frowned. "Should be enough, General. Those boats can handle two gees for ten minutes or so before running their tanks. Even if you allow them three minutes for launching, they can get—oh, three hundred kilometers out before impact. That should be a relatively safe distance."

"I suppose so."

"You seem doubtful," a new voice cut in from behind him. Carey turned to discover Du Bellay had come up, unnoticed, and was standing at his shoulder.

"I'm concerned about those still aboard that ship," the general growled. "They're civilians and shouldn't have to go through this."

"I agree." Du Bellay paused. "I, uh, looked up the *Origami*'s registry data. The captain is listed as a Chandra

Carey."

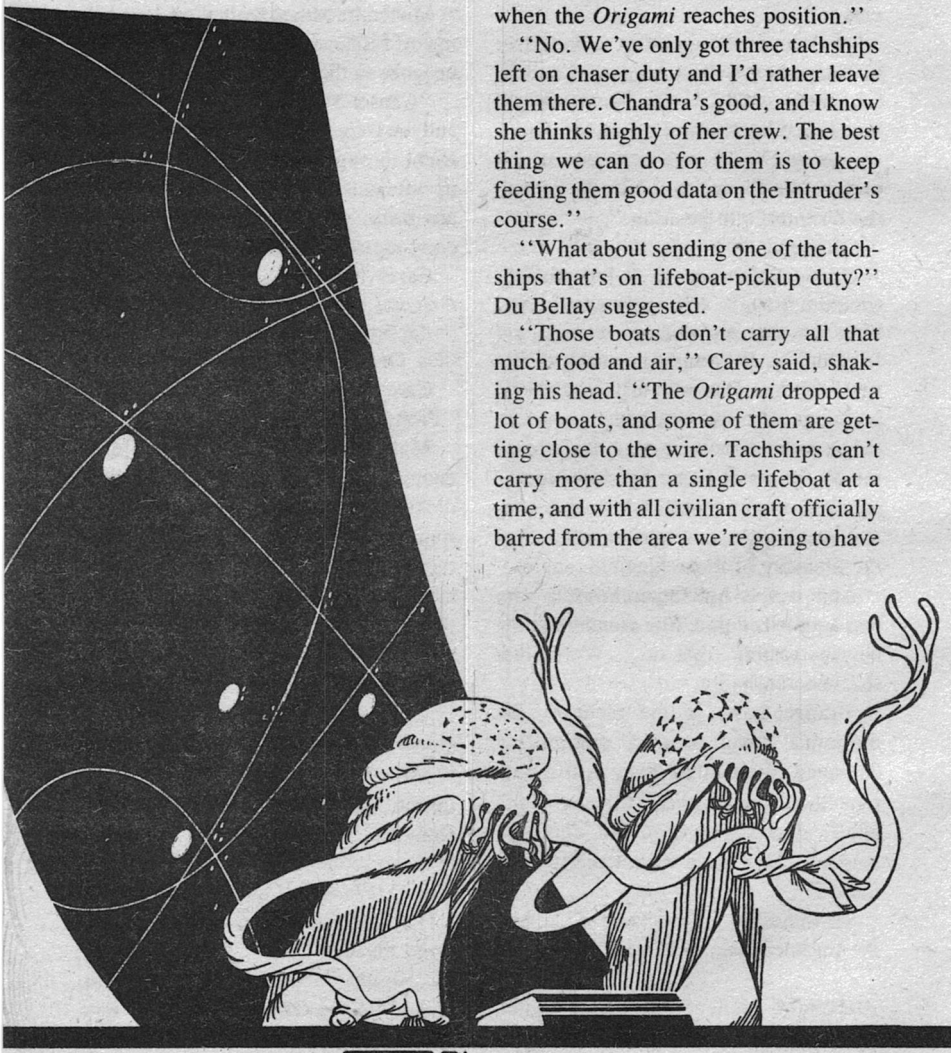
He stopped without asking the obvious question. Carey answered it anyway. "She's my daughter."

"Your daughter, sir?" Mahendra asked, eyes widening momentarily. "I'm sorry; I didn't know." His fingers danced over keys; numbers appeared on his screen. "Sir, we *could* pull a tachship off of the Intruder's path and have it waiting to pick up Captain Carey when the *Origami* reaches position."

"No. We've only got three tachships left on chaser duty and I'd rather leave them there. Chandra's good, and I know she thinks highly of her crew. The best thing we can do for them is to keep feeding them good data on the Intruder's course."

"What about sending one of the tachships that's on lifeboat-pickup duty?" Du Bellay suggested.

"Those boats don't carry all that much food and air," Carey said, shaking his head. "The *Origami* dropped a lot of boats, and some of them are getting close to the wire. Tachships can't carry more than a single lifeboat at a time, and with all civilian craft officially barred from the area we're going to have



enough trouble picking up everyone as it is.'' Both men still looked disturbed, so Carey flashed what he hoped was a reassuring smile. ''Don't worry, Chandra can take care of herself. Captain, what's the status of our attempts at communication?''

Du Bellay drifted off as, almost reluctantly, Mahendra turned back to his board. His hands, Carey noted, didn't look nearly as relaxed as before.

The door opened, and Orofan paused on the threshold for a moment before stepping onto the bridge. Lassarr glanced up from the console where he and Pliij were working. ''Yes, what is it?'' the Voyagemaster growled.

''I'm asking you once more to reconsider,'' Orofan said. His voice was firm, devoid of all emotion.

Lassarr evidently missed the implications of that. ''It's too late. Disassembly has begun; our new course is plotted.''

''But not yet executed,'' Orofan pointed out. ''And equipment can be reassembled. This path is not honorable, Voyagemaster.''

Deliberately, Lassarr turned his back on the Shipmaster. ''Prepare to execute the course change,'' he instructed Pliij.

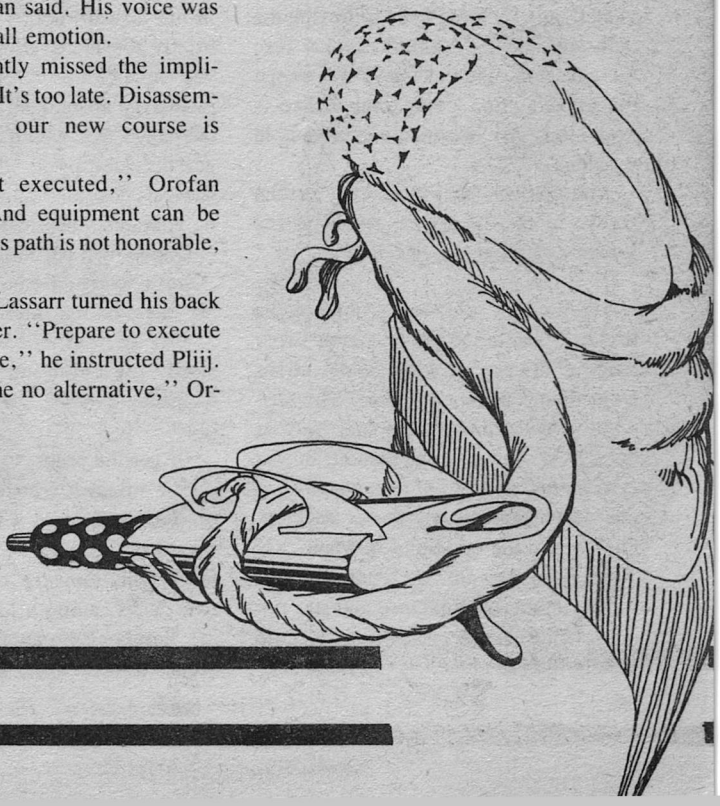
''You leave me no alternative,'' Orofan sighed.

Lassarr spun around—and froze, holding very tightly to the console, his eyes goggling at the assault gun nestled in Orofan's tentacle. ''Have you gone insane, Shipmaster?''

''Perhaps,'' Orofan said. ''But I will not face the ancestors having stood by while war was made against a race which has offered no provocation.''

''Indeed?'' Lassarr's voice dripped with the sarcasm of fear and anger combined. ''And destroying them outright, without warning, is more honorable? A few *aarns* ago you didn't think so. Or do you intend instead to condemn a million Sk'cee to death?''

''I don't know,'' Orofan said, gazing at the screen that showed the approach-



ing star. "There is still time to decide which path to take."

Lassarr was aghast. "You're going to leave this decision to a last-*aarmi* impulse?"

"Orofan, there's barely a tenth of an *aarn* left," Pliij said, his voice strained.

"I know." Orofan focused on Lassarr. "But the *Dawnsent* is mine, and with that power goes responsibility for its actions. It is not honorable to relinquish that load."

Slowly, as if finally understanding, Lassarr signed agreement. "But the burden may be transferred to one who is willing," he said quietly.

"And what then of my honor?" Orofan asked, tentacles rippling with half-bitter amusement. "No. Your honor is safe, Voyagemaster—you were prevented only by force from following the path you deemed right. You may face the ancestors without fear." He hefted the assault gun. "The final choice is now mine. *My* honor, alone, stands in the dock."

And that was as it should be, Orofan knew. In the silence he stared at the screen and made his decision.

Ten minutes till cutoff. Alone on the bridge, Chandra tried to watch every read-out at once, looking for deviations from their calculated course. The *Origami*'s navigational computer was as good as anything on the market, but for extremely fine positioning it usually had the aid of beacons and maser tracking. Out here in the middle of nowhere, six A.U. from the sun, the computer had to rely on inertial guidance and star positions, and Chandra wasn't sure it could handle the job alone.

She reached for the intercom, changed her mind and instead switched on the radio. The lifeboat bay intercoms were situated a good distance from the boats themselves, and Goode would have a better chance of hearing her over the boat's radio. "Goode? How's it going?" she called.

Her answer was a faint grunt of painful exertion. "Goode?" she asked sharply.

"Trouble, Captain," his voice came faintly, as if from outside the boat. Chandra boosted both power and gain, and Goode's next words were clearer. "One of the lines of the boat's cradle is jammed—something's dug into the mesh where I can't get at it. I'll need a laser torch to cut it."

"Damn. The nearest one's probably in the forward hobby room." Chandra briefly considered dropping back to one gee while Goode was traveling, but immediately abandoned the idea. At this late stage that would force extra high-gee decelerating to still get to the rendezvous position on time, and there was no guarantee they had the fuel for that.

Goode read her mind, long-distance. "Don't worry, I can make it. What's the latest on the Intruder?"

"As of four minutes ago, holding steady. At a light-minute to the nearest tachship, though, that could be a little old."

"I get the point. On my way."

The minutes crawled by. Eyes still on the read-outs, Chandra mentally traced out Goode's path: out the bay, turn right, elevator or stairway down two decks, along a long corridor, into the Number Two hobby and craft shop; secure a torch from the locked cabinet

and return. Even with twice-normal weight she thought she was giving him plenty of time, but she was halfway through her third tracing when the drive abruptly cut off.

The sudden silence and weightlessness caught her by surprise, and she wasted two or three seconds fumbling at the radio switch. "Goode!" she shouted. "Where the hell *are* you?"

There was no reply. She waited, scanning the final location figures. Sure enough, the *Origami* had overshot the proper position by nearly eighty meters. She was just reaching for her power controls when the radio boomed.

"I'm back," Goode said, panting heavily. "I didn't trust the elevator—didn't realize how hard the trip back would be. Sorry."

"Never mind; just get to work. Is there anything you can hang onto? I've got to run the nose jets."

"Go ahead. But, damn; this torch is a genuine *toy*. I don't know how long it'll take to cut the boat loose."

A chill ran down Chandra's spine, and it was all she could do to keep from hitting the main drive and getting them the hell out of there. "Better not be long, partner. It's just you and me and a runaway monorail out here."

"Yeah. Hey—couldn't you call for a tachship to come and get us?"

"I already thought of that. But the nearest tachship is only a light-minute out, way too close to get here in one jump. He'd have to jump out a minimum of two A.U., then jump back here. Calculating the direction and timing for two jumps that fine-tuned would take almost twenty minutes, total."

"Damn. I didn't know that—I've never trained for tachships." A short pause. "The first three strands are cut; seven to go. Minute and a half, I'd guess."

"Okay." Chandra was watching the read-outs closely. "We're almost back in position; I'll be down there before you're done. The boat ready otherwise?"

"Ready, waiting, and eager."

"Not nearly as eager as I am." A squirt of the main drive to kill their velocity as the nose jets fell silent; one more careful scan of the read-outs—"I'm done. See you below."

Goode was on the second to the last of the cable strands when she arrived. "Get in and strap down," he told her, not looking up.

She did, wriggling into the pilot's couch, and was ready by the time he scrambled in the opposite side. Without waiting for him to strap down, she hit the "release" button.

They were under two gees again practically before clearing the hull. Holding the throttle as high as it would go, Chandra confirmed that they were moving at right angles to the Intruder's path. Only then did she glance at the chrono.

Ninety seconds to impact.

Next to her, Goode sighed. "I don't think we're going to make it, Chandra," he said, his voice more wistful than afraid.

Chandra opened her mouth to say something reassuring—but it was the radio that spoke. "Avis T-466 to *Origami* lifeboat; come in?"

A civilian tachship? "Lifeboat; Captain Carey here. Listen, you'd better get the hell out of—"

"I know," the voice interrupted. "I eavesdropped a bit on your problems via radio. You're running late, but I'm right behind you. Kill your drive; I think I've got time to grapple onto you."

Chandra hadn't bothered to look at the 'scope yet, but even as she killed the drive Goode was pointing at it. "There he is. Coplanar course, intercept vector, two-five gee. . . ." The blip changed direction slightly, and Chandra realized suddenly that an amateur was at the controls.

Goode realized it, too. Muttering something, he jabbed at the computer keyboard, kicking in the drive again. "Tachship, we're shifting speed and vector to match yours at intercept; just hold your course," he called. "You've got standard magnetic grapples?"

"Yes, and they're all set. Sit tight; here I come."

The seconds ticked by. The blip on the 'scope was coming up fast . . . and then it was on top of them, and the lifeboat lurched hard as the grapples caught. "Gotcha!" the radio shouted. "Hang on!"

And with seconds to spare—

The universe vanished. Blackness filled the viewports, spilled like a physical thing into the lifeboat. For five long seconds—

And the sun exploded directly in front of them, brighter than Chandra had seen it for weeks. A dozen blips crawled across the 'scope, and the lifeboat's beacon-reader abruptly came to life, informing them they were six thousand kilometers north-west-zenith of Earth's Number Twelve navigational beacon.

Beside her, Chandra felt Goode go limp with released tension. "Still with me?" the radio asked.

"Sure are," Chandra said, wiping the sweat off her palms. "I don't know how to thank you, Mr.—?"

"Dr. Louis Du Bellay," the voice identified himself. "And don't thank me yet. If what you did out there didn't work, there's a worse death coming for all of us."

Chandra had almost forgotten about that. The thought sobered her rising spirits considerably. "You're right. Can you get us into contact with Peacekeeper HQ? We need to report in."

"I can maybe do better than that. Come aboard and we'll find out."

They were given special priority to land, and a car was standing by for them at the field.

General Carey was waiting outside the Situation Room. "I ought to pull your pilot's license for going out there against specific Peacekeeper orders," he told Du Bellay half-seriously, even as he gave his daughter a bear hug. "If Mahendra hadn't confessed to helping you get hold of that tachship I probably would. But he's too good a man to lose to a court-martial. Let's get inside; the Chasers have been reporting in for nearly twenty minutes."

Mahendra looked up as the group approached. "Captain Carey and Officer Goode? Congratulations; it looks like you've done it."

Chandra felt a lump the thickness of ion shielding in her throat. "We slowed him?"

"No, but you deflected him a couple hundredths of a second in the right direction."

"Confirmed?" General Carey asked sharply, as if not daring to believe it.

"Confirmed, sir," Mahendra nodded. "He'll be passing through the upper solar chromosphere instead of deep into the photosphere. We'll get some good flares and a significant radiation increase for a few weeks, but nothing much worse than that."

"And the Intruder hasn't tried to correct his course?" Du Bellay asked quietly.

Mahendra's expression was both sad and grim. "No, Doctor."

Puzzled, Chandra glanced between her father, Mahendra, and Du Bellay, all of whom wore the same look. Even Goode's face was starting to change . . . and suddenly she understood. "You mean . . . the impact killed *all* of them?"

Carey put his arm around her shoulders. "We had no choice, Chandra. It was a matter of survival. You understand, don't you?"

She sighed and, reluctantly, nodded. Goode took her arm and led her to a nearby chair. Sitting there, holding tightly to his hand, she watched with the rest of the Situation Room as the computer plot of the Intruder's position skimmed the sun's surface and shot out once more toward deep space. What had they been like, she wondered numbly . . . and how many of them had she killed so that Earth could live?

She knew she would never know.

Behind the *Dawnsent*, the star receded toward negative infinity, its light red-shifted to invisibility. With mixed feelings Orofan watched its shrinking image on the screen. Beside him, Pliij looked up from the helmboard. "We're all set, Shipmaster. The deviation's been calculated; we can correct course anytime in the next hundred *aarns*." He paused, and in a more personal tone said, "You did what was necessary, Orofan. Your honor is unblemished."

Orofan signed agreement, but it was an automatic gesture. The assault gun, he noticed, was still in his tentacle, and he slipped it back into its sheath.

A tentacle touched his. "Pliij is right," Lassarr said gently. "Whatever craft that was, its inhabitants had almost certainly been killed by our scoop before we detected it. You could have done nothing to help them. Refusing to accept the ship's mass at that point would have been dishonorable. You did well; your decisions and judgment have been proved correct."

"I know," Orofan sighed. It *was* true; fate had combined with his decisions to save the system from destruction without adding appreciable time to the *Dawnsent*'s own journey. He should be satisfied.

And yet . . . the analyzers reported significant numbers of silicon, carbon, oxygen, hydrogen, and nitrogen atoms among the metals of the spacecraft the *Dawnsent* had unintentionally run down. Which of those atoms had once belonged to living creatures? . . . And how many of those beings had died so that the Sk'cee might reach their new home?

He knew he would never know. ■

● There is one radical distinction between different minds...that some minds are stronger and apter to mark the differences of things, others to mark their resemblances.

FRANCIS BACON

Jay Kay Klein's

BIOLOG

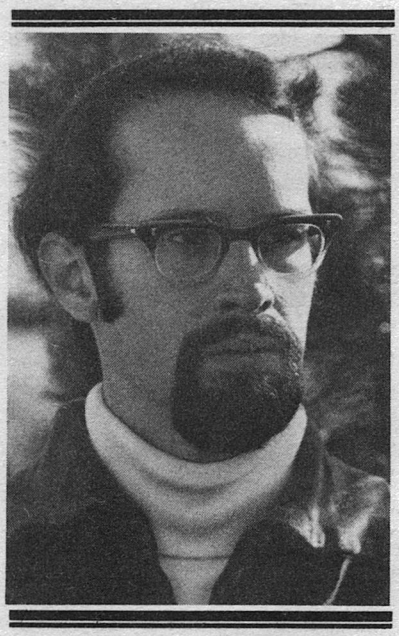
When it comes to "hard science" science fiction, this magazine has been considered the premier showcase since John Campbell became editor in 1937. A trained engineer, Campbell based his particular viewpoint on the practical application of technology. Both technologists and those educated in pure theory found a haven here over the years. The accession a few years ago of an editor with a doctorate in physics probably didn't increase the continuing flow of new writers with scientific backgrounds, but it didn't hurt, either.

Timothy Zahn, another new writing talent with a solid background in advanced theory, had his very first story appear in *Analog* two years ago, in the September 1979 issue.

Tim received a B.S. in physics from Michigan State in 1973, and an M.S. from the University of Illinois two years later. He worked summers at the Fermilab, and continued full-time towards a doctorate at Illinois. After the death of his advisor while his thesis project was halfway through, Tim decided not to go back to square one and a new project, but to try his hand at full-time writing. He had been writing science fiction stories for his own amusement, basing them on colored-pencil drawings he did for relaxation.

Copies of *Analog* with his first published story reached him just in time to be a wedding present and a portent of success. Interestingly, "Ernie" was not about a grandiose facet of nature or a subtle fact of physics but about a human being who had a *very* minor wild talent. A second story in the July 1980 issue was about another human with an even wilder talent. And a third story in the December issue followed quickly, about a virus with its own wild and very deadly talent.

Tim was born and raised in the Chicago area. He started reading science fiction almost as soon as he could handle the alphabet and has continued nonstop to the present. Classical music is his next-favorite activity, preferably listening to something from the nineteenth century or playing it himself on the cello. Now he is bringing the full-time energies that had been spent studying the intricacies of physics to bear on the mechanics of writing. Among other works in hand, a science fiction novel is nearing completion.



Timothy Zahn

THE FUTURE OF FREEDOM

Jerry Pournelle

"Stated most simply, if mankind is to live in the state of material well-being that technology can make possible, then, given the finite size and resources of the planet, there are just too many of us already."

—Philip Handler, President,
National Academy of Sciences,
July 1975

The Limits to Growth, a report to the influential Club of Rome, first appeared in 1972 and may have been the most influential book of that decade. Certainly an entire generation of college students read it, and for many it changed their lives.

Limits to Growth was based in large part on a book that few of the *Limits* adherents had ever seen: *World Dynamics,* an erudite tome prepared by Professor Jay Forrester of the Massachusetts Institute of Technology. Forrester's book gave detailed accounts of a very large computer simulation of the world: its population, resources, food, health services, birth and death rates were all entered into an enormously complex program which proceeded to project all these values into the future.

And lo! Forrester's computer foretold doom. No matter what he did, no matter what assumptions were changed, civilization was coming to an end—possibly as soon as the year 2050. Moreover, technology couldn't save us; indeed, if we increased investment in technology, we merely hastened the end through increased pollution and depletion of our natural resource base. Our best strategy was Zero-growth: stabilize the population by any means possible, cease constructing new industries, learn to live with a declining standard of living; expect less, make do, we have left the era of growth and entered the era of limits.

But that wouldn't save us either: with the most drastic program of birth control and zero industrial growth, most of the world was doomed to perpetual poverty, while Western civilization would itself decay; by the year 2400 or so there'll be nothing left of technological civilization, and no way to rebuild it.

This message was received in different ways by different people. The intent of the Club of Rome (wealthy industrialists all; *they* won't experience poverty no matter what) was that we should learn to accept limits. Governor Jerry Brown of California became the symbol of the "make do with less" movement.

The environmental and conservationist movements became explicitly anti-technology—and generally remain so to this day. However, there was a different reaction by others: "eat, drink, and be merry, for the computers prove there can't be a tomorrow." The "me generation" was born twin to the "era of limits."

Now it is clear that, for freedom to survive, civilization must also. It is all very well to speak romantically of noble savages, but in fact most *real* freedoms are the products of industrial civilization. True: civilization can take away with the left hand what it gives with the right. The transportation system that allows fast travel to wherever you wish can also bring the police where you do not want them—or sightseers onto "your" stretch of the John Muir trail. The fact remains that penicillin, electric lights, oil and gas pipelines, railroads, high-speed dental drills, Novocaine, Xerox, the telephone, transistors, and suchlike have given more people more *real* choices—which is to say real, not theoretical, liberties—than any other development in history. Sanity requires us to find ways to humanize industrial society—but not to abolish it or let it go away. We need technology.

This insight was not lost on politicians of the 1970s. They sought to preserve industrial society through the most explosive growth of regulation in human history. The result has not been universally appreciated; carried far enough it could, one fears, lead to the state de Tocqueville warned of:

"I think, then, that the species of oppression by which democratic nations are menaced is unlike anything that ever before existed in the world; our contemporaries will find no prototype of it in their memories. I seek in vain for an expression that will accurately convey the whole of the idea I have formed of it; the old words *despotism* and *tyranny* are inappropriate; the thing itself is new, and since I cannot name it, I must attempt to define it.

I seek to trace the novel features under which despotism may appear in the world. The first thing that strikes the observation is an innumerable multitude of men, all equal and all alike incessantly endeavoring to procure the petty and paltry pleasures with which they glut their lives. Each of them, living apart, is as a stranger to the fate of all the rest; his children and his private friends constitute to him the whole of mankind. As for the rest of his fellow citizens, he is close to them, but he does not see them; he touches them, but he does not feel them; he exists only in himself and for himself alone, and if his kindred still remain to him, he may be said at any rate to have lost his country.

Above this race of men stands an immense and tutelary power, which takes upon itself alone to secure their gratifications and to watch over their fate. That power is absolute, minute, regular, provident, and mild. It would be like the authority of a parent if, like that authority, its object were to prepare men for manhood; but it seeks, on the contrary, to keep them in perpetual childhood; it is well content that the people should rejoice, provided that they think of nothing but rejoicing. For their happiness such a government willingly labours, but it chooses to be the sole agent and the only arbiter of their necessities, facilitates their pleasures, manages their principal concerns, directs their energy, regulates the descent

of property, and subdivides their inheritances; what remains, but to spare them all the care of thinking and all the trouble of living?

Thus it every day renders the exercise of the free agency of man less useful and less frequent; it circumvents the will within a narrower range and gradually robs a man of all the uses of himself. The principle of equality has prepared man for all these things; it has predisposed them to endure them, and often to look on them as benefits."

—Alexis de Tocqueville,
Democracy in America

We may not yet have constructed that *democratic despotism* de Tocqueville warned of; but surely we have come closer to it than we like.

Yet, say those whose models foretell doom, what is the point of the discussion? Whatever we do, we shall not preserve the present. Slave or free hardly matters: our descendents will inevitably look on this time as a Golden Age, and our wishes in the matter are of little consequence. We must have Zero-growth, not merely of population but also of industry; and we must have it now, while there is yet time.

Or, say those who believe the models but reject the advice, perhaps it would be better simply to eat the seed corn. Why make sacrifices? There is no point in saving, investing for the future; it is not that we wish our descendents ill, we merely know—for Forrester's models have told us—that the future will be grim no matter what we do. Better, then, that we are, if not precisely happy, at least satiated. . . .

And thus liberty has no future: to achieve zero-growth will require stringent regulations, multiplication of government power; while failure to impose the limits will lead inevitably to collapse and death. So say the computers. . . .

But why must we trust computer models constructed by economists? In the real world, economists have yet to make successful predictions for a single nation for a decade ahead; why must we believe them when they forecast for the world over centuries?

In fact, of course, the models are plain wrong.

Interestingly, technology has made it easier to show this. When Dr. Forrester produced his *World Dynamics*, there were in this world few computers capable of running his programs; certainly there were none widely available. Now, though, as technology marches forward, nearly anyone can examine the Forrester models, run them, change them, play about with them. I have recently taught Ezekial, my friend who happens to be a Cromemco Z-2 computer, to run the *World Dynamics* models; and I have found that the model, unaltered, does indeed predict doom.

It is also a *very* limited model. The *World Dynamics* program generally begins in the year 1900. This is sensible, because it requires the model to "predict" the years from 1900 to the present, allowing us to examine how well its results fit the real world. If they don't fit at all, then we have to change the input assumptions.

On the other hand, some of the inputs don't stay the same; even the primary variable of birth rate changes, affected by new technology such as "the Pill." (In 1900 there really wasn't any effec-

tive birth control device.)

Thus the model has "switches": means for drastic changes in some of the input assumptions, the change to take effect at some designated year. You can, with these switches, change birth rates and agricultural returns and capital investment—

But you can't change the natural resource base. That is fixed for all time.

Forrester's models say—not explicitly where you can see it, but deep inside the structure of the program, where it is not at all obvious—that all the natural resources there will ever be were known in 1900, and have been slowly diminishing since. We can slow the rate at which we use natural resources, but we can never cease using them entirely—and we will never have more than we have now.

But that is nonsense.

On July 20, 1969, we heard: "Tranquillity Base here. The Eagle has landed."

And the world cannot be the same now.

On that day, the resource base changed forever. Formerly we were limited to "Only One Earth." Now, we can, if we like, have access to nine planets, fifty moons, a million asteroids, a billion comets, and a thermonuclear generator we call the Sun. Out there in space there are nearly limitless resources—so many resources that even Forrester's models cannot kill us for thousands of years.

Progress is possible. We need only a strategy; a strategy of progress to produce—and distribute—wealth.

With wealth comes freedom and liberty. It is all very well to speak of the freedom of the prisoner and the slave; to sing of the nobility of a man who may be poor, yet he is free; but most of us would feel a great deal more free if we had a great deal more wealth. Certainly that is true of the Third World, of those who literally eat bread by the sweat of their faces, and often can find none, sweat as they will. How is one free if one's children starve as you watch?

But that need not happen, nor need we impoverish the West to save the Third World. There is wealth enough for all. When the great rockets thundered upward from Canaveral, they sang—if only we knew it—of a time of real freedom, of liberty and wealth for all; and though we have retreated from our destiny, it is not yet too late.

I am writing this in January; and at this moment the United States has no space policy; but in late January a task force of aerospace professionals, including myself and my colleague Harry Stine, will meet to draw up a detailed space plan. By the time you read this, a presidential advisory committee will have that proposal. Sometime this spring the committee will recommend a national space policy and a specific space plan.

That plan must be approved by President and Congress; this in a time of inflation, of high interest rates, a time when everyone wants to cut, not expand, the budget. Budget cuts are painful. They are especially painful if the trimmed program has an organized and powerful constituency. Space has no constituency; at least this is the conventional wisdom.

But space does have a constituency.

Gene Roddenberry told me today that he was amazed at the response he received from Oregon farmers at a state fair. My travels and lectures yield the same information. The nation is ready for new goals; we want to be proud again—and space may make profits in the bargain. At the least, space research will broaden the technology base. Belt tightening is all very well, but we *have* to continue investing.

Comes now the commercial.

Tell them in Washington that space has a constituency; a constituency every bit as noisy as some of those other "untouchables" in the budget. Tell them in letters and phone calls. Tell them a simple tale: that you believe an expanded space program would put new heart in the nation.

Find out the names of your senators and representatives, and write them. Today. This afternoon. And if you can't figure out their names, write "My Congressman," care of the House Office Building, putting your zip code on the outside of the letter. Better that than nothing.

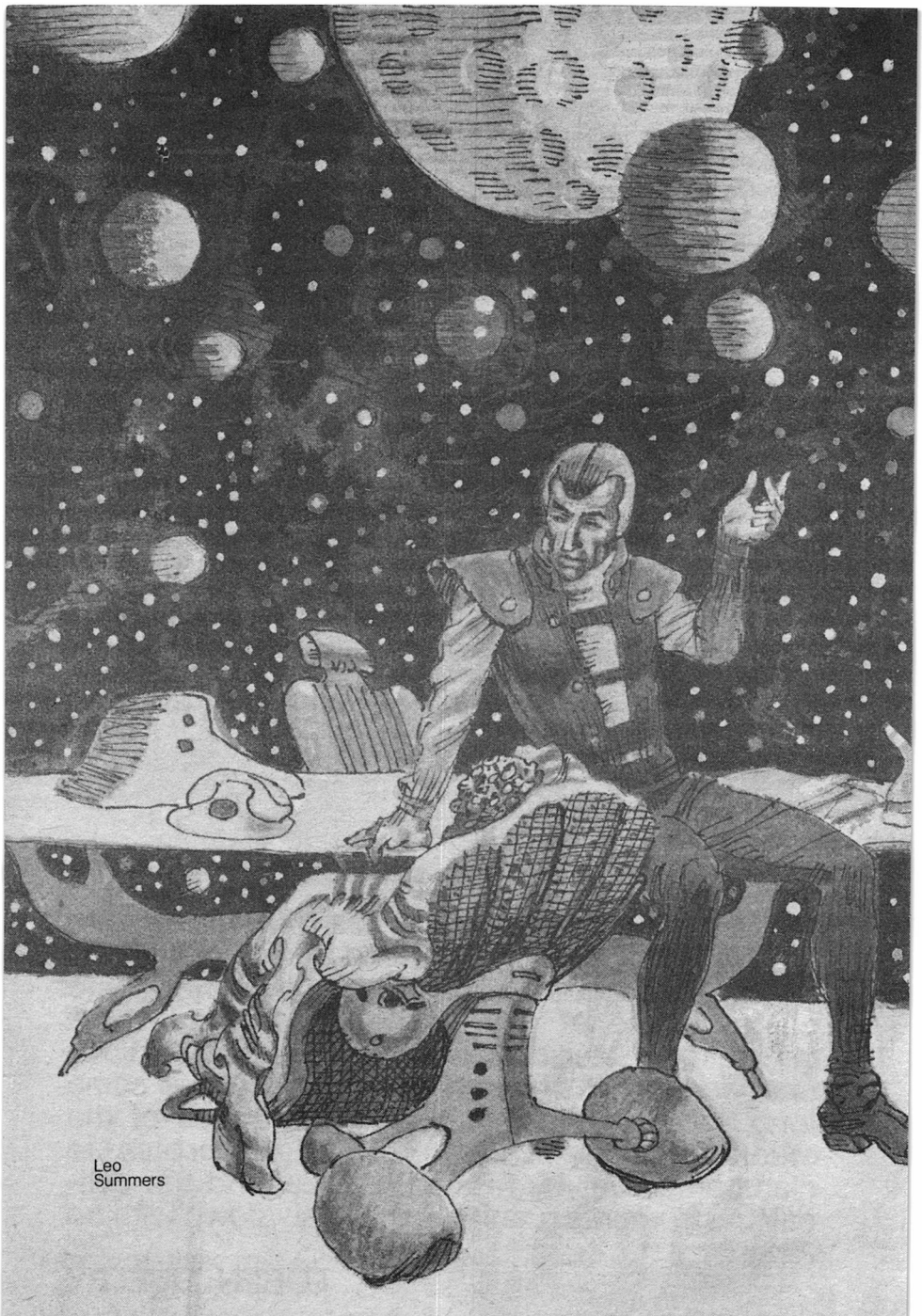
Write the president, too.

Four letters: to your congressman, both senators, and the president. Sixty cents postage and considerably less than an hour's work could have a far-reaching effect. We have a good chance. This administration is not afraid of investment. They're already in favor of space; it remains only to convince them that a noisy and enthusiastic portion of the public wants a renewed space program. A few thousand letters. A small percentage of Analog readership; and the effects may last for centuries.

We of this generation have found the means of grace and the hope of glory; we can, if we have the will, secure the blessings of liberty to ourselves and our posterity—aye, and to everyone's posterity. We can reach the stars. ■

● So deep is the conviction that there must be life out there beyond the dark, one thinks that if they are more advanced than ourselves they may come across space at any moment, perhaps in our generation. Later, contemplating the infinity of time, one wonders if perchance their messages came long ago, hurtling into the swamp muck of the steaming coal forests, the bright projectile clambered over by hissing reptiles, and the delicate instruments running mindlessly down with no report.

LOREN EISELEY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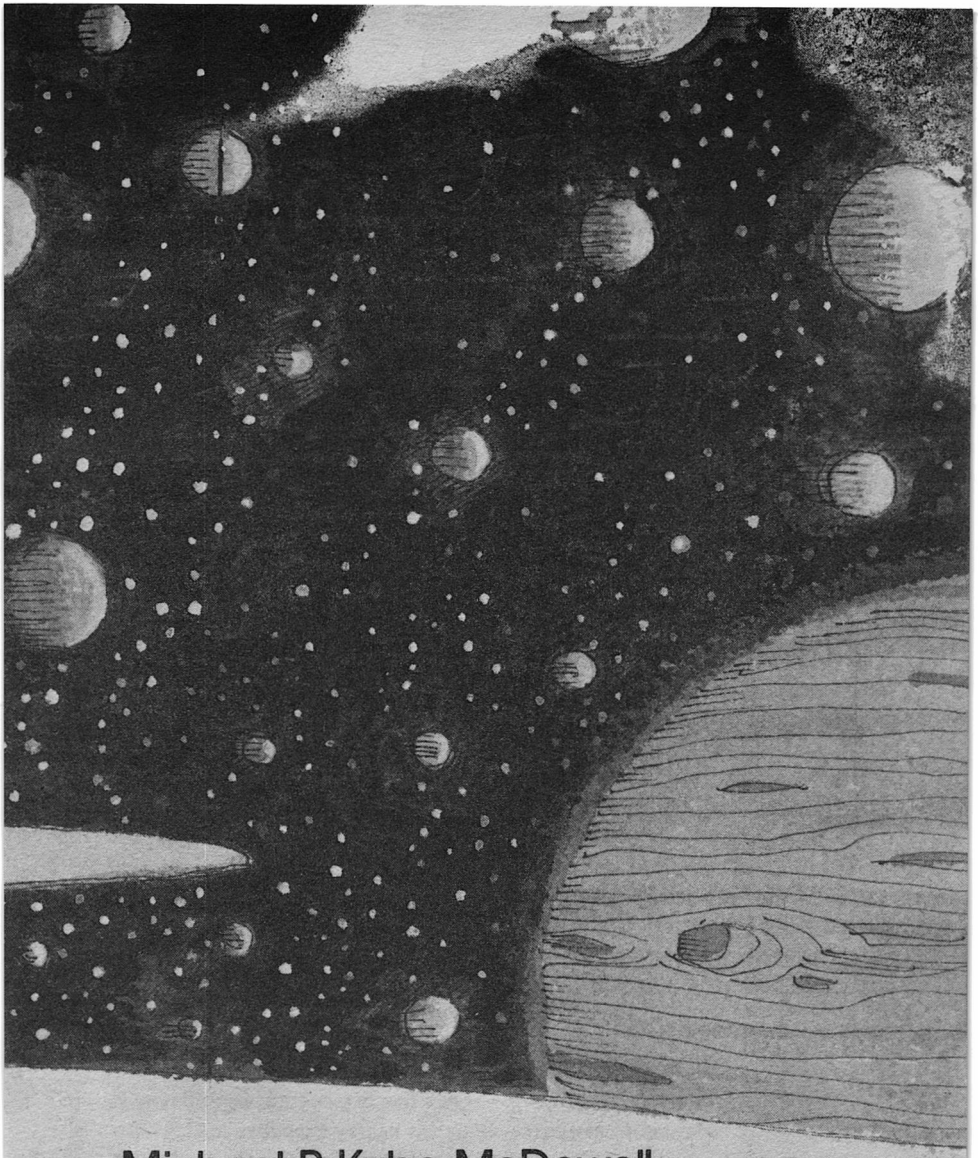


Michael P. Kube-McDowell

A QUESTION OF COMPLIANCE

Decrees from Agencies on High can make it very hard for working folks to get their jobs done. But there are ways....

(IP) [IAPETUS, 6-8-8] THE SOLAR COURT RULED TODAY THAT A PRIVATE BUSINESS MAY NOT DENY EMPLOYMENT TO A MEMBER OF A NON-TERRAN SPECIES ON THAT BASIS. IN A SWEEPING 8-3 DECISION, THE COURT ORDERED EXECUTIVE TRANSPORT, INC., TO REINSTATE WITH FULL BACK PAY ME'IN DKOY, A CETIAN. IN SO DOING THE COURT SENT A STERN WARNING TO THE BUSINESS WORLD THAT EQUAL EMPLOYMENT OPPORTUNITY MUST BE EXTENDED TO NON-TERRANS. IN ADDITION TO REINSTATING ME'IN DKOY TO ITS POSITION AS PUSH ATTENDANT ON PLANETARY SHUTTLE *DECARIS*, EXECUTIVE TRANSPORT WAS ORDERED TO BEGIN AN ACTIVE RECRUITING PROGRAM TO MAKE UP FOR PAST DISCRIMINATION.

—MORE—

LAWYERS FOR EXECUTIVE TRANSPORT ARGUED UNSUCCESSFULLY THAT THE REASON FOR ME'IN DKOY'S DISMISSAL WAS THAT THE GASEOUS BYPRODUCTS OF ITS DIGESTIVE SYSTEM HAD A CORROSIVE EFFECT ON THE HULL OF THE SPACECRAFT, A FACT NOT KNOWN AT THE TIME OF ITS HIRING. A SPOKESPERSON FOR E.T.I. ESTIMATED THAT MODIFICATIONS TO THEIR FLEET WOULD COST AT LEAST $800 FEDERATION AND INCREASE FARES BY TEN PERCENT.

—MORE—

SPECTATORS IN THE COURTROOM WERE ENTRANCED WHEN, FOLLOWING THE RULING, ME'IN DKOY REPEATEDLY FOLDED AND UNFOLDED IN AN EXPRESSION OF JOY. . . .

"Didja see what happened?"

"I was in the john."

"All *I* know is, one moment she's sitting at her desk, the next she's out cold on the carpet."

"I was over at the VDT and all I heard was this little cry, like a scared kitten, then *thump*."

"Where is it now?"

"In Sherrill's office, I guess."

Richard Sherrill stared through his name hologram at the Boötean which had caused all the confusion. Resting in its cart, a rounded mass of pimply protoplasm, it looked more like a plastic carnival imitation of an alien than any sort of sentient being. *What now?* he thought. *I don't know anything about them.*

Then ask me a questiôn, it thought back at him.

"Don't do that!" Sherrill said, startled.

"My apologies," rasped the vocoder hanging on the side of the neural wheelchair.

"Mine, too," Sherrill said, regaining his composure. "We're not used to having ESPers around here."

"And at these wages, you're not likely to get many more." The vocoder squeaked—a laugh.

Sherrill stared, unbelieving.

Not humorous? it asked. *Apologies. I hope this will not affect my employment here.*

"Excuse me," Sherrill said, standing bolt upright. "I'll be back shortly."

Once free of his office, Sherrill homed in on the nearby executive area, scooting past the secretary's grasp, shoving aside a security guard, and barging unannounced into the office of the vice president of corporate affairs.

"Max! I need help. You have to get me out of this!"

The VP, floating near the ceiling in his comfort field, rotated toward his wide- and wild-eyed subordinate. "What's come up, Richard?"

"There's a Boötean in my office."

"Really!"

"A stinking mass of green oatmeal in a rolling sandbox, that's what it is."

"What does it want?"

"Want? A job! What else? Max, what am I supposed to do?"

"Do? Why, interview it, of course."

"Interview it!" Sherrill's face darkened. "What happened with that Executive Transport case? That Cetian couldn't have won that—"

"We were just about to send out the memo," Max said gently.

"Oh, no."

The VP gestured, and on his desk a piece of paper popped into view. It folded itself into a starglider and flew itself point-first into Sherrill's chest.

"New desk?"

"From Arcturus. Micro-grav fields."

"Very cute," Sherrill said. He read the memo:

TRANS-HELICAL LUMINARIES, INC.

Facilities on Five Worlds

To: All Supervisors and Personnel Dept. Staff

In accordance with the recent Solar Court ruling, all employees involved in procurement and placement are reminded that the Corporation firmly supports the principle of equal employment opportunity for all sentient life, regardless of biohazards. Guidelines will be forthcoming as soon as possible. In the interim, every consideration for employment should be given to members of non-Terran races (aliens), as well as continuing our strong efforts in the area of dolphin employment.

Ref: Policy 238-44(b)

"Oh," said Sherrill quietly.

"It's a promotion for you, Ricky. Manager of non-Terran employment. Five Federation more a year. Sell it to 'em, Ricky. You're going to find people who faint, employees who grumble about the smell, pure, primitive, racial hatred. Sure, some of 'em feed on earthers given half a chance, but you've got to show our people that that's just not relevant. We've got to protect those government contracts."

Sherrill swallowed hard and nodded.

"Good boy!"

"Sorry about the delay," Sherrill said, slipping behind his desk. He tapped a few keys on his VDT unit and the wall behind him vanished, to be replaced by a stereo starscape of the Boötes constellation. His visitor cooed.

"Now, let's see about the application," Sherrill mused. "Your proper name?"

The vocoder sputtered and creaked like an electrocuted ant.

"Is something wrong?"

"You asked my name."

"Oh—of course. Ah—could you spell that?"

Five minutes later, Sherrill settled for a recording and went on. "Planet of evolutionary origin?"

It took another five minutes to establish that the visitor's answer (which sounded most like grease on a griddle) referred to Xi Boötes III. "Address?"

A red light flashed on the vocoder, indicating a conceptual barrier.

"Let me rephrase. Where do you live?"

"—In this body?"

"Excuse me?"

"May I scan you?"

Sherrill was dubious. "Well—if you think it will help."

The surface of the creature shivered like Jello under a child's prodding.

"I see," it said finally. "Terrans maintain a compartment as an extended-body territoriality and as a locus for various communication devices. This seems most strange. However, in that concept frame this chair is my address."

Sherrill stared at the Boötean, uncomprehending, then shook his head. "Address 'not applicable.' Well, that takes care of the application."

"Is that all?" The Boötean sounded surprised—or was that indigestion?

"Yes." Sherrill pivoted the VDT screen toward his visitor. "Please read—er, scan, this. It is the company's statement of what we pledge *not* to consider in the applications of various peop—lifeforms. The questions I asked you are the only ones I'm permitted by law to ask."

"I am finished."

"Then let's take a look at what's available," Sherrill said, tapping his input keys. A short list of openings rolled quickly up the screen. "Spaceport stevedore . . . no, that's no good, you have no arms. Are you an oxygen breather?"

"Yes."

"Too bad, that rules out anaerobic processing . . . trench miner, same problem as with the stevedore," Sherrill mused. "No, I don't think receptionist is quite up your alley—ah, here we are. Supervisor of Domestic Advertising. What sort of salary were you expecting?"

"Whatever is fair."

"Whatever's fair, right," Sherrill said, cutting in half the figure he had in mind. "When will you be ready to begin?"

"Immediately, if you wish."

"Fine, fine," Sherrill said, at the same time tapping CLEAR THE HALLWAYS into his console. "Follow me," *you great lump of decaying cookie dough on a motorized card table.*

Security had done its usual efficient job of clearing the halls, and there were no incidents until Sherrill and the Boötean reached the advertising offices. Their entrance caused a great buzz of conversation, but Sherrill ignored it and marched straight to the manager's office.

"Hello, Richard. . . ." The manager's voice trailed off as he spotted the Boötean.

"Howdy, Tom," Sherrill said, plopping into a vacant chair. "I want you to meet your new Supervisor for Domestic Advertising."

The manager stared at Sherrill, then at the creature, then back at Sherrill. Suddenly he burst into great body-shaking roars of laughter. "You're a card, Rich, what a number," he squealed. "You and those guys in Modeling—what is it, inflated?"

"I am pleased to meet you as well," the Boötean said formally.

Instantly the manager's laughter turned into a choking cough. "Is he . . . I mean are you. . . ." he spluttered, purpling.

Sherrill nodded gravely.

The manager sank back into his chair.

"I'll leave you to get acquainted," Sherrill said, rising. The office door had been open, and the buzz of curiosity outside had been replaced by a shocked silence. Even so, as he stepped out of the department, Sherrill heard a gruff last comment:

"Five years ago one of them slithered in here we'd of shot it on sight. Now we supposed to work with 'em. Lordy, what a day."

Look stern as a constipated nun, Sherrill told himself. *Maybe you can make him go away. He looks apologetic. That's hopeful.*

The advertising manager sat down in the big armchair. "Rich, I've got a problem. No, let's make that *we've* got a problem."

Sherrill made his gaze direct and emotionless. "Tell me."

"Well, it's about Dee—that's what we call it, it's the only part of its name we can pronounce. Rich, let me say up front that no one in our department harbors the least bit of prejudice against it. Oh, there was a little squirming in the beginning, but that didn't last long. As a matter of fact, we've found Dee to be a really nice—entity."

"But. . . ."

"But Dee just doesn't have what it takes to work in our area. It's only seen about two hours tri-V, most of that in spaceport terminals over someone's shoulder. It can't tell the difference between the ads and the shows. Besides that, it never dreamed that creatures bought what it calls 'little pieces of reprocessed planetary crust,' and still doesn't get a glimmer of why. We'd like to keep it, really, but this just isn't the right position."

Sherrill nodded, his mouth twisted unhappily. "Transfer?"

"It's for the best."

"All right. Let's see what's up," Sherrill said, turning to his console. He studied the screen a minute.

"Third floor, Building 9," he said finally. "Power room. There's an opening for a systems technician. Take it up there for me, will you, Tom?"

"Morning, Mr. Sherrill." There was something unfriendly in the 'mister.'

Sherrill looked up. Filling the doorway was Toyo Nei, the power room foreman. He cradled a lump of blackened, shriveled metal in one massive hand.

"Dee?" Sherrill asked weakly.

Nei stepped in and closed the door behind him. "Recognize this?" he asked, holding up the lump.

"No."

Nei settled in a chair. "It's what's left of a cross-circuit bar from the fusion overload junction."

"Not supposed to look like that, is it?"

"No," Nei said affably. "It's not."

"Tell me."

"We made Dee the process monitor. Nothing to do but watch a couple dozen displays. We hooked him up with a squawk box to let us know if anything needed attention."

"Go on."

"Know anything about Xi Boötes III?"

"Not really."

"Neither did I, 'til I phoned the library last night. Know about the slime fountains?"

"I may have seen a picture."

"Interesting geology. Basically, when the fountains blow, all is right with the world. They're a stinking mass of natural sludge full of explosive vapors, but to the Boöteans they're food. What's more, when the fountains don't blow, it means earthquakes. So Boöteans *love* pyrotechnics. All hell breaks loose, they're in ecstasy."

"Told Dee what might happen if things got out of kilter, didn't you?"

Nei nodded sadly. "I suppose he just didn't ken that we wanted to stop it from happening."

"How long you going to be down?"

"Three weeks—maybe a month—"

Sherrill turned to his console. "Salary Administration. Building Four."

The rest of the day, Sherrill kept his door shut. It didn't help.

"Hal from Compensation to see you," his secretary paged.

By the time the manager's foot was in his office, Sherrill was already hunched over his console, a muscle in his temple quivering with a nervous tic.

"What is it this time?" he asked over his shoulder.

"Richard, did you know that the Boöteans have a base-seven math?"

"Not until now."

"Before you go looking into your crystal ball, there, let me give you a tip," the money man said, leaning forward conspiratorially. "It'll have to be off-planet."

"Why?"

"Do I have to spell it out? Everybody's got the word, here. They're taking their openings off the ticker. You won't be able to find it a position here unless it's as a desk ornament."

Sherrill did not smile.

"Hey, don't worry about it. It's just as well, right? Maybe we have to hire 'em. But we don't have to make it easy for 'em once they're here."

Sherrill's gaze turned steely cold. "Get out," he said frostily. Later he wondered why.

"Thanks for coming down to see me, Dee."

"My pleasure," responded the creature. "You've been trying to assist me, I know. I have read in others a certain hostility toward you in recent days."

"I'm not surprised."

"I am sorry."

The apology caught Sherrill by surprise. "Not your fault. It's mine—and theirs. Dee, I've been wondering why you want a job at all. You don't own anything; from what I understand you're an autotroph; and I can't really figure out what you plan to use the money for."

"To rejoin myself," Dee said. "I did not leave home by choice. I was banished. They claimed it was for conjugating across class lines. In fact, it was for spreading non-group thinking."

"Are you saying you're a radical of some sort?"

"During communal, I was encouraging further contact with alien races. The higher classes are very much against it, and I persisted in expressing the opinion that it would be interesting. So I was bifurcated, and this part of me sent away. I'm sure they hope I will not last long."

"There's more of you?"

"Approximately four times the volume you see. It is quite docile—being held hostage, in a way. It is their method of reducing my abilities. I may have that portion any time I can pay its fare here and an additional bounty."

"And that's why you need the money," Sherrill mused. "You're in a tough position, Dee."

"Caught between a slime fountain and an earthquake, we say."

Sherrill smiled, and it felt good. Thinking back, it may have been his first smile in three days. "How about accepting a job off-planet? I'm afraid all the local positions have . . . disappeared."

"If it is my only option, I must. But this is the only planet I have been on thus far where I can communicate with my other part without interference. Without that link, I have barely the capacity to converse with you."

"That won't do, then." Sherrill's mind was boggling at last—two bodies, star-to-star mind links, vivisection, and interstellar expatriates. "I need to check into a few things. Will you come back tomorrow?"

"Certainly," Dee said, and with the hum of the wheelchair motors left the room.

"Max—isn't there some way out of this?"

"I'm a little embarrassed to hear you ask, Ricky. Our social responsibility is clear."

"No wormhole? No subtlety of interpretation?"

"Please—Richard."

"Max—look at the facts. Dee's been a flop or worse in three different positions. The employees are hostile, the managers are screaming, and the job opening ticker is blank."

"Have you considered what possibilities are created by its unique aptitudes? Surely a sentient creature can be useful in some way. If we are creative, perhaps even in a special way."

"It's a renegade! It's not even a normal Boötean—not even a whole one! It couldn't make it in its own society. How can you expect it to make it in ours?"

"Richard," the vice president said quietly, "you must realize that your failure to find a satisfactory solution has begun to reflect on your qualifications for your own job."

Stung, Sherrill was silent.

"Do we understand each other?"

"I'm afraid so," Sherrill said, and stalked out.

It was after three by the time Sherrill returned to his office, and everyone had gone home. Everyone, that is, except Dee, who was waiting outside Sherrill's door.

"I said tomorrow," Sherrill said curtly.

"Please."

Sherrill sighed. "What is it?"

"I know that I've done badly. But no one will explain, or help." The vocoder was not programmed to relay emotion, but the words alone made the emotion clear. "I thought perhaps—if someone would just talk to me. I thought perhaps that someone could be you."

"Why don't you just read their minds?" Sherrill said, unsympathetically.

"I have tried. They close off, and your language is still foreign. . . ."

Sherrill sighed again. "Come on in."

Sherrill remained at his desk long after Dee had left, sitting with his feet up and his hands folded, staring through the wall of his office as though in a trance.

His mind wandered from considerations of the vice president's ancestry to vituperations against the Solar Court to recipes involving partial Boöteans, but kept coming back to one phrase: "unique aptitudes." Finally, as the artificial sun in the landscape behind him was setting, an idea took form in his mind.

Jumping to his feet, he ran like an Eridani quillhound through the halls to the law department. With trembling fingers, he entered a question into the computer.

When the answer came back, his cries of "Yes! Yes! Yes!" could have been heard throughout the vacant building.

"Are you certain you wish to do this?" Dee asked.

"Very sure. It's going to work out fine for everyone," Sherrill said. "You finished there?" he asked the woman bending over the console.

"Just now," the technician said, closing her tool case.

"Okay. Dee, the terminal will take voice instructions from your vocoder, or you can direct-input for privacy. I've given you the guidelines, and you'll have the case-by-case specifications. Do you see any problems?"

"No," Dee answered. "You have done for me what no one else seemed willing to—make certain I understood. This task seems clear to me."

"Good," Sherrill said. "And good luck."

Dee wheeled behind its desk. "Thank you."

As he left, Sherrill noted with approval that the namegram had already been changed.

Going directly to the vice-president's office, Sherrill walked in unannounced and turned off the VP's comfort field without warning. The shocked vice-president found himself sprawled on the carpet, looking up at Sherrill.

"A 'satisfactory solution' has been found," said Sherrill.

"Eh . . . good," the VP said, rubbing his elbow gingerly. "What is it?"

"I've resigned. Before I did, I hired Dee to replace me as Personnel Director, Terran and Non-Terran."

"What!?"

"As you'll see, it's the perfect solution. I consulted the corporate law library and found that ESPers represent a loophole in Equal Employment Opportunity legislation. There's no injunction against knowing things such as an applicant's intelligence, experience, or ability—only against asking about them. Dee won't have to ask. And he won't have to guess if an applicant fits a job, or if he'll be content there. It'll all be in his head, too, so there'll be nothing for the investigators to find if someone eventually does complain. Which they won't, because Dee will see that they're happy."

"But why your job? Why not an assistant slot?"

"So that the rest of the company knows that I believe in Dee. They've

written him off, and if I ended up hiring him as my assistant—''

''Our token alien.''

''Exactly. This way they'll know,'' Sherrill said, his eyes sparkling. ''In fact, they'll have to deal with him, every one of them in time.'' He seemed to relish the thought.

''I understand,'' the VP said slowly.

''Good! Not that it would have made any difference if you hadn't.'' Sherrill turned to leave.

''But what about you?''

''What about me? The universe is opening up, and I've been missing out on it,'' he said, starting toward the door.

''Richard!''

Sherrill stopped in the doorway. ''Yes, Max?''

''Stay with us. You're a good man. You're needed here, not out there.''

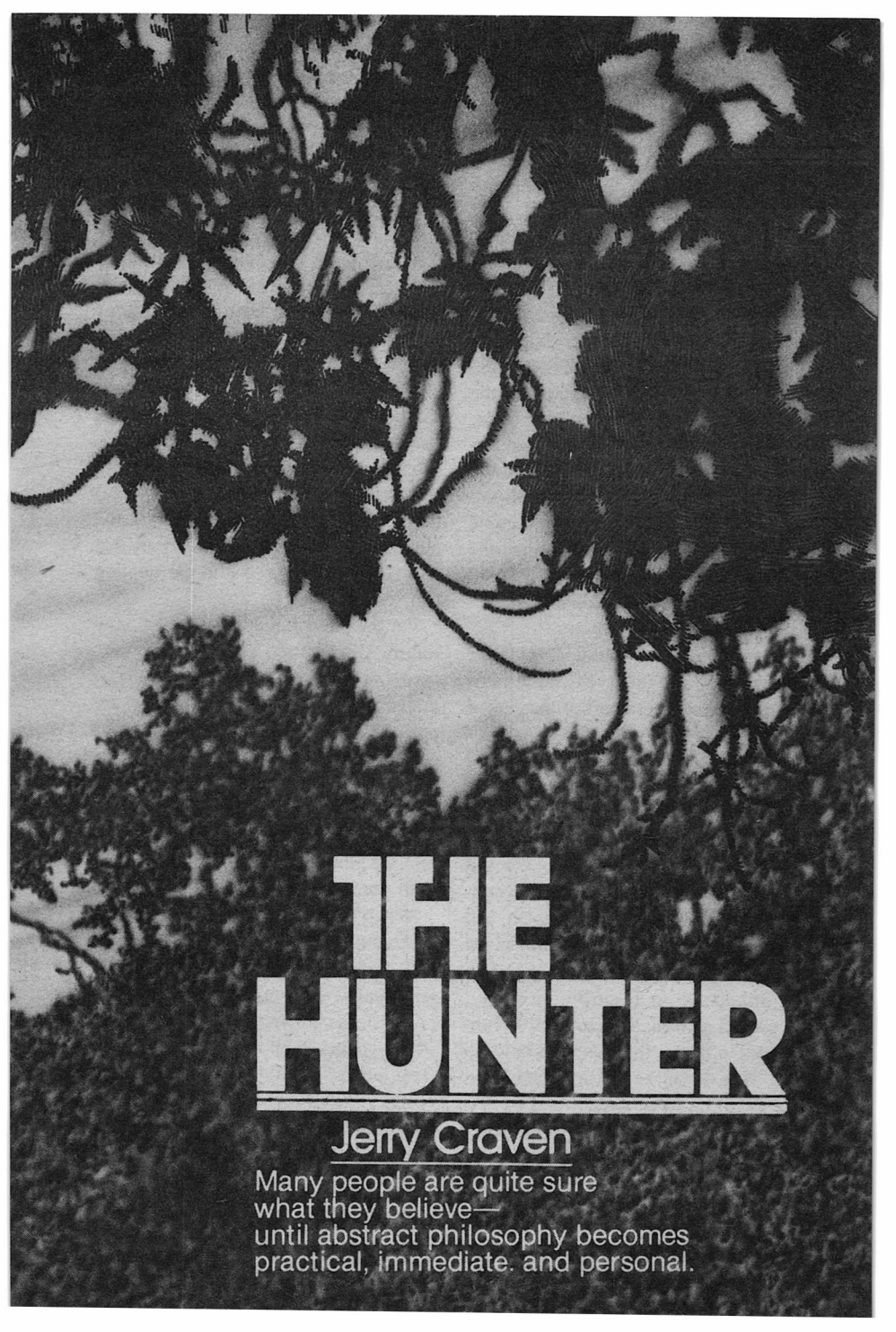
Sherrill smiled. ''You're wrong. I'm needed on Xi Boötes III.''

''Whatever for?''

''To finish a job Dee started.'' He waggled his fingers. ''Bye, Max.''

The sound of his whistling carried back from the hall. ■


Broeck
Steadman


THE HUNTER
Jerry Craven
Many people are quite sure what they believe—
until abstract philosophy becomes practical, immediate. and personal.

Dodd Crowell had smelled a fresh kill, so he was not surprised when he found the body. He was surprised, though, to realize the man's head was gone: severed with surgical accuracy, with not a drop of blood on the ground, nor, apparently, any remaining in the body.

Crowell circled what was left of the blue-skirted Indian, reading the signs so as to reconstruct the actions taken by the killer. Likely the Indian had been in the mango tree, waiting for birds. Crowell noted the long bow and the antler-tipped arrow, used only for birds. Someone had killed the Indian instantly, and his body had fallen to the spot where Crowell found it; tracks under the tree showed that. Two people had removed the head and drained the blood: two people with unusually small feet. "Cultists," Crowell said with disgust.

He had read about similar incidents, only they all had involved cattle mutilations in the western part of the United States. As he recalled, various parts of the cattle were cut away, and all blood of the animal removed. Though no one knew for sure who killed the cattle or why, Crowell was positive it was the work of some screwball cult composed of people wealthy enough to use helicopters and discreet enough not to kill people in an area where they might get caught. Thus they chose this Indian in the Orinoco River Basin.

Crowell cursed the crowded condition of the planet that forced him to go such long distances to find good hunting, to find a place undamaged by civilization. And now this, he thought, disgusted with the cultists. The two who killed the Indian were probably women, judging from the size of the footprints. It bothered him that even in so remote a spot, people—worse, women—could come with ease to ruin the wilderness.

Crowell examined the body to see what was used as the murder weapon, but could find nothing except for a puncture wound on one leg, something the man could have received in the fall. Either he had been shot in the head or hit with a tranquilizing dart, Crowell decided.

He dragged the body into the brush so Brooks wouldn't stumble across it. Brooks had changed in the past few years, and Crowell regarded him with some contempt, friend or no friend. No doubt Brooks would want to report the incident to the authorities, and all that would do would be to ruin the hunting trip.

On the chance that the killers would return, Crowell set a trap with a piece of nylon cord and a springy limb on a guava tree beside the place in the underbrush where he had hidden the corpse. Should anyone investigate what had been dragged into the brush, the curious party would be unceremoniously hoisted, feet first, two meters into the guava tree. He hid the trap well with vines and leaves.

When he got back to the plane, Crowell found that Ramón Nuñez, his pilot and guide, had finished setting up the tents and was doing some repairs on the plane's engine. Brooks was at the edge of the camp where the savanna met the river jungle; no doubt, Crowell thought, ogling some ridiculous flower. This was hardly like the old times, the good hunting trips of the past when Eldon Ray Brooks was nearly as good a hunter as

he. Brooks had made them both famous with his writing about their hunts. Then he turned into a bleeding heart liberal, gave up the hunt, and restricted his writing to scholarly works on language and his stupid tropical flowers. Professor Brooks, Crowell thought sourly: linguist and expert on pansies. Crowell thought that if he got the man back into the jungle, maybe the raw power of the wilderness, the vivid closeness of the laws of the survival of the fittest, would jar him back to his senses and he would get back to hunting animals instead of orchids.

So far his plan looked like a failure. Brooks didn't even want a hand gun for the trip. He agreed to go along partly out of friendship and partly because he thought he might find some rare orchids, and now he seemed to be sticking to his search for flowers.

At dusk Nuñez built a fire. The three men sat around the camp, sharing a simple meal. "You told me in the plane," Nuñez said, "that you got permission from the Venezuelan government to hunt deer and cats, *verdad?*" Nuñez spoke with an accent but clearly enough.

"Yes," Crowell said.

"The deer we eat," Nuñez said. "I understand that. I have killed such animals when I was hungry. But *el tigre?* What good is it to hunt *el tigre?* In my country we leave the big cat alone, unless it kills a man. Then we hunt it down. Twenty, maybe fifty men track it, sometimes for days. It is not something we enjoy, and no one eats *el tigre*." The musical cadence of Nuñez's English had a pleasing Spanish flavor, and he left the last sentence on a high note, making it sound like a question.

"It is more than just food," Crowell said. "I hunt the deer for many reasons. For a challenge. To live out my basic nature as a predator, to satisfy an itch in the blood for making a good kill, a need we have inherited from the killer apes we evolved from."

"Bull," Brooks said.

"And some other good reasons," Crowell went on, ignoring Brooks. "I eat the deer out of respect. And I take his head or his horns, if he is an unusual specimen. The cat I hunt for sport, for the danger of it. Both animals are made stronger by hunters, since the cleverest escape death and reproduce, while the ones who die by the hunter's bullet cannot then pass on their faulty genes."

Nuñez pondered that, struggling for understanding. "And you, *Señor* Brooks, do you hunt only flowers?"

"I was once very like my friend Dodd," Brooks said musingly. "Hunt, hunt, kill, kill. I was lucky. I quit before an animal bit back." He leaned toward Crowell and knocked a couple of times on the lower part of Crowell's left leg. "While you, old buddy, are slowly turning to plastic." He went on to explain his joke: Crowell had lost his leg up to his knee to an Egyptian crocodile. "But you would never know it to see him walk. Or hunt."

Nuñez chuckled appreciatively. "Why did you quit hunting?" he asked.

"Crowell hunts because of ancient monkeys," Brooks said. "I don't hunt because of a modern monkey. A red howler, to be exact."

Crowell, who had heard the story of the red howler several times, excused himself. He picked up his rifle and headed toward the river.

"It was along the river jungle near *El Tigrito*," Brooks went on to Nuñez. "Twice I stalked a big buck and was about to get close when the red howlers started screaming. I accepted losing those kills as just bad luck. But the third time, after hours of tracking, I had the buck in my sights when the monkeys howled. That time I got angry. Something moved high up in a mango, and I fired at it almost without thinking. A dark shape fell out of the tree, so I pushed through the bush to see what I hit. When I got to the clearing under the mango, I saw this red howler sitting on the ground, bleeding from a hole I had put in his side. That monkey was like a child, the way it muttered and fussed over the wound. The poor thing was picking up scraps of leaves and sticks and putting them on that hole in its side, trying to stop the blood." Brooks's voice became strained and emotional. He fell silent.

Nuñez, embarrassed, offered a change of subject: "*Señor* Crowell should not go into the river jungle at night."

"It was the last animal I killed," Brooks said. "I couldn't let it suffer like that. After I squeezed off one more shot, for a clean kill—as Crowell would say—I put up my hunting rifle for good."

"Tomorrow," Nuñez said awkwardly, standing to turn away from Brooks's show of emotion, "I finish cleaning the carburetor on the plane, unless *Señor* Crowell wants me with him for the morning hunt." He retreated to his pup tent.

Snapping out of his reverie, Brooks called after Nuñez, "I could help you with that, if you want. I used to help my father keep his crop duster in repair."

Crowell made a circuitous route toward the river, staying in areas where there was no undergrowth to wade through. The river was only about fifteen meters from camp, and most of the way was clear, so he had no trouble finding his way with his flashlight. The sound of something moving in the brush made him switch off the light and stop dead still. He heard the movement again, off to his left and coming toward him. Crowell had excellent night vision, and there was enough moonlight filtering through the trees to allow him to see forms and shadows. Something flew in front of him, about knee level. It gleamed like a white bird, only it moved much faster than any bird. He heard it crash into the bushes off to his right. A missile, he told himself—something thrown at him, perhaps. He aimed his rifle toward where the object had come. Something struck him on his lower leg, rocking him back and causing him to stumble. Crowell lit up the bushes with rifle fire and made a hasty retreat.

Brooks and Nuñez met him at the edge of the camp, alarmed and full of questions. Crowell assured them that all was well. "A fish turned on the river," he said. "I took a few pot shots at it."

In his tent Crowell examined his artificial leg. A white spike protruded from the plastic, a crystalline object that looked vaguely like quartz. It was about three decimeters long. Crowell wrapped a hand towel around it and pulled it out. Its point was razor sharp and glistened with moisture. He went out to find

Nuñez. "Should we keep a watch tonight?" he asked.

"*Sí señor,*" Nuñez said. "We take turns watching the camp and the plane. Some blue-skirts live in this area, but they will avoid us. But *ladrones*—men who steal, men who run from the law—these can be found almost anywhere." Satisfied, Crowell saw to it that the night was divided into shifts.

Around midnight Crowell was awakened by a commotion. He grabbed his rifle and crawled out of his small tent. Nuñez, who was standing watch, was slapping the ground in front of Brooks's tent with a stick. The moon was directly overhead, so Crowell could see fairly clearly.

"Bats," Nuñez explained. "*Señor* Brooks, come out of your tent. I think maybe you bleed." Brooks crawled out, eyes heavy with sleep.

"Whatzit?" he asked. "My shift?"

"Sit," Nuñez said. He switched on a flashlight. "Let me look at you." Puzzled, Brooks complied. "*Sí, sí,* it is here. Look, *Señor* Crowell. The bats made a meal on his leg."

"What?" Brooks said, suddenly wide awake, staring at the bloody spot below his knee.

"Vampire bats," Crowell explained. "Nuñez killed, let's see . . ." he shone his light on the ground, "three of them. You move fast, Ramón. Good work."

"This is a nightmare," Brooks said. "And I slept through it. I didn't feel a thing."

"They have teeth like needles," Crowell said. "They make a clean wound, then bunch around their victim and lap the blood like dogs drinking water. The little rats are quite subtle. I would be surprised if you did feel anything." Nuñez applied a bandage and first-aid cream. "Usually," Crowell went on, "they feed on cattle or deer. The whole flock of them on one animal. Always, it seems, they pick the weakest—the very old or the young or the diseased—and they come back night after night until the animal dies. It's a ghastly habit they have, drinking blood. But they actually serve the animals they victimize by eliminating the weaker ones from the genetic pool."

"And that, I suppose," Brooks said, "makes me one of the weak and undesirable, to be eliminated from the genetic pool. By flying rats. I need to hang a sign on my tent that I have had a vasectomy." Crowell laughed, enjoying, as he usually did, his friend's sense of humor. But this time he wondered if perhaps the bats had, in their blind way, made the right choice.

In the gray beginnings of morning Crowell awakened with a start, realizing he had not been called for his turn at standing watch. He pulled on his boots and crawled out of the tent, rifle in hand. "Nuñez?" he called. "Brooks?" Ashes of the fire still glowed. Dew on the tents reflected the pre-dawn sky. Crowell loved the smell of the air, the cool morning, the jungle that began just a few meters away. All seemed well: the plane on the edge of the savanna where Nuñez had parked it; the three pup tents lined up in military exactness, facing the jungle that followed the great river. Brooks was still asleep; Nuñez was nowhere to be found. Crowell headed for the area the three of them had agreed upon as serving as the latrine.

It was there that he found the body. What was left of Nuñez lay upon its back, headless. The same small footprints he had seen around the Indian surrounded Nuñez's body, and, as Crowell expected, all of the blood had been drained from the body.

Before investigating any further, Crowell awakened Brooks. "Get your boots on and get out of there," he said. "We have some real trouble." While Brooks struggled out of the tent, Crowell rummaged through the plane for his pistol.

"Here," he said, offering it to Brooks.

"No thanks," Brooks said.

"Take it," Crowell said, shoving it into Brooks's belt. "You will be glad to have it when you see what they did to Nuñez."

"Who did?"

"The cultists. Come on." He led Brooks to the body.

Brooks took one quick look and retreated to the camp. Crowell shrugged and examined the body by himself. The only wound he found was a hole in one leg, a few inches below the knee. Crowell took the crystal spike from his pocket and tried it in the wound on Nuñez's leg. It fit exactly. Next he examined the footprints, noting with satisfaction that he could follow them.

Back at camp, Crowell was disgusted to find Brooks weeping. Brooks looked up at the stern disapproval on Crowell's face. "He was my friend," Brooks said with a touch of anger. "And if you had any decent human feeling, you would cry, too."

"There is no time for that," Crowell said. "Get on your feet and help me track down the people who killed him. They left a trail a mile wide, and there is a chance they are still around."

"Who are still around?"

"The members of that crazy cult who butchered our pilot," Crowell said with impatience.

"We ought to leave that to the authorities, Crowell. That is not our job."

"By the time they got here, the killers would have hopped in their chopper, or whatever they flew here in, and be gone. And it is our duty. Besides, what else are we to do? Nuñez has taken the engine apart, hasn't he? That leaves us without a functional plane."

"All he did was take the carburetor apart, and I can repair that, though it might take a while. It has been years since I have tinkered with an engine. And I can fly us out of here. Taking off on this savanna will be very like taking off on the Texas prairie on my father's ranch."

"Fine, Brooks. You repair that engine. Later. Right now, let's go hunt down these killers. Just like we did that man-eating lion, remember? You helped me shoot that big female cat, or have you forgotten? This will be little different. I think it was women who killed Nuñez, judging from the footprints. How will killing them be different from killing the lioness?"

"It would be murder, Crowell."

"Not murder. Revenge. And self-preservation. Hell, they could go for us next. And even if they didn't, it would be our duty to rid mankind of such parasites."

"I refuse to be judge, jury, and executioner."

"Then," Crowell said with a sneer, "you stay out of it. I'll track them

down."

"And you'll love it because it will be a hunt, one helluva challenging hunt, with you the hero doing your moral duty for mankind."

"That's right," Crowell said hotly. "My moral duty. You stick to your books and pansies. Me, I'm going to track down that human slime and kill it."

"Could you really do that?" Brooks asked. "I mean, it's fine to talk about it in the abstract. But when it came right down to killing them, could you pull the trigger? They are people, Crowell. Women, maybe."

"My hand will not shake." He glared at Brooks for a few chilling seconds, then went to the plane. With tin snips from Nuñez's tool box, he cut the aluminum backing off one of the seats. Then he sat on the ground, shredding a couple of shirts.

"Don't worry, Brooks," he said with sarcasm. "I didn't hurt the plane." He wrapped the strips of cloth around his good leg from his knee to his ankle, forced the aluminum around the cloth bandage, and pulled his pants leg down. "For protection," he explained. "Those bloody women seem to shoot their poisoned darts at the lower legs." He got up and left without further elaboration.

Tracking the killers was easy; clearly they did not expect anyone to be looking for them, Crowell decided, or they would have taken some care to cover their tracks. The trail led into the jungle, then roughly parallel with the river westward. When Crowell realized he had come to within about thirty meters of the clearing where he had found the dead Indian the day before, he decided to take the time to check his trap.

At first, Crowell thought he had caught some sort of sloth, or an anteater. But when he got closer, he saw his mistake: the animal hanging in the tree looked more like a human child than anything else—a twelve-year-old wearing a suit made of silver-gray scales. It looked dead, suspended by one foot from the guava tree, its eyes milky and staring.

Before lowering it to the ground, Crowell removed its belt. Hanging from the belt were four crystalline spikes and a metal rod about the size of a pencil. Once he had it on the ground, Crowell examined his catch more closely.

Its oval face was strikingly human, except for its whiteness, its lack of lips, and those chalky, glazed eyes. Protruding slightly from the hole that no doubt served as its mouth was a yellowish tongue-like knob of flesh. As Crowell examined the facial features of the killer, the tongue-like thing rippled and vanished, and its mouth became a straight line, like a well-healed incision. "It's still alive," Crowell said in surprise. Its eyes vanished under white lids. Crowell quickly bound its hands and legs with the nylon cord from the trap, dragged the body over to the guava tree, and tied it in a sitting position to the trunk.

Its eyes fluttered open, revealing briefly that glazed, milky look, and then cleared, as what Crowell took to be some membrane-like substance rolled back from the eyeballs. It looked intelligently, analytically at Crowell. "What kind of freak are you, you murdering little shrimp?" Crowell demanded.

"Shrimp?" the thing said. A thin line

of short, yellow hair that ran brow-like over its eyes wrinkled into a frown, and its eyes briefly milked over. "Sea animal, low on the food chain, eaten by the dominant species." Its brow ovaled in alarm. "I am not a shrimp," it said.

"You're not exactly a Goliath," Crowell said. "Why did you kill the blue-skirt?" He pointed to the brush where he had dragged the Indian's body. "And why did your buddies murder my pilot? Why did you cut off the heads? What did you do with the blood?"

The thing shook its bald head in amazement, its brow raised. "You want information from me?" it asked. "Could you possess conscious awareness?"

"I'll ask the questions," Crowell snapped. "Why did you kill the Indian?"

"The one in the tree?" Its voice was high, like a child's, and it pronounced each syllable distinctly, though without any foreign accent that Crowell could detect. "As the gray owl hunts mice, so the one in the tree hunted the gray owl. We hunted the one in the tree."

"And me," Crowell asked, "are you hunting me also?"

"Yes. Last night I thought I brought you down, but I must have missed."

"What kind of pervert are you?" Crowell asked. "Where are you from, freak?" Crowell concluded that the tiny being was an aberration of nature: a mutant, maybe, suffered to have freedom by some well-meaning parents who now, perhaps in ignorance, supported it with enough money to allow it its murderous games. The little guy, soured by his physical deformities, took out his hatred of the normal world by killing and mutilating. So it wasn't a cult after all that was responsible for the cattle mutilations in the western states, Crowell thought: it was an insane freak.

"I come from a star system that is further than you can imagine," the freak said. "Why do you question me? Why do you keep me alive?"

"Star?" Crowell asked, startled. He considered the possibility and quickly rejected it. "So you practice up on cattle back in the States, then come here for some human blood," Crowell said, more to himself than to the freak. "Your parents should have sought psychiatric help instead of giving you the means to do as you want. You are sick, hunting down and killing human beings. Sick."

"We came to do you a service," the freak said. "You have passed optimum population for your world, and you are on top of the food chain. We come in place of what your species lacks: a benign predator to keep your population in check. And we come for the adventure of it. Not unlike the one in the tree who sought the bird."

"I'm going after the others," Crowell said decisively. "Your cronies killed my pilot. I'll decide what to do with you later." He checked the knots to make sure the freak wasn't going to get away. "Your buddies," he asked, "are they armed? I mean with firearms, not just your toy poisoned darts."

"Yes. But don't go after them. They will kill you."

"Isn't that what you tried to do last night?" Crowell asked with sarcasm.

"Yes. But that was before I had communicated with one of you. Your level of awareness suggests that you have

some rudimentary moral sense that might be based on conscious and self-conscious thinking. If that is true, we perhaps should not take your life."

Crowell laughed. "You are crazier than I thought." He turned without another word and went back to trail the murderers of Nuñez. Their tracks led him through the jungle several kilometers parallel to the river. When he found older tracks mingled with the newer, he became more cautious, knowing he was nearing their camp. He kept expecting to find larger footprints, but the tracks remained small, suggesting to Crowell that the freak had hired only women, or perhaps men who were of his own stature or smaller so as not to aggravate his sense of inferiority.

When the proliferation of marks on the ground indicated their camp was dead ahead, Crowell began circling, edging closer with great caution. When he got to the edge of the clearing, he saw the ship.

It was a dull metallic cylinder about three meters in diameter, something Crowell had never seen before. But he was sure it was some sort of ship. The two creatures he had been tracking were working around a tiny table on the ground beside the cylinder. They looked identical, Crowell realized with a start, to the freak he had left tied to the guava tree. Then they really were aliens: one such freak might be born on this planet, but not three. And then there was that cylinder that was obviously some sort of space ship, or maybe a shuttle craft from their ship. In any case, Crowell thought, these were the monsters who had killed his pilot.

He took careful aim and fired two shots in rapid succession. The creatures fell without a sound. He waited to see if others might emerge from the ship; then, risking the assumption that he killed the only two there were, he ventured into the clearing.

First he examined the two creatures, seeing with a grim nod that he had blown away the major parts of their heads. Then he examined the table.

"Nuñez," he said aloud, involuntarily stepping back. The two aliens had been doing something with human heads: one was what he took to be that of the Indian, the other clearly taken from his pilot.

Crowell tried to get into the ship but could not find a door. By the table he found an object he decided had to be their tool box. He picked it up, glanced briefly at the heads on the table, and started back to his camp.

The heads, he told himself, were trophies, and the blood. . . . He stopped walking, startled by the thought. Perhaps they drank the blood, just as people sometimes ate the flesh of the animals they killed.

Crowell, unlike Brooks, was not an introspective man. But he wasn't stupid, either. Brooks once told him that he chose such an active life because he found that easier than thinking. It had been said in a moment of anger, so Crowell dismissed the charge. But later, in one of his rare moments of self-analysis, he decided that there was some truth to the statement. While he was busy with his quest to avenge the death of his pilot, he had done little thinking, relying instead upon assumptions and stock responses. But now that his immediate purpose was accomplished, the

facts crowded in upon him, and the facts did not support his assumptions.

The freak and he had much in common. That thought made Crowell's mouth taste sour. Hadn't he, just the day before, been aware of the overcrowded condition of the planet? He had complained of people encroaching upon the wilderness, making it necessary for him to travel to another continent to find a good place to hunt. The freak alien simply used an extension of his own logic defending his love of hunting. To be completely consistent, Crowell thought, he should have offered the murderous aliens his services in hunting humans, instead of snuffing them out as he had done.

Crowell sighed, impatient with himself, and resumed his trek toward camp. Killing animals and killing people were not at all the same, he told himself. But he was aware that he made the assertion without complete conviction.

When he drew near camp, he veered off toward the river to check on the alien he had left tied to the guava tree.

But the clearing was empty. Crowell looked nervously around, then, remembering he had disarmed the alien, examined the place where the alien had been tied.

The nylon cord was still there, but in many pieces. It had been melted in a number of places instead of cut.

Back at camp, Brooks listened to Crowell's story without comment. He looked skeptical, but fell to examining the tool box rather than expressing doubt. "These soft places on the ends must be the key to opening it," Brooks observed. He tried pushing them separately, to no avail, then tried them simultaneously. Instead of opening, the small silver box began speaking a melodious, unbelievably foreign language.

Crowell jumped. "That's the voice of the freak alien," he said. "It must be some sort of radio."

"I don't think so," Brooks said. He pressed on the end of the box and the voice stopped, then resumed, this time in another language. "Russian," Brooks said. He pressed again, and again the language changed. "Spanish, this time." He listened for a few seconds. "Dodd, this is some sort of recording machine. There's no telling what all it does, but right now, it is giving lessons in speaking Spanish. I thought that was what was going on when it spouted some Russian, but my own Russian is too rusty for me to be sure. You say the alien told you it was here to hunt people?"

"You believe me now?" Crowell asked, a note of satisfaction in his voice.

"You always learned as much about your game as possible so you could reduce risk in the hunt and so you would have a better chance of making your kill," Brooks said. "It would make sense that these hunters would do the same with their quarry." He pressed both ends of the box twice in rapid succession, and, as he suspected it would, the box fell silent.

"What about this device?" Crowell held up the metal pencil-like object he had taken from the alien.

"Likely a weapon. Or a tool. Look, Dodd, we need to take this box and clear out of here before that thing comes. We have enough evidence in the recorder box to convince anyone of the danger that humanity is facing."

"A weapon?" Crowell looked closely at the metal object. "There is a tiny button here," he said. "Wouldja look at that! A light beam only three or four decimeters long." He picked up a stick and sliced it in half with the beam. "A laser scalpel. I'll bet this is what they cut the heads off with."

"Dodd, did you hear what I said?"

"Only it would take at least two megawatts of power to operate a tool like this." He continued slicing up the stick. "How do you suppose they get that much power into such a little place? And how does the cutting beam cease being operative just a few decimeters out?"

"Dodd Crowell, would you put that away and listen? What we have here is a threat to humanity that is really serious. We need to get away with the warning."

"I heard you." Crowell turned off the tiny laser and put it into his pocket. He looked directly at Brooks, taking note of his greasy hands, then glanced at the plane. "You have been working like the proverbial Turk to get that engine fixed so you could scram out of here, away from whatever killed Nuñez. And now that you know what did him in, you want to run like a scared rabbit. Did you get the plane fixed?"

"Don't be unfair. And no, the plane is not back together; that will take me about another hour. But we don't have an hour, Dodd."

"No need to rush. We can warn the rest of the world in our own good time, if we decide to."

"*If*, Dodd? *If?* Do you realize what a threat this is?"

"To the rabbits of the world, yes. But we are not rabbits, Brooks. We will survive. Those killers get only the unwary and the weak—like I do in my hunting." Crowell looked at Brooks with contempt. Surely, he thought, the vampire bats had picked the right victim when they entered Brooks's tent.

"In that case," Brooks asked, "then why do you go after the biggest bucks with the most horns when you hunt deer? You go for the strongest, not the weakest, and you thus hurt the species instead of helping it."

"What I hear you really saying," Crowell said, ignoring Brooks's argument, "is that you want to get away from here so you will live. Warning the world is secondary. But you need not worry as long as I am around. I killed two of them already, remember."

"That is precisely what has me worried, Dodd. You killed two of them."

"So?"

"So what did you do when the lioness killed a member of our party?"

"What did *I* do? You mean what did *we* do. It was a man-eater. We hunted it down and killed it."

"Exactly," Brooks said. "And would you go after a man-eating lion with a bow and arrow? You killed two hunters. The third one will give up those tiny darts and come after you with his version of an elephant rifle, and if there is anything left of you, you can bet that your head will be displayed on some distant world as an example of a killer human." Brooks looked objectively at Crowell. "In a way," he said, "there is some poetic justice here. Dodd Crowell, world-famous hunter, will be hunted down and made into a trophy." He offered the pistol Crowell had pressed on

him earlier. "Take it," he said. "You will need all the help you can get. You flatter yourself to think you could protect me. It is your presence that puts me in danger. My bet is that the alien will be here shortly, and if he finds you here, we are both apt to die. But we have a remote chance if you escape from here. And I would be a fool to go with you."

Crowell, glaring, took the pistol and put it under his belt. Brooks's words had a maddening logic to them. Running did seem best for the moment. But he didn't like it. "You are stupid, Eldon Brooks," Crowell said evenly, keeping his anger controlled. "I will get away. You will be among the first of the weaklings to be eliminated. Unless, of course, you decide to come with me for protection. Besides, even if the alien did get lucky and kill me, he would look you up to keep you from warning the rest of humanity."

"I doubt that," Brooks said. "Do you care if the deer population knows if you are hunting them? If the aliens are as like you as they seem, they are in actuality unconcerned with us as anything but objects of sport, for all the rhetoric about doing us a service by controlling our population."

Crowell decided to waste no more time talking with Brooks. He gathered some supplies and stuffed them into a backpack. At the edge of the camp he paused. "This is your last chance to come with me," he said.

"Thanks, but no," Brooks said. "You do what you have to. I plan to stay right here and work on the engine so I can fly out of here."

"What will you do when the hunter shows up?" Crowell asked.

"I will handle that in my own way."

"You will be killed," Crowell warned, turning to go. "At least try to hide for a while," he threw back over his shoulder. As he left, he was aware of being glad not to be saddled with Brooks. Not only that, he thought, but Brooks's staying behind could delay the alien.

He had tried, Crowell reflected. He had brought Brooks out here in one last attempt to bring him to his senses, to make him back into the strong, agressive person he once seemed to be; but that had failed. He will die, Crowell decided, the foolish, passive man that he is. And perhaps he deserves to die.

But Crowell felt confident that he was a survivor. He strode through the jungle feeling the same sort of excitement he always felt when he started on a dangerous hunt: confidence that he would succeed, and sure that success would be evidence enough that he ought to succeed.

Brooks watched Crowell go, then took off his shirt and got back to the business of repairing the plane's carburetor.

When the alien hunter showed up, Brooks put down a wrench and held out his hands. "I am not armed," he said.

"So I see," the hunter said. "And the other one, the killer, has run from me." He approached the plane. Brooks noted the crystal spikes hanging from its belt and the small tube it held in one hand.

"Will you hunt him down and kill him like an animal?" Brooks asked. He was struck by how childlike this hunter seemed, though he knew the being to

be dangerous.

"Are you not afraid?" the hunter asked. "Why did you stay?"

"I am afraid," Brooks confessed. "All creatures dread annihilation. But I reasoned that if I ran, you would overtake me and kill me. The hunters I know among our own people find no sport in killing a sitting duck."

"You think well," the hunter said, knitting the line of hair that served as its brow. "It makes me wonder if we were right to open your world to hunting."

"It is wrong to kill us," Brooks said quickly, encouraged by the hunter's hesitation. "How would you feel if some technologically superior race came to your world to kill you for sport?"

"If we bred our population so large that we were on the brink of racial suicide, I would welcome such a race," the hunter said. "Though I personally dislike killing beings who possess consciousness."

"Doesn't our technology make it evident we are conscious beings? Doesn't our language?"

"Not at all." The hunter turned away, looking at the ground as if searching for tracks. "Many species of animals are abundantly clever and yet do not possess consciousness."

Evidently, Brooks thought, *they mean more by that than we do.*

"Then stay and talk with me. Maybe I can convince you so your kind will not come here again to kill at random."

The hunter, circling, picked up Crowell's trail at the edge of the camp. "That wouldn't matter to most who will come," he said. "It matters only to me." He started off in the direction Crowell had taken.

"Then you must spare Crowell—the one you are hunting now," Brooks said, catching up with the hunter.

The creature stopped and turned to him. "It killed two of my friends," the hunter said.

"Because they killed two of his friends."

"That is different."

"Is it?" Brooks asked. The alien considered that for a moment.

"Perhaps not," it said, then turned to resume following the trail Crowell left.

Crowell followed the edge of the jungle for several kilometers, then sought the cover of the trees. After walking for what he estimated to be two kilometers through the underbrush, making no real attempt to hide his trail, Crowell headed straight for the river. At the water's edge he made sure he left a clear footprint pointing toward the water, then pulled himself into the branches of a tree. Climbing on intertwining branches, he managed to move through several trees until he was nearly ten meters from the bank of the river. He dropped softly to the ground, and, taking care to cover his tracks, he moved carefully toward the savanna at the edge of the jungle. His plan was to risk traveling in the open so as to put some kilometers between him and the hunter before ducking back into the brush, where he would again attempt to cover his trail, just in case the alien had not been fooled into thinking he had swam the river.

A few meters from the savanna, Crowell heard some crackling sounds, and two small trees in front of him top-

pled. He retreated hastily, but did not get far before the crackling noise stopped him again. This time he saw the bright beam that cut through the jungle ahead of him. It looked like the blade of the laser knife he had experimented with back at camp, only the beam was very long. It flashed for only a second or two, and Crowell could judge what direction it came from by the effect it had on the vegetation, though he could not see its source. He turned to his right, in a panic, and ran as fast as his artificial leg allowed until he regained control of his nerves.

He turned again toward the river, but the beam again flashed in front of him. Crowell spun around and ran toward the savanna, but was stopped by the crackling laser slicing through the jungle ahead of him. It was then that he realized that the hunter was playing with him, moving him about as it pleased, herding him in a particular direction.

He tried again to find the source of the laser, but that was not possible. So he complied with the wishes of the hunter, hoping to outrun his pursuer. After about fifty meters of moving as fast as he could through the brush, Crowell tried again to head toward the river.

This time he met no interference from the deadly beam. This time, he thought, he might really swim the river. There was the danger of piranha, though he knew that was slight at that time of the year. Just as his hopes were rising, he stepped into the trap.

It was a simple, primitive spring device that shot a metal rod through his artificial foot, sending him sprawling to the ground. Crowell sat up and examined the trap. It had been set cleverly about six decimeters below ground level and covered with leaves. The shaft of the rod that had penetrated his artificial foot was chained to something under the ground. Crowell had not seen anything exactly like it before, though he himself had hunted various animals with spring traps that clamped his victim's paws.

It was impossible for him to remove the shaft from his ankle, so he rolled up his pants and began hastily unfastening the artificial limb. One of the leather straps was tied in a square knot, and, in his haste, Crowell broke a fingernail. The alien would be near, he knew, so he had to get free fast. He bent over and took the knot in his teeth to jerk it loose. Crowell thought fleetingly of a fox that had once chewed off its own paw in order to escape a trap he had set. The fox had gotten away, he remembered as he loosened the knot between his teeth. But he had shot it the next day.

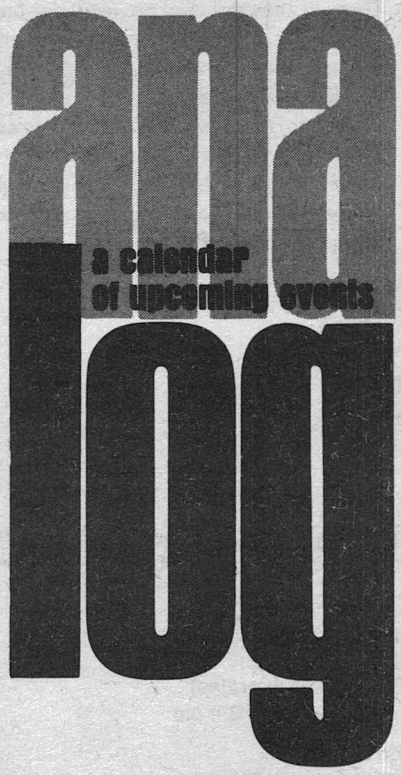
Using his rifle for balance, Crowell hopped toward the river. In the middle of a small clearing something struck him in the leg. He stumbled, caught his balance with the rifle, and turned to look behind him. The hunter stood not five meters away. Crowell tried to raise his rifle, but his muscles did not cooperate, and he could feel numbness creeping through his body.

As he fell, Crowell caught a glimpse of the crystal spike protruding from his leg, above the knee. He came to rest on his back, paralyzed except for his eyes. He was aware of the sound of the hunter moving toward him, and of another sound.

It was the unmistakable drone of a

small plane. *Brooks!* he thought. The plane crossed the corner of his range of vision, low enough so that he was certain it was Brooks. *So Brooks got away*, he thought with a mixture of astonishment and anger. *Brooks is the survivor, while I am trapped by the hunter*. The alien must have used some unfair technological advantage in tracking me, Crowell thought. *And my artificial leg slowed me down*. He became aware of the sound of the plane. *It's unfair*, he wanted to shout: *unfair*.

By the time the alien knelt beside him, Crowell was no longer able to move his eyes, but in his peripheral vision he could see the hunter activate its laser scalpel. ■



5-7 June
PHRINGECON II (SF fringe fandom conference) at Ramada Inn, Phoenix, Ariz. Movies, video, art, dealers, costume contest. Info: Phringecon II, PO Box 128, Tempe AZ 85281.

7-12 June
American Nuclear Society Meeting at Miami, Fla. Info: Nils Dias, Nuclear Science Center, Gainesville FL 32611.

13-15 June
ADVENTION '81 (South Australia SF conference) at Hotel Oberoi Adelaide, Adelaide, S.A., Australia. Guest of Honour—Frank Herbert. Info: Advention '81, P.O. Box 98, Rundle St., Adelaide, SA 5000, Australia.

15-18 June
Second Annual National Computer Graphics Conference at Baltimore, Md. Info: NCGA, 2033 M Street NW, Suite 330, Washington DC 20036. 202-466-5895.

17-19 June
Third National Educational Computing Conference at Denton, Texas. Info: Dr. Jim Poirot, CS Department, North Texas State University, Denton TX 76203.

14-16 August
STUCON 1 (German SF convention) at Stuttgart, West Germany. Sponsored by Science Fiction Club Deutschland. Guests of Honour—Marion Zimmer Bradley, David A. Hardy, Helmut Gabriel. Registration (U.S.$)-$18 after 1 February 1981. Info: Jurgen Mercker, Eichenweg 24, D-7016 Gerlingen, West Germany.

2-7 September
DENVENTION II (39th World Science Fiction Convention) at Denver Hilton, Denver, Colorado. Guests of Honor—C. L. Moore and Clifford Simak; Fan Guest of Honor—Rusty Hevelin; Toastmaster—Edward Bryant. This is the SF universe's annual get-together. Professionals and readers from all over the world will be in attendance. Talks, panels, films, fancy dress competition, the works. Join now and get to nominate and vote for the Hugo awards and the John W. Campbell Award for Best New Writer. Info: Denvention II, P.O. Box 11545, Denver CO 80211. 303-433-9774.

—ANTHONY LEWIS

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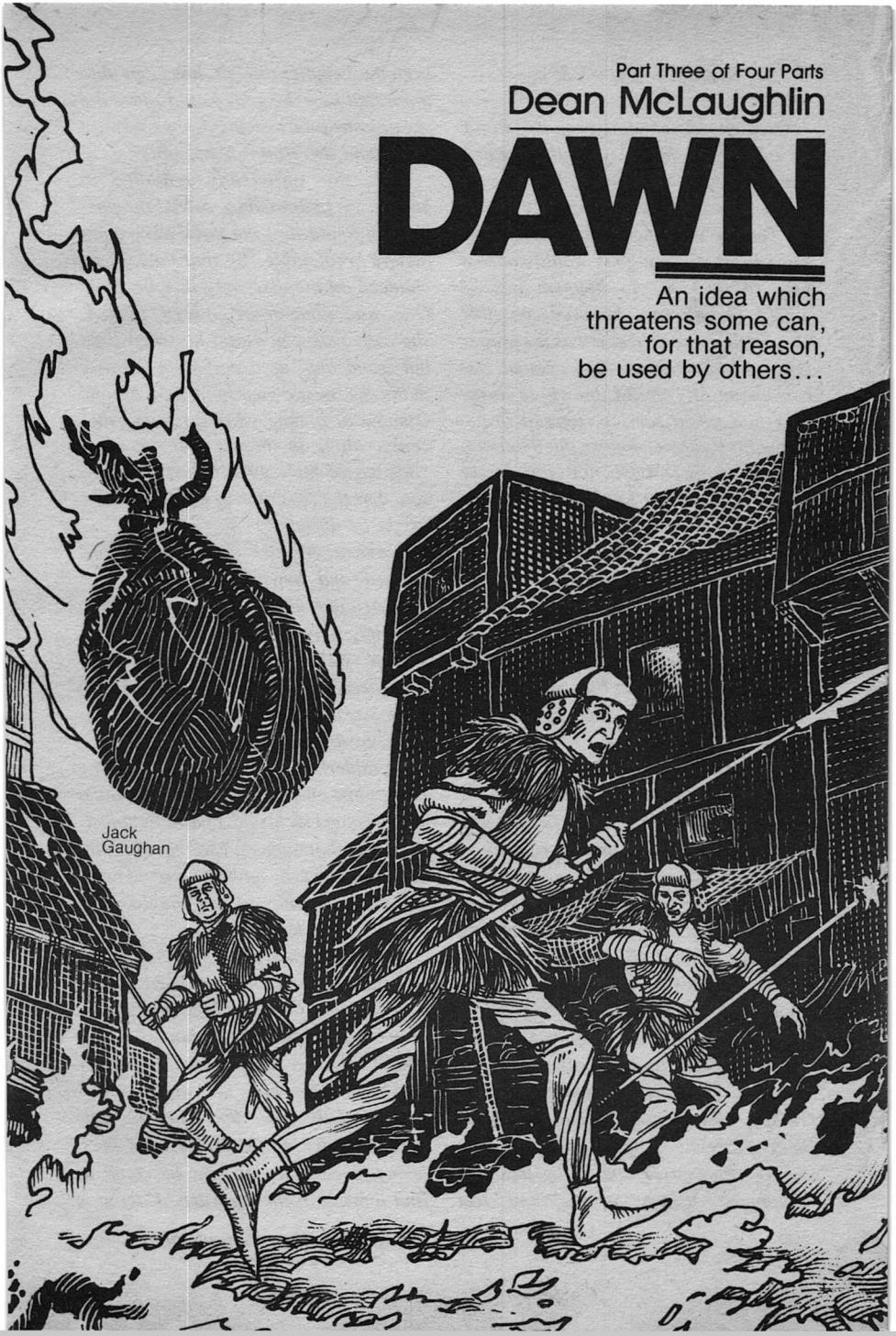
Part Three of Four Parts

Dean McLaughlin

DAWN

An idea which threatens some can, for that reason, be used by others...



Jack Gaughan

On a world nameless because, so far as its people know, no others exist, young ISAK, an informally trained scribe, thought he needed only to tell the Temple's Council of Brothers of his foretelling that the gods would cause a time of darkness to happen and he would be believed, honored, possibly rewarded. In any case, it was the proper thing to do. Dubious and cynical, the heirophant ARTANEEL, at whose shrine Isak had taken service, agreed to arrange his audience before the Brothers.

Neither SEDMON nor the lesser Brothers, nor their Legate Priest, BALCHIN, are impressed. Since never in memory have the gods permitted to happen even a moment during which at least one of them did not stand in the sky, watching and giving light, the possibility that such could happen is beyond belief. And Isak has admitted the foretelling came to him by rational thought, not revelation.

The power of the Temple is based on knowledge. No man doubts that the gods control the world's seasons and its climates, the tides and the run of eels in the river, and that they reveal their intentions for the world by how they stand in men's sky; the ever-changing sequence of their rising, the constantly shifting angles of divergence of their shadows from the foot of a shadow post, and by how far those shadows extend. Equipped with its Archives of records reaching back many generations, the Temple and only the Temple can produce a foretelling of the likely prospect for an enterprise, be it agriculture, commerce, fishery, or the hunt. Not even the Temple, though, has been able to foretell how the gods would share the sky at some future moment; the gods are gods, and therefore unknowable.

Isak, not sufficiently schooled to know it was impossible, solved the puzzle. He found that the gods were completely predictable. By that course, he chanced on the discovery that the Pale One, who alone of the gods (if, indeed, she truly was a god) did not shed light but stood only as a perfect white disc in the sky, would pass in front of Actinic Gamow at a time when he stood otherwise alone in the sky; all the other gods would have gone below the horizon. For the first time in memory, there would be darkness.

Scorned by the Brothers, disappointed and bewildered, Isak begins with Artaneel the long walk down into the city. Artaneel scolds him for his naïveté. Before they reach the foot of their descent from the Temple's height their way is blocked by a squad of Temple Guards accompanied by an ambitious underling from Artaneel's shrine who points out Isak as the false prophet and Artaneel as his advocate. Artaneel, who until that moment had thought himself in no hazard, having done no more or less than a hierophant should, tries to flee and is killed.

Taking advantage of the confusion, Isak escapes, killing a Guard in the process, and finds uncertain refuge as a prisoner/guest in the household of PALOVÁR and his pregnant daughter KALYNN. They hide him in an underground vault under the watch of their aging servant, HOBUR. He tells them of his foretelling and how he came to find himself in their garden. Kalynn is

sympathetic, perhaps because she broke a pot over his head while capturing him. Palovar is more skeptical.

Quickly, Isak discovers they are involved in a conspiracy against the Temple, something he had never imagined possible. To be against the Temple was to be against the gods; and how could a man be against the gods? For their part, Palovar is not sure Isak is a genuine fugitive; he might be a provocateur in the Temple's service. Even if genuine, they warn, men higher in the conspiracy may decide that to keep Isak carries too great a risk; still scouring the city, the Guards might search the house again and find him, while releasing him for possible capture by the Guards would entail a similar risk. The Guards might persuade him to talk before they split his tongue, the fate of false prophets.

"You would kill me," Isak says.

A third possibility exists, Kalynn's suggestion: he might be useful to the conspiracy. To explore that question, he is visited in his hiding place and sharply interrogated by two persons whose importance to the cabal is suggested by the fact that they come masked. One, identified by Kalynn's tongue-slip as EB, shows himself to be a formally trained scribe; the other, just as obviously, is a man of power among the conspirators, perhaps the leader himself. Though he is nameless, Isak comes to think of him as HIS LORDSHIP. As they depart, still undecided—for Isak has told them much that Eb must investigate—Kalynn lingers behind; she has noticed how Isak has passed his idle captivity scratching notes in the grease on serving boards on which his meals were brought, trying by careful thought to extend his understanding of the gods. She offers to bring waxboards, possibly even some parchment and writing tools.

"I would like that very much," Isak says.

It is the beginning of an awkward, ambiguous relationship. Though not permitted out of his hiding place, he is now more guest than prisoner, she more hostess than jailer. Except for Hobur, she is the only person he sees, but she spends much time with him. They talk. He teaches her how to read a post's shadows, and she brings him readings from the post in the garden. He discerns that the post's marker tiles are incorrectly positioned, and teaches her how to calculate the corrections. She is a quick and eager student, curious about the gods and almost everything else. Yet it is she who explains to Isak how his foretelling threatens the base of the Temple's power; it would suggest the gods are displeased with how the Temple has used that power. And Isak has to concede corruption is not absent from the Temple.

She considers even that an understatement.

"You hate the priests," he says.

She admits the truth of it. Then she tells him why, tells him how, by accident of having caught a priest's eye at the wrong moment, she was chosen bride of the gods on the occasion of Red Bethe's most recent overtaking of Blazing Alpher, was conducted through the ceremonies of observance at the Temple, drugged, and finally raped repeatedly by that same priest and possibly others, becoming pregnant as a result.

That to have been chosen bride of the

gods might be considered an honor does not impress her. Suitors who might have contested for her at bride auction have turned their attention elsewhere. Her self-worth injured, she asks Isak if he would have lost interest, as they had. Wanting neither to hurt nor speak a word that is not truth, Isak protests he has not so much as a farthing.

"But if you had a farthing?" she asks.

He insists the question is meaningless. He has no coin. He is a fugitive whose tongue the Temple would split, and whom the cabal might kill for lack of knowing what else to do with him.

"We'll just have to do something about that," she says.

Knowing death is likely and fearful that his discoveries about the gods would be lost—would the gods wish that to happen?—he begins to teach Kalynn how to foretell how they will stand in the sky. Her education has advanced hardly past a beginning, though, when her father abruptly calls her away. Shortly thereafter, Isak is taken from the hiding place, sealed inside a winebarrel, and carted away. Though Kalynn has tried to assure him he will not be harmed, he does not know if he should believe. What he believes matters little, however; he has no control, not even of his own life.

PART THREE

Then what is the answer?—Not to be deluded by dreams
To know that great civilizations have broken down into violence, and their tyrants come, many times before.
When open violence appears, to avoid it with honor or choose the least ugly faction; these evils are essential.
To keep one's own integrity, be merciful and uncorrupted and not wish for evil; and not be duped
By dreams of universal justice or happiness. These dreams will not be fulfilled.

Robinson Jeffers

The wagon rattled as its wheels bumped over the street's uneven stones. Very quickly under Alpher's blaze, the barrel's interior turned warm. Soon it was like the steaming pool's chamber at the baths. Isak's body turned greasy with sweat. For a while, grimly, he endured.

The barrel had been skillfully chocked and lashed; held tight, it thumped and shuddered with the hammering jolt of the wheels. Downslope they clattered, the drome's paws sprawling and slipping on the cobbles, the drover and his helper straining at the levers that forced brake blocks against the wheels, spitting curses at the beasts and vehicle parts with impartial fervor. downward and downward, past the voices of street children, the shout of a melon peddler, the huffy complaint of a drome toiling upward. Drovers yelled. Hard tires scraped the stones. Once Isak heard the measured tread of a file of Guards. He held his breath until the rhythm of their cleated shoes faded away.

The slope levelled out. There was a subtle change in the scrape of wheel rims on the stones. The wagon's pace

slowed, and there was the cacophony of many voices, near and distant, mingled. Sometimes the wagon paused and drovers shouted insults at each other and at their beasts. Gradually, Isak became aware of the fetor of the lower town. The cart lurched one way, then another, turned and turned and turned again, and Isak thought of how the lower town's narrow alleys branched and twisted and crossed at a thousand different angles, never any two the same. He thought of the high, looming tenements of the poor, the taverns and cribs, the necessity shops, charm dealers, and moneychangers, the vacant faces of homeless men, the calculating eyes of masterless women. Anything could be hidden in that maze. Only when he caught the river's special stench did he have even a hint where they were taking him.

It was only a hint, though. The riverfront curved from above the Stranding Bar's lagoon to the marsh below the Widow's Quay where ancient shacks crouched on stilts above the reeking mud. When the wagon stopped at last, it could have been anywhere.

Men vaulted into the wagon, freed the barrel of its lashings, kicked the chocks aside. Grunting, they wrestled the barrel down a plank ramp, across a reach of gritty, hard, rutted ground, and up another. Isak had to brace against the barrel's sides to keep from being tumbled. Far off, men shouted and water washed against pilings. Close by, drome hissed, orox growled. There was the sneer of a hinge. Hollow boards drummed; the barrel thumped against a padded obstacle. Feet stumped away. The hinge again, and the clack of a bolt snapping home—then, silence.

It was a long wait and, in that cramped prison, increasingly uncomfortable. The heat had abated somewhat now that the barrel lay in shade, but his clothes still clung to his body, his eyes burned with sweat, his lips tasted of salt. A seam in his shirt cut his shoulder like a blunt knife. From time to time he heard footsteps, but none came near, nor did he dare call. Now and then there were voices, but never clear enough for him to distinguish any words.

Then new footsteps approached. The barrel was taken again, rolled for a distance, then abandoned. A heavy door boomed. Silence followed. Then again footsteps came, more softly shod feet this time, feet that whispered on the floor; and a voice that spoke commands.

With a heave the barrel was tipped up on end. Tools attacked it. The topmost band whanged off on the floor. Moments later, as the staves sprang apart, the barrelhead came loose. It would have fallen on him, but he pushed it aside. It clattered on the floor. Mask-cloaked faces looked down on him. He squeezed his eyes against the pain of the stronger light.

"May I come out?"

A thick-fingered hand's gesture gave assent, but his legs had been cramped too long and would not hold him. Several pairs of hands clamped on his arms and he was lifted and borne, dangle-footed, to a stack of plump spice bags in a corner. There, surrounded by the heady redolence of saffron and joss, they set him down.

"So, hatchling."

Though the face was swathed, he knew that voice. He nodded. "My lord."

He choked on the words. His throat was thick, as if full of dust. The same fleshy hand gave a sign. Isak had a glimpse of the ring, a stone the color of sky when only Gamow stood aloft. A mug was thrust into his hand. He drank; wine, cool wine. He fingered his smarting eyes.

The man stood over him. "You've posed a problem for us," he said. "A knotty problem."

"You could merely let me go," Isak said. "I never wanted to make problems."

His Lordship laughed. It was a cold, humorless laugh. "What you may have wanted is not our concern. What interests us . . . your prophecy stands against all reason, yet . . . our scribes are defeated. They can produce no proof it will not happen."

"That is because it will happen," Isak said.

"Our scribes are deeply doubtful," His Lordship said. "They point out that clever argument is not the same as being right, and they are very skeptical of anyone who claims to predict the behavior of the gods."

"There is also the error of having too much doubt," Isak said. "Doubt beyond what is justified can be as . . ."

"Hatchling, have a care," His Lordship warned. "We did not bring you here to resume old arguments. We have decided that it makes no difference. Whether your prophecy be false or true, for us it will be useful. And you, hatchling—*you* will be useful."

"Toward what goal, my lord?" Isak asked.

"You do not know?"

"I suspect, but that is not the same as knowing," Isak said.

"Tell me your suspicion," His Lordship instructed.

Isak opened his mouth to speak but paused to put his thoughts in order. The sack on which he was seated oozed an incense-scented dust. Beside his feet another sack lay, as if nudged aside; it leaked a trickle of dried beans. Within range of his sight was a pile of plump grain bags, bundled pepper wands, and a carefully stacked pyramid of pickling crocks sealed with bitumin. There was no skylight overhead; the gods' light came through openings under the eaves.

A factor's wharf shed, one of the hundreds that crowded the river's shore. Through the floorboards he could hear the wash of water against foundations, and he knew that somewhere near would be a smuggler's hole, through which a dead man could be unobtrusively fed to the eels. Looking up at those mask-shrouded eyes, he knew the man would not shrink from that.

Still, he had to speak truth. "I do not know if you are the leader, or if you follow another," he said. "But I believe you seek to overturn the Temple's power. What you would put in its place, or how we would then serve the gods. I do not know."

"Do you think the gods approve how the Temple has abused its power? The greed of priests, the petty use of power to achieve more power, till they rule the lives of all of us? Take all, give nothing?"

"My lord, I do not know if the gods notice," Isak said.

His Lordship humphed. "Either you are far too wise or not wise enough,"

he said. His stance changed. "Very well, you know our purpose. Now, have you thought how the common people will react if—as you have made prophecy—the gods take their light away from us? What they will think if, as you say, our sky turns black?"

"That is why I asked my heirophant to take me to the Brothers," Isak said. "Because it will be a thing they have never known to happen before, and may not have happened in all the time there has ever been. They will be frightened, I think. They will believe they have been abandoned by the gods. But then Blazing Alpher will rise in the east, the sky will again be blue, and again we shall stand in the sight of the gods. And, so far as I have been able to calculate, it will never happen again. Certainly not in our lifetimes. If the people are given that foretelling, they will know they do not need to be frightened; that it is only a happenstance of how the gods share our sky."

"You see in that event no portent? No significance?"

"Should I?" The question puzzled Isak. "My studies have shown that the gods change their positions in relation to each other and to our world by orderly, predictable motions; that it is only the complexity of those motions and our lack of reference points, and our failure to carefully measure duration, that have prevented us from knowing the pattern. The time of darkness will be merely an accident of that process, and I know of no consequence that will come of it, either among the gods or on our world."

"But if you knew none of that? What then, hatchling?"

"My lord, I do not know," Isak said.

His Lordship laughed; a robust, mocking burst. "Hatchling, you may know more about the gods than any other man, or you may not. We have not settled that. But one thing I am sure. You do not know men. You do not know how they think. You do not know what they believe."

"Can anyone?" Isak wondered.

"Individually, perhaps not," His Lordship said. "Considered as a mass, though, I say it can be done. When the darkness comes—*if* it comes—our people will see it as a sign the gods are displeased with those who now sit in the Temple, claiming to serve them but in truth serving only themselves."

"Why should they think that?" Isak wondered. "From the event, no such interpretation can be logically developed. How can you say that thousands . . . ?"

"I say it for three reasons," said His Lordship. "First, they will be frightened; you have said so yourself. Second, very few have failed to notice how corrupt the Temple's priests have become; it touches the affairs of all, from mighty merchant to crippled beggar. And, third, already our agents are now among them, speaking of your prophecy, and of how the Temple has declared you fugitive—which is true and known—because they fear you and they fear your prophecy, and that they fear your prophecy for the reason I have told you. So, if it should happen that your prophecy has truth, the people of this city will remember and will have no doubt. We should be able to use a situation such as that. On the other hand, if you are wrong and it does not happen,

we shall have lost nothing. It will have been a rumor in the marketplace, one of many, for which no man is responsible. And it shall have served to increase our people's displeasure with the priests, a foundation on which we can later build.''

''But my foretelling—and, my lord, believe when I tell you it is only a foretelling—does not presume to claim why the gods would permit such a thing to happen. I have said nothing to suggest . . .''

With a gesture, His Lordship silenced him. ''Hatchling, what you believe makes no difference—nor does what I believe. What matters is what our people can be led to believe, and how we can make that useful to us.''

''But truth . . .''

''We are not concerned with truth. We are concerned with driving corruption from the Temple. We shall do it by fair means or foul, by whatever opportunity comes our way. You, hatchling, may have brought the opportunity we've watched so long for.''

Shocked, Isak looked up into the hard eyes under that desert man's cowl, then looked away. He massaged his knees, first one, then the other; they still ached deeply from his confinement. He tried to think.

He had to choose; either to join this man's conspiracy or not. Neither choice felt entirely comfortable. To join would mean accepting a violation of truth and alliance with a cause which, if this man's words and manner were a sign, would only replace one tyranny with another. But not to join . . . .

He listened to the water licking stones a few handspans under his feet, and he thought of the ravenous teeth of eels. He thought of the bulge-bellied old arrogant men whom he had told truth and who, not having the wisdom to know it was truth, had ordered his death. He thought of Artaneel in flight down the cobbled Way until the Guard's pike went through him like a roasting spit, of Kalynn's body made gravid with a priest's child. He thought about Kalynn for a long time while he rubbed his knees. There was also the small matter of staying alive.

Finally he looked up. His Lordship waited there. He took a breath. ''How can I help?'' he asked.

His Lordship seemed to grow in height. He set his hands on Isak's shoulders, holding him very still. ''You are the prophet, hatchling. When you speak, people will hear. Through walls they will hear you. What you command they will do.''

''But it is only a foretelling,'' Isak protested.

''Is there a difference?''

''It came from the use of knowledge,'' Isak said, hoping somehow to explain the distinction to a man not interested in distinctions. ''No vision, no revelation. It is only the consequence of known facts.''

''How it came to you is not important,'' said His Lordship. ''To anyone but yourself it is beyond understanding. To them, you will be a prophet. If you want to be useful you will accept that role.''

''What must I do?'' Isak asked.

''Much,'' His Lordship said.

* * *

Any sufficiently advanced technology is indistinguishable from magic.

Arthur C. Clarke

In its time, the cellar where Isak now found himself had been used a hundred ways. Scraps of leather, dusty and stiff with age, had been scuffed into corners for weevils to gnaw. The dark earth floor had the print and the surrounding stains of wine vats, and a blackened hearth beneath a flue vent—sealed now—and scars where fittings had been taken from the wall. Once a forge had been in that place. Now, though perhaps only briefly, it was a conspiracy's meeting hall.

Cloaked in the hooded robe of a wayfarer, Isak sat in a corner with his knees drawn up. Beside his shoulders what had once been a tapestry extended along one wall, its colors dulled by grit and time. Still full of misgivings, still troubled by doubt that he was doing what the gods would have him do, he waited and watched while one by one and two by two His Lordship's agents arrived. (But would the gods permit a man to do a thing of which they did not approve? Could they be gods without that power? Was death the only way they stopped a man, or had they other, more subtle ways?)

How he had come to this place he knew only in part. From the factor's shed they had taken him, rolled in a bale of undyed cobbler's felt, by boat and then by wagon to a house in the old castle's shadow where, for several passings, he and His Lordship's minions had argued, bargained, and made plans. On his own feet, then, they had taken him through the alleys of the old town to this smoky catacomb of lamps and shadows. There had been only time enough to make sure the two anchorweights had been properly hung before others began to arrive.

Their variety startled him, though when he thought about it he realized it shouldn't have. They came in ones and twos, men for the most part, though a few were women. Their garb was as various as the shapes of stones. They came from every level of society, high to low; every trade, craft, and calling; they wore everything from a beggar's rags to a priest's embroidered robes.

"Be not affrighted," muttered the one who had guided him hence when the priest was nodded past the guards at the door. "It be the animal inside that matters, not the skin he wears." And he chuckled.

A few were women. Isak hadn't expected that, either, and was surprised when the first appeared. Considering, though, he wondered why it should have surprised him. Kalynn had proved to him that a woman was as capable at many things as a man. He began to hope that she would be among those who would come, that he would see her. He held his breath. He watched for her. Once, when he caught sight of an odd gait and a skirt thrust forward by an abnormal roundness, he almost sprang to his feet; but then the woman turned. He saw the plump cheeks and pinched mouth, the lines around her eyes. Disappointed, he sank back, waited, watched.

Slowly the cellar filled. They sat on the floor. A few knelt. Some leaned on pillars or against the walls. They talked among themselves, a murmur at first,

but as their number grew it became a rush of sound as primal as the thrust of sea against the shore. Long after he thought the cellar was full they continued to come, squeezing in between their fellows, older occupants shifting closer together to make room for the ones who came later. He had not thought so many could be brought together so quickly, but then he remembered that the conspiracy was not a new thing. He felt their eyes on him, the stranger in their midst. He hugged his knees.

At last Eb came to him, picking his way through the crush. Long since in their discussions at the house he had put off his mask; his nose was large, his hair sparse and mostly grey, his cheeks gaunt. His full name was Ebron. His eyes had the look of a man enduring interminable pain. He crouched next to Isak.

"Keep us here no longer than you must," he said. "If the Guards come on us, I will have your liver."

"I would be the one they want," Isak said. "Should I begin?"

"They'd want all of us," Ebron said. "I dislike having so many of us in one place. Yes, begin."

Isak stood up. Threads of smoke from the lamps filled the high spaces between the roof beams. The place was full of shadows. He pushed the hood back from his shoulders. The sudden hush brought him a momentary fear.

He found his voice. "You all know of my foretelling," he said. He swallowed and plunged on. "But being told is not the same as knowing truth. You shall be speaking my foretelling to others. Many others. Your master would have you fill the city with it. I would not have you speak a thing you do not know is true. Also, I would prefer you had it from my tongue."

Their faces were turned up to him. He saw skepticism, indifference, scorn; they would do His Lordship's bidding. Truth meant little to them.

"I will show you a marvel," he said. He went to where the anchorweights were hanging. Standing between them, he looked up to assure himself again that they were suspended the way he had asked. They were; the heavier one's cord fixed to a hasp in the ceiling while the smaller one's was knotted around a rod that spanned the space between two pillars several hand-spans below the ceiling. At his feet was the urn stand he'd asked for.

"You will notice," he said, "the ropes that hold these weights are almost exactly the same length, and that if I raise them to the same height above the floor the smaller one would then swing in a wider arc. I will now do that." He bent to pick up the urn stand. "I will need help."

A pepper-bearded man in drayman's clothes rose from among the nearer watchers. "Help ye shall have." He stepped through the crowd. His glance went to the weights and a smile twitched the corners of his mouth. "Be it thy thews not contain the adequate bone?"

"It is a matter of needing more hands," Isak said. The urn stand had a very narrow foot; he held it out. "I want both anchors to rest on this. I want all to see they begin from the same elevation."

Pepper-beard cocked an eyebrow, as if thinking such attention to detail was not necessary. But he did as bade, rais-

ing first the small anchor, then the larger, and setting them on the stand's platform. Isak shifted its position a little so that both ropes were taut. When he took his hands away, the stand held steady. He stepped back.

"Would you say the larger one weighs more?" he asked.

Pepper-beard scuffed the earthen floor. "Aye."

"And you have seen it is not hollow?"

"If it be hollow, it be filled with much uncommon stuff." His manner said he thought the question needless.

"I want it known there has been no deception," Isak said. "I want it known I speak only truth. When I have done, whoever doubts may test the weights and know for themselves."

Pepper-beard bristled. "I be known to these. They know I'd not mislead."

"Nevertheless, they shall have that right," Isak said. "No man's speech is the same as truth. Even mine."

Pepper-beard met his eyes, then grinned. "Aye, lad. Truth be its own."

Isak turned again to his audience. "I would have you think about this. I would have you notice that the larger anchor, which weighs more, will travel the shorter distance. I would have you wonder which of these will complete its swing more quickly."

"Huh," Pepper-beard muttered as he stalked back to his place. "Obvious."

Isak curbed an impulse to reply. He waited, gave them all time to think the question through. Bending then, he passed a length of cord around the urn stand's base, then backed away with both ends of the cord held low in one hand.

"You will notice also that, by doing it this way, I release both at the same moment." Still holding the cord low, he jerked the stand out from under the weights.

Falling, they moved apart. Gaining speed, they swung through the low points of their arcs and—losing speed now—ascended, paused, and began their return. Downward they came, then level, then upward again to pause together at the same moment, almost touching.

Isak had not moved. Again he let the weights descend, rise, pause, and return. Again they almost touched before once more drawing apart. A murmur of surprise, disbelief, and puzzlement rose like the wind of an approaching storm. Only then did he speak.

"I would not deceive you; the similarity is not perfect," he said. "After a few more returns, the difference will become apparent. But you have seen it is not as you expected. And I will tell you also that it is a thing you can test for yourselves; that so long as the cords are the same length it does not matter what the weights may be, nor how wide they swing. So long as they are several times the weight of the cord, they will complete a swing in the same length of time."

He could sense a difference in the way they looked at him now. There was still caution, but he had shattered their certain doubt. They were no longer sure he was a trickster with a supple tongue. Some few of them, even, might wonder if perhaps he was giving them truth. Possibly, though, it was only what he hoped.

"I have shown you that not every-

thing in our world is the way you might have thought,'' he said. ''It would not be truth to tell you it is in this mystery that the secrets of the gods were shown to me, though it would be true to say it was in this discovery I found the beginnings of that knowledge. But I have demonstrated it to show you I have knowledge which you do not have.''

''Been told that lots of times.'' The man who spoke leaned lazily against a pillar, rubbed his cheekbone, chuckled. It brought a scatter of laughs.

''And had it proved?'' Isak asked.

''Aye. Betimes.'' He ducked his head, grinned.

''Each time his mouth be open,'' declared a heavy-shouldered man with a scar on his brow. ''Give that one no thought, lad. It be y'rself we come to listen at.'' He looked at Isak, waiting for his next words.

''I do not have much more to tell,'' Isak said. ''Only that the knowledge I have come to has revealed to me that when Actinic Gamow overtakes the Pale One the second time from now, it will come at a time when only those two stand in our sky, and Gamow shall pass behind her. Darkness shall fall on us. That is the foretelling I give you. That is all I am sure of.''

The sound that broke the hush of their attention betrayed a mixture of reactions. Some grunted as if struck, others as if they had expected more. Some made no sound, but frowned or gazed at nothing, wondering. A few stirred uneasily.

Isak went on. ''Why the gods should want this thing to happen, I do not pretend to know. It is possible it is just as you have been told: that by this sign the gods shall declare their rage against the men who hold the Temple. But that is not part of my foretelling. I do not know why the gods will do this thing. Only that it will happen.''

Behind his shoulder, Ebron spoke, so abruptly it startled him even though he knew it would come. ''Do you suggest a better reason?''

Isak made himself turn slowly. ''I must speak truth. I do not know why the gods do anything they do. It could be for reasons that have nothing to do with us.''

''Such as?'' Ebron demanded. And again, triumphantly, ''Such as?''

Even though the exchange had been planned, Isak felt the force of Ebron's challenge. He wanted to back away, but knew he must not. He steeled himself to speak the answer they had planned, but instead it was different words that came. ''The Temple's priests would have you think they know the gods and speak for them,'' he heard himself say. ''Either they are deluded or they lie. I do not pretend to knowledge I do not have. I must speak truth.''

Far back in the crowd, so far he was only a shape in the bad light, a man stood up. ''Destroy the Temple!'' he roared.

That also had not been planned, but the response came to Isak's tongue as if born there. ''Not the Temple. Those who infest it. We must still serve the gods.''

Now there were shouts. Many voices. ''Kill the priests!'' ''The gods be served!'' ''Cleanse the Temple!'' From many lips, in many phrases, the word ''prophet'' sprang, inflected with reverence, with awe.

Bewildered, Isak turned to Ebron. The question on his face needed no words.

Ebron laughed a savage laugh. "As you sought, hatchling. Before, they would do as our master told. Now . . . you have made believers of them."

"But all I said was . . ."

A powerful voice broke through the tumult. "Brothers! Guards in the street!"

"Kill them!" belled another throat, and the cellar was alive with bodies struggling toward the narrow door.

A hand clutched Isak's arm. Ebron hissed, "This way," and thrust aside the ancient tapestry. It broke to tatters in his hand. He thrust Isak ahead of him into the opening.

The tunnel was dark as the core of a black stone. The footing was full of pits that trapped and stumbled him. Behind, he heard others following. Ebron's grip urged Isak on. "Did you think we would risk to meet in a place that had but one way out?" his voice rasped. " 'Ware now! Here's a climb!"

Isak stubbed a toe on the step, but then found footing and started up. He felt a whisper of light; the wall turned and the steps turned with it. They entered a passage full of grey light, slowly brightening as they fled its length toward the glare of the gods' full blaze. A few more upward steps and they emerged from the labyrinth. The street was narrow, the paving stones uneven and wheel-worn, the tenements high on either side. Through the open rift of sky, Isak found Gold Ephron and Embrous Zwicky low to westward. How they stood together told him all the compass points, that the street descended to the southwest, and that the Twinned Ones would soon go under the world. The sky's brightness and shadows against the tenements on the northwest side told him that Bright Dalton was also aloft, midway up the eastern sky, while Red Bethe, also eastward, stood lower down. He searched for the Pale One. She would be somewhere in the eastern sky, he thought, but he could not find her. Near her overtaking by Red Bethe, the tenements blocked sight of her.

Ebron thumped his shoulder. "The Guards are down there," he said. "Follow me."

Isak's attention was drawn. From where they stood, still blinking in the light, the street went down toward the river. Still some distance away, a force of Guards was coming up. "I did not summon them," he said. "How could I have?"

Ebron humphed. "You are the reason that brought us here." His grip tightened like a claw on Isak's arm, and Isak was aware of other men, motley-clad and grim-faced, surrounding them.

"I have given you only truth," he protested.

At that moment, something broke from a rooftop, leaped out and fell and burst among the Guards. Its watery contents splattered. Another followed, and then other things, smaller, that also shattered. Flames whumped into being.

The Guards scattered. Some dropped their pikes to beat at the flames now clinging to their legs like ravenous parasites. A rabble pounded out of the tenements, a hundred doors, yelling battle cries and "Honor to the gods!" They broke upon the Guards with, suddenly, swords in their hands; swords that hacked and struck, hammered and

chopped, slashed and stabbed. Men fell. One struggled on the stones in a pool of fire. Twice he lifted his body in an arch, strained, fell. Flames danced on his back. After the second try he only lay there feebly writhing.

Ebron let Isak watch until he turned away. "If they be your masters, hatchling, think what your welcome will be when you return to them."

Isak looked over his shoulder, fascinated by the scene. He saw a spatter of blood flung from a sword's tip a moment before it chopped into a shoulder. "In the Prophet's name!" the swordsman shouted. "Truth under the gods!"

"They are not my masters," Isak said, and discovered his throat was too dry for his voice to come out right. "And I am not a prophet."

"For us you shall be a prophet, or die." Ebron nodded to the fight below. "As we thought, they have informers among us. Whether they only took advantage or whether it was part of a larger plan in which you had a role remains unclear. As you have seen, though, we anticipated them. Now they will be less eager to come to this part of the city. We—" His grip firmed on Isak's arm. "We shall go the other way."

Isak had no choice but to go. Their escort formed a loose group around them and together they set off up the slope. The shouts and clang of battle continued behind them, slowly fading with distance, but it was long before he stopped thinking of the man in that puddle of fire, and the others who were dying under the bite of swords.

* * *

And malt does more than Milton can
To justify God's ways to man.
A. E. Housman

The dram shop was dark, illuminated only by openings at front and back. The man who picked his way through the maze of benches, stools, and tables toward where Isak and his companions sat, pausing to sip from his over-full mug as he came, wore a wagon vendor's smock and leathers, a floppy-brimmed hat, and a silver ring in his left ear.

"One of you be the prophet?" he asked.

Isak's companions looked at him, so obviously they might as well have pointed. He felt the discomfiting touch of their eyes.

"Some have called me that," he admitted. "My name is Isak."

The vendor stood there, mug half raised. "Be there doubt?"

"I do not feel like a prophet," Isak said. "Certainly I do not claim it. I have a foretelling, but that is the most I claim."

The vendor appeared to consider the information, or perhaps he inspected a scrap of foreign matter in his wine. Snagging a stool with his foot, he brought it over and sat down across from Isak at the table.

"Our host—" He made a nod to where, against the far wall, the shop's proprietor perched on a tall stool behind his serving counter. "Our host be saying no question stands: that a true prophet now does honor to his place. But when that one be speaking thus in one breath, while doing all his tongue be able to bargain down the price of a half-sack of fingernuts in the breath be-

fore and the one after, a man be wise to ask more deeply.''

''I also doubt,'' Isak said. He glanced at the men on either side of him, part of his escort. To speak such a thought came close to forbidden things. It was a careful line he trod between untruth and death. ''I say it is only a foretelling.''

''Be a foretelling not a prophecy?''

With a nod, uncomfortably, Isak yielded the argument; to a man such as this, the difference would have no real meaning. He leaned back against the wall and was careful now not to glance again at the men beside him. Their bench was in the shadow between the light from the street and that which came from the small wall-enclosed garden beyond the shop's inner porch and colonnade. Others of his escort lounged in the street, and more were posted in the alley beyond the garden's wall.

The vendor set his mug down. ''Our host be saying the gods shall take their light from us, which be a thing not heard of ever, and shall cause the priests to be cast from the Temple, which be also a thing most difficult to believe. Then, argues Hward of the Good Heart, our host, the tithe collectors shall be shorn of their power and shall disappear like a god's shadow when he leaves our sky, and shall leech on honest men no more. Thus, argues Hward of the Good Heart, a man may ask a smaller price for his goods and yet have more from the bargain. Be it possible?''

Isak would have spoken, but the man on his right, leaning forward, restrained him with a hand on his knee out of sight under the table. ''If the tithe man takes none of it, a smaller sum would be more than he would have left you with.''

After a moment's careful thought and a small sip from his mug, the vendor nodded. ''Aye. But that be only if the tithe collectors be taken from our backs. While priests be seated in the Temple, can such happen?''

''When the gods give their sign, the Temple will be cleansed of priests.''

Now they were at the heart of the matter. The vendor waggled a finger. ''Ah! But shall the gods be giving such a sign?'' His eyes watched Isak without a glance to either of the men beside him. ''You be the prophet, if any such be sitting here. Speak.''

''That is the core of my foretelling,'' Isak said. Without awareness that he did so, he pushed back the hood from his temples. ''There shall be a darkness over all our world. Not the mere darkness of heavy cloud, but the terrible darkness of no god giving us his light. Would you ask a clearer sign?''

A sound made him look up. A circle of listeners had gathered around them. One was another of his escort, drifted over from his table near the serving counter. The one who perched on the corner of an adjacent table was a street man who had listened in before, hoping now, Isak supposed, to hear more than the previous time, All the other faces he had never seen before.

''It be a sign,'' the vendor said. ''But what of?''

''What would you think?'' Isak asked. Though he did his best to give no outward sign, inwardly he felt a reluctance; what he would say now would not all be truth, though neither would it not be truth; and while he could have left it for

one of his escort to speak, from his tongue it would carry more force. And, he told himself, forcing his resolve, to speak it would be to do ultimate service to the gods.

"Would you not say that such a sign they would give only to declare their most powerful wrath?" he asked.

It got him a wary, grudging nod.

"And what could enrage them more," he went on, "than the conduct of the priests? They who enrich themselves at the expense of other men in the gods' name, who say they speak for the gods and serve them, but truly do nothing but fill their own appetites. Can you suggest some other reason why the gods would send a sign like that?"

The vendor felt the ring in his ear. His hand lingered on it. "Play no games," he said at last. "I ask, be you a prophet? You be saying you be not, but then you speak prophecies. Declare thyself."

It was a challenge to deny his prescience again; Isak let it pass. "I can imagine only one other reason," he said. "That their rage is for all men—all men who have witnessed the priests' corruption and, by doing nothing, have let it go on."

That turn of thought was new to the vendor. His head came up, startled. "What can one man do?"

"One man?" Isak echoed. He leaned back, felt the hard, cool bricks against his shoulders. He took a breath. "Very little. Nothing, probably, though I am myself only one. But if many men, acting together . . ."

"Ah!"

"When?" That from the one of his escort who had joined the listeners.

"When the darkness comes," Isak said. "If it does not, believe nothing else I have told you."

"When the darkness comes." Several voices spoke it softly, almost in a whisper.

"When the darkness comes," Isak said.

The man on Isak's right stood up. "Hward!" he called, dropping a rattle of coins on the table. "Wine for my friends! The special wine!"

> *We have come into being in the fresh glory of the dawn, and a day of almost unthinkable length stretches before us with unimaginable opportunities for accomplishment. Our descendents of far-off ages, looking down this long vista of time from the other end, will see our present age as the misty morning of human history. Our contemporaries of today will appear as dim, heroic figures who fought their way through jungles of ignorance, error, and superstition to discover truth.*
>
> *James Jeans*

The fountain at the foot of the Street of Diligent Stonecutters was one of the few places where the people of Old Town could find untainted water. Flanked by his escort, Isak descended the street, the hood of his wayfarer's robe thrown back, his sandals whispering on the worn, uneven stones. News that he would come had gone ahead; already a crowd was waiting in the square.

"He comes!" He could hear their voices. "The Prophet comes!"

He wished they would not call him that, but there was nothing he could do. On either side of him men strode with naked swords in hand, his escort's captain at his right, that man's lieutenant to his other side. More came behind. The advance party cleared a way for him through the mob—"Way for the Prophet!"—until he stood on the fountain's base. The leader of that squad gestured to a dark red stain on the stones.

"You wondered if the streetwarden would come sniffing," he said. "You see his blood."

There was blood also on the sword he wore, scabbardless, thrust through the sash at his waist.

"And—?" Isak asked.

"He feeds the eels," said the squadman with a nod toward one of the narrow streets leading off from the square. "Both parts of him." Though out of sight beyond the kinks and turns, the river would be in that direction. The squadman gave a savage grin. "Like all good streetwardens! Fear nothing here. Our men hold every way to this place. No Guards will trouble us."

Absently, Isak nodded. But for a turn of fortune, he would himself have been feeding eels. The squadman cocked his head, smiled mirthlessly. "Spare no qualm. He did not serve the gods."

"He must have thought he did," Isak said.

"What he thought matters not a scrap," the squadman said. His voice was impatient now, and hard. "He served the priests. Them only. For that service, he has won his reward." Turning away, he raised a hand to catch the crowd's attention.

It was hardly necessary. They had seen Isak come and knew he was the man. Who else, now, would dare put on a wayfarer's robe? Now the murmur of their voices stilled. Trapped by their expectation, he could only begin.

A waist-high wall of mortared stone slabs enclosed the fountain's pool. Isak climbed up, thinking to stand on the rim, but found that even with one of his escort bracing a shoulder against his knees it was too narrow for him to stay balanced. He slipped back down and found a space where he could seat himself without the narrow stone cutting too hard at the flesh of his thighs. He looked up. Gamow stood high, close to zenith point. The Pale One stood well to his westward, five passings short of their overtaking. He could see no others, though the red tint in the eastern sky told him Alpher was soon to rise. All as it should be. The overtaking would come, and Gamow would appear to overtake the Pale One, and would pass so close to her that a finger would not fit between them.

For a long breath he studied the blend of colors on the Pale One's face: grey and white, a hint of gold, a touch of pinkness on her westward edge. His understanding of the gods—even such a small understanding as he had—was a fragile thing; though a thousand bits of observation might confirm it, only one which did not could bury it in doubt. Nothing he saw, though, conflicted with the vision in his mind. Only when he was satisfied of that did he give his attention to the people who had come to hear him.

"I have a foretelling." Until he spoke, he hadn't known he would begin

with those words. He surprised himself. He took another breath, began again. Sitting there on the fountain's rim, bareheaded in the solitary light of Actinic Gamow, he told how the foretelling had come, how he had taken it to the Temple—which was the only proper thing a man could do if that man served the gods—and how the Brothers had shown no more understanding than the stones of which the Temple was built. He told them how the Temple's men had sought his death.

"I must wonder," he said—it was a new thought, and the words came even as he spoke—"could it be that the gods have protected me? That they would have me live? Would have me no man's captive, and able to tell my foretelling to all who will hear me, as you hear me now? I do not know if it is in the gods' power, or if it is true I owe my life and freedom to their touch, but I cannot explain by any other cause why I still live, or why I am here with my tongue in one piece, able to speak these words. I must believe they would have the foretelling told."

"Honor to the gods!" The shout was spontaneous. Other throats echoed it. Isak let the outcry rise, expand to a crescendo. When it began to subside he held up his arms to command their attention again. Silence fell.

He told them then what must be done, what the sign of the gods' darkness must certainly command. It brought a few more shouts from the crowd, but from most, for whom it must have been only what they expected, it produced a soft, susurrous, wordless "Ah!" as if, having heard it now in the Prophet's own words, at last they were satisfied. Now they could believe.

It troubled him a little, that because he spoke it and because he was sure, they accepted it without doubt. It was a thing he did not understand, such docile submission. Before such credulity, how could truth—untested—be known?

Yet he knew his foretelling was truth, and as for the rest of it, who was to say? It could be made to happen, and only if the gods should cause the effort to fail would it not be truth. But for what reason would they do that? It was beyond belief they could know of the priests' corruption without disgust. But—was it possible?—was failure or success beyond their power to control?

A man was struggling to the front of the crowd. A tall man with long russet hair and full beard and a voice as if his throat was full of dust. "I must speak to the Prophet. I must." Three of Isak's escort moved to block him, swords ready. It brought Isak out of his thoughts. He raised his eyes.

"Let him come," he said. It was impulse, but this was not part of His Lordship's contrivance; whatever it was, it came from some other source. Perhaps the gods themselves?

The escort stood back, though still not letting down their weapons. The stranger wrestled through the last ranks of the crowd. His eyes held torment. He mounted the steps of the fountain and Isak slipped down off his perch to receive him. His escort moved to be ready to act if the need came. But when the stranger had taken the last step up he went down on his knees at Isak's feet.

It took Isak by surprise; it was an

honor he had not earned and did not seek. He reached down, and with a gesture and tugs at the loose-fitting shirt persuaded the man to rise.

Now the man towered over him, which seemed to discomfit the man. He stepped back—back down two steps until their eyes were level. He pulled off his leather cap and crushed it in his hands. His leggings were work-worn, patched, and threadbare.

"Yes?" Isak prompted.

"Prophet—" the man began, but Isak stopped him with a gesture.

"My name is Isak," Isak said. "It is only a foretelling."

The man's gaze dropped. He twisted his cap as if to wring the sweat from it. "I come from Rofa. We heard of your foretelling. I have come. I had to hear it with my own ears."

Caution made Isak hesitate. Rofa was a nine-passings journey up the river, beyond the mountains and Thunder Gorge, and at least a seven-passings journey back downstream. Was it possible his foretelling had traveled so far so quickly?

"And now you have heard?" he asked.

The man from Rofa nodded. "More than ever. But . . ." He hesitated then, as if words had stuck in his throat. Isak waited. He wrenched his cap another twist. "I must ask . . . it is why I have come . . . if all priests must be thrown from the Temple, I must ask, if that is done, how then shall we—Prophet, I do not know how to ask!—how then can we serve the gods?"

It was something Isak had given no thought to. It was so distant from the hard, true core of his foretelling that no rational thread linked one to the other. Yet, as an ultimate consequence of His Lordship's intrigues, it was a reasonable question to ask. How indeed? He took a breath, tried to shape an answer in his mind, took another breath. He looked at the man, who waited.

The men around His Lordship had warned that the Temple might put men in his crowds—men to heckle him, to cast doubt, disrupt, dispute with him—call for his tongue, kill him if they found the chance. This man could be one such. The two of his escort nearest exchanged a glance and moved closer; perhaps they held the same thought. Isak lifted a hand to forestall them. Having been raised before this crowd, the question needed a reply.

"I do not know," he said. "I have not ever known how we serve the gods. I have known only that, by our lives, by the way we live, we do serve them; and that in return they give us their light, their warmth, their rain, and their wind. Also the pulse of the tides, the ebb and rise of the rivers, the renewal of spring and the bounty of harvest. But now they will take their light from us—though I can tell you it will be for less than one passing—and I must believe they would mean such a thing to be a sign that their benevolence is not without limit, and that for reasons we can only guess we have displeased them. Do you wonder, then, that I would think of the Temple's old men, who would have us believe they speak with the voice of the gods, whose self-satisfaction and greed are well known?"

"I?" the man from Rofa wondered, bewildered. "I?"

Isak went on as if the man had not

spoken. "And I would ask one other thing: to serve the gods, do we need those men? Is it not possible we might serve them as well—even better?—without the Temple's guidance? What worth does the guidance of such men have?"

It was more than his questioner could absorb. The man from Rofa spread his hands, his crushed cap in one of them, the other open-palmed. His mouth worked but no words came. Raising the hand that clutched his cap, he touched it to his brow and would have gone again to his knees had not Isak stopped him and raised him again.

"Go back to Rofa," Isak said. "Tell them my words. Tell them the darkness shall come, but it will pass. And if the Temple is cleansed it will not come again in our lives."

The man from Rofa looked up into his eyes, touched his brow again, turned, and plunged back into the crowd. Isak watched him go, wondering if he had answered well and whether, through it all, he had spoken only truth. He wished he could be sure. Was not false guidance among the worst of the priests' misdeeds?

His escort's captain touched him on the arm. "Did you hear the trumpet?"

Isak had heard nothing but his own voice. "Trumpet?" He turned, as puzzled as the man from Rofa had been.

"Guards coming," the captain said. "A strong force on—I think—the Netweaver's Way." He nodded toward one of the streets that entered the square. "That quarter, at least. For a while we could hold them, but we would lose men. And they might try coming another way, also. Before they trap us, we should go."

It was no more than common sense, and he had done all he could hope to here. Isak nodded. The captain made a sign. His men advanced on the crowd.

"Way for the Prophet!" they shouted, swords extended as if to carve a path. Those in the forefront of the crowd edged aside.

Isak raised an arm. "Still they seek me," he told the crowd. "They shall not find me. Not here, not anywhere." He started down the steps. "Until the darkness! Wait for the darkness! Cleanse the Temple!"

The crowd parted for him. The captain and his lieutenant took positions a half-step behind him. There was hazard in that cleft between two walls of men and women; there could be one in that crush with a blade in his hand, waiting his chance. The Temple would reward him. Isak took a breath; it wasn't a risk he could turn from. He who could foretell the gods could not predict his own fate; therefore to chance it was his only choice. As he advanced, the people broke apart to let him pass. All but one, a woman, who paused and held her place. It was as if the crowd had opened so that they could meet. She looked into his eyes. She reached out.

"Please." A desperate voice, a voice beyond hope, yet hopeful still. "Touch me, that I may live to see it happen."

He saw the pinch of pain around her eyes, her withered breasts. A tattered shawl. Her arms were like bones. "I do not have that power," he said.

"Please," she insisted.

It would not be truth, but he had told her that. She did not want truth. He

touched her cheek—hard bone under corn-husk skin. "I can promise nothing from this," he said.

Her own hand came up to press his fingertips firmly to the hard bone. The strength in her fingers startled him. Her lips moved, though he heard no words, and the look on her face made him think of Kalynn though he could not have said why. A murmur rose from the people around them, and he realized that they watched. He wondered what they must think and he wanted to shout that it was not a thing he could do.

His escort captain moved close. "Another trumpet," he muttered. "Best we take to the tunnels."

Isak retrieved his hand. It would be heartless merely to walk away. Nevertheless, he could offer only words. "If it were in my power to give, had I the skill, I would give you life and health," he told her. It felt lamely inadequate. "All I can give you is the wish of it."

"On!" his captain shouted and, gripping his arm, urged him past the woman before he could say more. "Way for the Prophet!"

Behind them Isak heard a sob; whether of gladness or despair he could not guess. Nor could he look back. All the while they picked their way through the god-blinded underground of Old Town, men stumbling, softly cursing, lamps flickering, the air fetid, he thought about that sound. Was it possible that out of kindness he had failed to serve truth and the gods? The more he thought, the more it troubled him.

And did he stop and speak to you,
And did you speak to him again?
—Robert Browning

* * *

Hardly a moment now was his own. Unannounced he passed through a marketplace; his protectors parallelled his path but kept a distance from him so that it would seem he walked alone. By now his wayfarer's robe and the way he wore it, cowl thrown back, were well known. Heads turned. A whisper thrilled through the crowd. A boy ran up and touched his sleeve, then dashed away again as if made fearful by his own daring. Another child watched gravely, wide-eyed, from under a trestle of sweetmeats and shrank back, fingers in her mouth, as he trod past.

"Will it come? Will the darkness really come?" He heard the question asked a thousand times.

"It shall," he said.

They said he had cured a woman of the wasting sickness, a lame boy of his limp. When he said he did not have that power and that he remembered no such boy they did not believe him, just as they did not believe him when he said he was no prophet. It was strange what they would believe and what they would not believe.

"But if we kill the priests, they will give us their light again?"

"The gods? Even if we do nothing, their light will come again," he said.

Now they surrounded him. They reached out to pluck the fabric of his robe. With anxious faces they watched him and spoke questions. Raptly they listened to his words.

"I do not think it wise to believe the gods would punish all for evils done by only a few," he said. "No knowledge I possess would suggest they are cruel.

The darkness will be a sign to us—only a sign, not a scourging."

"Aye, but a sign they would have us . . . the priests. . . ?"

One of his escort squeezed through the crush. He edged close to Isak's ear. "Master, a streetwarden. He escaped us."

Isak acknowledged the news with a nod. Similar things had happened several times. The warden would summon Guards, but that would take time. The hazard was not yet large.

"The gods do not tell us what we should do," he told the questioner. "The darkness will show their displeasure, but that is all."

"Aye, but the priests . . ."

"Perhaps it is with us they are displeased," Isak said, "that we permit the priests to lord over us. But it is a thing I do not know. It would not be truth to say I know what the gods would have us do. It is even possible—but in this I speculate, I do not suggest it is so—that they do not care. That is not what I believe, but I know nothing that denies the possibility."

The man was looking at him queerly, his puzzled half-smile showing gaps where teeth had been. Not a man, Isak realized, to burden with complicated ideas. Perhaps others in that crowd might understand his thought—the effort was not wasted—but this man . . .

His escort touched his elbow. "Master, we should go."

"The darkness shall come," Isak said. "With the overtaking it shall come. Wait for it, and when it comes . . . when it comes, do as your beliefs lead you to believe the gods would have you do, that we may serve the gods again."

The escort man advanced, sword out and raised. "Way for the Prophet! Way for the Prophet!"

Fingers brushed his sleeve, his shoulder, his robe as he passed. He wondered for the thousandth time whether he himself now served the gods, or whether now he only served ambitious men. He wondered how he could know, what test or evidence would give him truth, but no new understanding came.

"Way for the Prophet!" his escort cried. Swords glinted in the air. Blazing Alpher watched, standing high.

The day of the new Moon in the month of Hiyar was put to shame. The Sun went down (in the daytime) with Rashap in attendance. (This means that) the overlord will be attacked by his vassals.

—Author Unknown.

(Clay tablet found in the ruins of Ugarit; translation by J. F. A. Sawyer.)

His wanderings through the city went on. He talked with wharf men and boat men, drovers, caravaneers, and troubadours. Husbandmen come to the city with late harvest crops heard his foretelling, as did masons and pot menders, weavers and herdsmen, sewer cleaners and gentry. Everywhere he went, his robe with the hood thrown back, his face, his words were known. At each shadow post he paused to read the standing of the gods, assuring himself the tiles were correctly placed, measuring the passage of time. Now and then he

scanned the sky. Slowly he saw the parts of the pattern come together, saw the moment of the overtaking and the darkness loom certain like a heavy cloud growing large across the sky. Sometime in the course of it, though he never could mark the point, he became something other than the boy he had been. No man can see his words heard with reverence and not be changed.

When only a dozen passings remained, he had been everywhere in the city but the Temple's square and the Preserve of the High Houses, where he went now. On the castle's side of the river, on a broad platform below the heights but above the city's sprawl, a cluster of Old Family households huddled together like survivors on a rock above the wash of the sea. A carriage track zigzagged up the slope, but from its terminus above and below a time-worn stairway of red stone ascended directly. Several times in their ascent, Ebron paused for breath. Though much younger, Isak welcomed the chance to do nothing but sit and watch the view and think his thoughts. He had seen too much and done too much. The ache of fatigue was deep in his bones.

Below him the city was like a field of tightly crowded pebbles. Across the river, hunched over its brood of lesser buildings, the Temple crouched dark in newly risen Alpher's blaze, while from the west Actinic Gamow's sharper light etched hard lines against its stones. No other gods stood aloft; even the Pale One was somewhere down under the world. Without waxboard or parchment —without even tracing a mark in the thin sift of grime underfoot—he calculated where she would be and when she would come up over the horizon. Lounging on the steps below him, one of his escort offered a companion a bite from his sausage twist, then gnawed off a chaw of his own.

"You must remember, hatchling," Ebron said, "these will be well-tutored folk, and shrewd. Do not think they will be gulled by the same sophistry that persuades more common men." His breath was coming back; his tongue had never lost its sting. "Fortunately, their sympathies are with us already. Their hesitation is only on the question of whether we shall triumph. They are timid and their blood is thin. Our task is to win their support."

"I have no foretelling that would give us that," Isak said.

Ebron made an annoyed sound. Hand firm on a balustrade, he pushed himself again to his feet. "Only a short way more."

They resumed their climb. "Must we have them?" Isak asked. He could not believe he could say anything that would persuade such men.

Already, Ebron's breath was coming hard. "Hatchling, against the Guards our numbers are a pittance. We must gather . . . all the help we can. From whatever source we are able. These . . . these are men of power and . . . wealth. We . . ."

"I can only give them truth," Isak said.

Ebron's voice was a snarl. "Your prophecy interests them not. They have heard it . . . and made their judgment. What . . . interests them is . . . whether we can turn . . . it to our purpose."

Isak slowed his pace, pausing between steps, to put less strain on the old

man's lungs. Ahead, above them, three sentries moved out from under a canopy to take positions commanding the crest. From their halberds, Blazing Alpher's light flashed so bright the eye was forced to look away; Actinic Gamow's light, though not as strong, gave almost equal pain. Swords hung at their sides. Looking down, they waited.

"In truth, what can I promise?" Isak asked. They were on the last few steps. Ebron shushed him with an angry hand. He stopped and turned to him.

"Do you claim . . . ?" His breath gave out. He breathed deeply twice, glaring at Isak while his chest heaved. "Do you claim, hatchling, you do not know what you have done? What you do with every word you speak?" He smiled savagely at Isak's puzzlement, breathed deeply again, and impatiently gestured him silent. He raised a hand to the sentries waiting above. "We bring the Prophet!"

The men hardly moved. "Aye. We be told he would come," said the one nearest the top of the steps. "Our masters say he be welcome. And thyself. But those . . ." His nod managed to include all their escort.

"Where the Prophet goes, they go," Ebron said.

"Without their tools, then," said the spokesman. "Let them be laid down where they stand."

"Toothless?" Ebron demanded. He turned, went down a step. "Tell your masters the Prophet's regrets," he flung over his shoulder and took another step down.

"Hold," the sentry blurted. Ebron paused. Isak had never moved.

"Protection must our masters have," the sentry said.

"And the Prophet?" Ebron demanded. "The Prophet needs none?"

"In this place, no." The metal butt of the sentry's halberd rang on the stone by his feet. Isak glanced at Ebron, who stood not moving, fists at sides, stubborn. In a moment, Isak sensed, he would turn and go on down the steps leaving Isak no choice but to follow. Quickly—it was an impulse—Isak reached out, touched Ebron's arm the lightest touch he could, and started upward. With a startled squawk, Ebron scrambled after.

"It be true! The Prophet knows!" whispered one of the sentries as Isak mounted the last step without a break in his stride. Though he spoke to his fellows, it was loud enough for Isak and Ebron to hear, and possibly also their escort, who now were laying their swords on the steps farther down, preparing to follow.

Isak's eyes were level with the sentry's. The face under the studded leather helm was youthful, perhaps hardly older than Isak himself. With a shake of his head, Isak demurred. "I did not know. I have discovered a way of learning. It is not the same thing."

By then Ebron had caught up with him. His chest still heaved from the effort, but he nudged Isak to go on. Only when they had gone well past the sentries and were following the Preserve's central avenue between mosaic-patterned façades, green shrubs, a glittering fountain, did he speak. "You are too trustful, hatchling."

"What did I risk?" Isak asked. Except for their escort they were alone on

the street. "Was it likely the Families would give me to the Temple?"

Ebron's reply was a contemptuous snort and a scowl. "Not likely, but a needless risk. As I told you, these are timid men with much to lose should they support us and we fail. It would be possible they would think to gain more by throwing their lot with the Temple."

"Timid men?" Isak wondered. "Would they see no risk in that?"

"I do not claim to know their perceptions," Ebron said. "But the Temple would give much to have you. The fact that already they have much does not mean they are without greed. Nor would it need all of them to make a trap of this. One or two would be enough."

"Then we shall win the support of some, some will take neither side, and others will side with the Temple," Isak said. "But if, as you say, they are timid, I think none will declare their choice. None will do a thing that would show how they have chosen."

"Ha!" Ebron spat. "Hatchling, you assume they are rational men. You assume they act sensibly when their interests are involved. I warn you . . ."

"Do you say they are fools?" Isak asked.

"I say they are ordinary men," Ebron said. "Argue no more. Here is the place."

The gate was not significantly different from any other along the avenue. The hammered metal panels were stained blue-green by corrosion, and the intricate enamel patterns had been chipped by time. Ebron tapped on the smaller door set within and framed by the larger, the postern gate. When nothing happened, he tapped impatiently again. The view slit snicked open. Black-browed eyes peered through.

The heavy voice matched the eyes. "Stranger, name thyself."

"We bring the Prophet," Ebron said. He stiffened his back, squared his shoulders.

"That boy?"

"Must a prophet have white hair? No teeth? Wrinkled skin?" Ebron snapped.

"Nay. Nay," the gatekeeper said hastily. "No disrespect be meant. Be him the one?"

"When our sky turns black you shall know it."

"Please," Isak said. It was a needless altercation. "I have been called a prophet, but I do not myself claim it. My name is Isak."

"You be the one our master summoned?" the gatekeeper asked.

"I was told that," Isak said.

"Invited," Ebron said. "Not summoned. Think you the Prophet comes to beck of any man?"

"I come that I may give my foretelling," Isak said.

There was the scrape and thunk of bolts being thrown, and the metallic groan of ancient hinges as the postern gate swung outward. "By our master's command, be welcome." The gateman carried a sword at his side but wore no armor. Iron-grey chest hair showed through gaps in his tunic. His head was bare, bald, and held erect on square, strong shoulders. Past his prime, but for a gatekeeper not yet old, Isak thought as he stepped through the opening. The gatekeeper watched him with wary, fascinated eyes.

Ebron followed, then the escort, one by one. Inside they waited while the

gatekeeper shut the gate and dropped the thick brass bars—one, another, and a third—into place and turned to face them again.

With a gesture and a nod, Ebron detailed two of the escort to stay by the gate. They were taller than the gatekeeper, more robust, with longer arms and bigger hands. They took positions on either side of the older man. The heavier one grinned down at him. "We'll get along just fine now, won't we?"

From a bench beside the gate, a page boy advanced. He wore a plain smock and leggings, and an emerald blaze on his left sleeve. His eyes were blue, his hair fair. He raised an arm. "Our master waits."

The flagstone path led around a carriage shed and stable, past a sunken pool where crayfish, crawdads, and skitterbugs darted among the lilies. A bed of blossom flowers gave fragrance to the air. Tall shrubs gave shade. Ahead, beyond the pool, a dense, high hedge pinched in on either side of the path. Ebron nodded to several of the escort to go ahead. To Isak it seemed a needless precaution.

He said as much. "Whatever happens to me, the darkness will come; and it will come as I have told you, with the overtaking. Would these men risk the gods' wrath?"

"Never try to guess what these men would risk," Ebron said.

"But if they are timid . . ."

"Be quiet, hatchling."

They passed through the hedge into view of the mansion's colonnade. A man came down the steps and across the lawn. By his garb—flowing sleeves, silken blouse, many-colored kilt—this was no servant.

"Welcome! Welcome!" he called as he advanced, arms spread in greeting. "Never has the house of Maggitoro been so honored!" The top of his head was bald as bone, but hair from his temples and the back of his head cascaded smoothly to his shoulders; once dark, it now was thickly threaded with grey. By contrast his beard, even more whitened, was neatly trimmed. Ebron stopped and waited for the man to come to them.

He was still effusive. "You have brought hope! For the first time in many lives, true hope!"

Ebron met his smile with stony eyes. "I am not the Prophet." He jerked a thumb. "He is."

Their host shifted attention with hardly a blink. "Ah! Such a beautiful lad!"

Isak decided he did not like the man. "I am not a prophet either," he said, "though I am called that. I have a foretelling."

"He does not know his power," Ebron said.

"My name is Isak," Isak said.

"Ah, yes! Well!" Maggitoro turned back toward the mansion. "Our guests await!"

He led them back across the lawn, glancing back constantly, as if fearful they would not follow. His tongue never paused. "We have a magnificent feast prepared. Ah, such a feast! Two passings ago in the Skull Dome Hills, my huntsman with a flint-tipped lance had the good fortune to take a full grown hackabout male complete with dewlaps and crest. All of eight forearms tall at the shoulder it was! And done with a cast of more than seventeen paces! With

only obsidian blades he dressed it and rushed it down the river, that I might have it in time for your coming. My kitchen master has been roasting it on a wood spit since Bright Dalton went down. Never shall metal have touched its flesh!''

At one time in his wandering, Isak had been reduced to snaring scavenger bats for food. It had been that or starve. This man had never in his life felt the ache of an empty gut. The lawn underfoot had no path; he watched where he put his feet and said nothing.

Maggitoro bounced up the mansion's steps with quick, skipping strokes of foot and ankle that belied his bulk, delighted as a boy. ''All the Houses are here, your grace, and the Korman of the River People, and the Kellermeister of the Forgemen's Guild. Even Lockstra himself has come, whom I despaired would ever take an invitation from my House. To hear the Prophet! Ah, indeed, it's an exciting time we live in. Exhilarating!''

He conducted them through a hall where iridescent tapestries cloaked the walls and golden carpets paved the floor. Isak did not listen to his noise. Matched wicker benches trimmed with burnished brass and brightly stained leather were spaced along the walls on either side. In a niche two stone figures of indeterminate sex, life-sized, embraced under the stern gaze of a plainly male statue from a niche in the opposite wall. They emerged onto a portico that overlooked a sloping lawn, a garden of shrubs and greens and flowers ending in a parapet, a low wall, and a vista of the city far below. There was music and the scent of meat and a charcoal fire. At the rail Isak stopped, looked down, and saw the dancer.

She wore only flowers; bands of them around wrists and ankles, and a belt of blossoms at her waist. Her long yellow hair, which made him think of Kalynn's, had been gathered and knotted close to the ends so that it swung as she moved like a skein of satin threads. It was a slow dance, an odd combination of the provocative and the innocent that, either by design or accident, did well to display her supple, god-browned body. Oil-rubbed, she glistened in Alpher's warm light as she swayed, turned, raised her arms, strained skyward, then bent under the weight of the gods' imperturbable regard. She danced as if not aware of the men who silently watched there on the lawn; as if knowing only the music that came from the three who crouched to one side of the patch of tiles that was her dancing floor: flute, drums, and lyre. Bobbing from a thong around her neck, a turquoise charm lodged momentarily in the hollow between her young breasts, a moment later swung free.

Maggitoro signed for them to wait on the portico and tripped down the steps to join his guests. Isak watched the dancer, a comely young woman, graceful and poised in her nakedness, and found himself thinking of Kalynn. He wondered how she was; her child would come soon, if it had not already. Childbirth was not an easy time for a woman. The drum's thump gained strength and speed. The flute and the lyre matched stride. The dancer shifted weight, whirled, flung out her arms, whirled again. In a motion so smooth it could only be part of the dance, she broke the

charm from its thong and tossed it high in the air with the whole force of her body; and, continuing the motion, dropped to the tiles, with her knees hugged tight against her. In the same instant the music stopped as if the instruments had fallen from the players' hands.

The stone came down among the guests. They scrambled for it on hands and knees, shoulder-butting each other, scrabbling on the ground, gabbling like kakkaburrs over scraps of feed. Leaner than most, craggy-browed, one rose to his feet with the stone between fingers and thumb. Another man made to snatch it, but the first man raised it triumphantly out of reach. The brawl broke up in a cacophony of jeers and raucous congratulations. The winner advanced through a gauntlet of slaps on the shoulder toward the dancer, who stood now to meet him. Isak saw the flash of fear on her face before she forced a smile and stepped into his embrace. He was not sure he understood what he had seen.

Ebron chuckled. "You have never seen a concubine provided before?"

"Provided?" Used that way, the word was new to him.

"The host of this affair wants to make show of his wealth," Ebron said. "So he presents a concubine to a guest. And to assure it is the giving that is noticed rather than who she is given to, chance is used to decide who shall have her. Among men of this class it is frequently done."

Kalynn had said that if she went to auction, it would likely be as a concubine. At the time, Isak had not given much thought to it. "What will happen to her?" he asked, even though he knew. At least, he thought he knew.

Ebron sniffed. "What always happens to concubines? If she pleases him, and if she produces healthy young, he will keep her comfortably."

Down below, the dancer's bottom took the print of her new owner's hand. Her body moved against him as if the attention was enjoyed. Isak couldn't see her face.

"And if she does not?" he asked.

"She will bend every effort to make sure that does not happen," Ebron said. "In the class she was born to, this one's achievement is considered good fortune. Many would envy her."

Isak nodded. He knew that well enough; he was still thinking about Kalynn.

The drummer touched his instrument one stroke. It brought attention to Maggitoro, who stood now on the tiles where the dancer had been. He raised a hand that he might be heard.

"If Rikk can delay making deeper acquaintance . . ." he began. Ribald laughter drowned his voice. One of the musicians tossed a bundle of cloth to the concubine; it was a long, narrow strip, like a banner. She draped it over one shoulder. Though it did little to conceal her body, it gave her the appearance of being clothed.

When the laughter died down, Maggitoro resumed. "My House has promised you uncommon entertainment. So far, while most pleasant—" he nodded and smiled toward the dancer in the curve of her new owner's arm "—what we have had has been ordinary. Now—" He cocked an eye upward; Isak felt their notice for the first time.

"You have heard, all of you, that a Prophet is abroad in our city. A true Prophet, denied by the Temple and sought by its Guards. You have heard of his prophecy, though from the tongue of each man I have heard different things. Doubtless your experience is similar. So my House has found him, though the Temple and all its hirelings could not, and brought him here, that you may have it from his own tongue. Whatever its truth, I . . ."

Unease nibbled Isak's mind. "Is he an ally?" he asked over his shoulder.

"He is cooperating," Ebron said, close to his ear. "He would turn in an eyeblink if he saw advantage in it."

"But for now he is with us?"

"Do not be sure of it," Ebron said.

He realized Maggitoro had stopped talking; speaking with Ebron, he hadn't noticed. Now, suddenly, the breathless quiet made him aware they expected his voice. His hand touched the rail. On impulse he swung his legs over and sat there on the verge of the drop, looking down at them.

They were all richly clad in fine cloth and leather and stones and gold. Most were middle-aged or old. Each would be the master of a household. Some, in addition, would command great enterprises, or own large holdings of land. All had great wealth, wealth that made possible the doing of many things. It was a form of power, possibly even such power that the Temple itself would fall before them if they sought its fall. He wondered what he could say to them that he had not said before, what he could say that would win them to the Temple's overthrow. No ideas came, and he put the thought aside. He could do only what he was able—speak truth and serve the gods.

"My name is Isak," he said. "I have a foretelling."

The words came easily. He had said all of them so many times he hardly had to think. While he spoke he could watch their faces. They listened strangely, not like any others he had spoken to. They seemed indifferent, detached—seemed hardly to hear him at all. A few exchanged momentary glances. Here and there an eye narrowed, a brief, crafty smile worked the corner of a mouth. But for most of them, for all the response he saw, he might have been talking to stones. Even the dancer; he watched her face, but the worries it betrayed had nothing to do with the gods.

Enough. He had expected nothing else. Unlike his other crowds, these were not predisposed to believe, nor even perhaps particularly interested in what was truth and what was not. Only if they saw advantage would they be swayed. Only if convinced beyond doubt that the Temple's power would be broken would they join the effort. Speaking truth and only truth, Isak had no thought, no fact, no argument or idea that would make them his. If, as Ebron had told him, the help of these men was vital, he had not only failed, but it had been hopeless from the start.

Well, within the limits of honor he could not do more. Truth was his only blade. "My foretelling does not say the Temple shall be taken," he said. "I do not know if the priests shall be cast out. But the gods must want the effort made, and if it is not it shall fail by default. Nor should we let it fail for lack of

commitment. Half-hearted effort can be as fatal as none at all.''

He did not speak his other thought; that he knew no way to read with certainty the ultimate goal of the gods; that the gods might want a different thing than men did; that for them to want an effort made did not mean they would want it to succeed. He could not be sure, even, if the darkness would be a portent or a sign of anything at all. He wondered if the gods would see him punished for speaking as he had in their name.

Nor did he let his thoughts dwell long on whether a cause that needed the support of such men—men who would make gift of a woman, however willing, as casually as a mug of wine or a sweetmeat—whether such a cause was any better than what it hoped to replace. His thoughts cringed from that question. He wondered how the gods could permit such a confusion of corruption and virtue, whether it was possible that virtue itself could be corrupted. His glance touched the dancer again and his voice faltered. She was beautiful. She made him think of Kalynn.

When he was done, he saw his audience smile, nod carelessly, applaud politely. He saw Maggitoro congratulated for his enterprise and ingenuity in arranging such a unique amusement. Maggitoro grinned and laughed affably. His belly jiggled. He mounted the steps to the portico. He was spry, but by the time he reached the top he was slightly winded.

''Marvelous! Marvelous,'' he burbled. ''My House shall be the talk of the district for a hundred rounds!''

For the space of a heartbeat, Isak was tempted to recant; to say his foretelling was false, his sophistry mere sedition. But that would not have been truth. The darkness would come, and all that followed came logically, or could be made to happen.

''I do not know why it is I who must speak for the gods,'' he said. ''It is not an honor I sought, nor is there pleasure in it.''

''Yes. Yes. Well . . .'' Maggitoro said, still the jovial host. Perhaps he had not heard. ''But you must come down now and meet our guests. Some have come all the way from their country estates to . . .''

''No,'' Ebron said, advancing from his place against the wall. ''He is the Prophet. Let them come up. A few at a time.''

Taken by surprise, Maggitoro blinked and puffed, stammered wordlessly, gestured incredulously. ''But then he will come down, will he not? Join us and partake of the feast I have called in honor of him? Surely? And yourself also?''

Ebron unbent only a little. ''Time may not permit. Would you think you and your friends are all whom his prophecy must be taken to?''

Isak touched his arm. ''It is only a foretelling,'' he protested. ''How many times must I say? And I . . .''

''Be quiet, hatchling,'' Ebron whispered. And, to their host, ''We shall be pleased to join you if the Prophet's further appointments allow. You must understand—the gods are demanding masters to one who truly serves them.''

''Ah! Of course! Of course!'' Turning to the railing, Maggitoro clapped

his hands. "You have heard, my friends!"

So they were brought up, four or five at a time. The steps were too narrow to be used in both directions at once; after the first group it was used alternately by groups coming up or going down. Maggitoro himself presented them. Isak sat on the rail, his feet drawn up against the rail's supporting columns, and nodded as each name was spoken. Some of the names he knew, and they were names to conjure with. No one could have lived long in the city without having learned those names. Some had a familiar ring, as if he might have heard them before, or names much like them. Others were totally new and forgotten as soon as the faces were gone. They bowed to him and some of them touched their brows. He nodded and, for just a moment, met their eyes. Then they moved on.

The routine broke only once, when Rikk and his new possession came before him. The cloth over her shoulder left her flanks, her hips, the outside of her thighs exposed, and one breast bare; a very provocative garment. "Rikk of the House of Aratav," Maggitoro announced. The man bowed and touched his brow. Isak nodded and gestured an acknowledgement. The man started to move on, taking his property with him.

Isak spoke quickly. "And she? What is her name?"

Both Rikk and Maggitoro looked startled. "Your grace, she is not important," Maggitoro said.

"I would like to know it," Isak said. Once he himself had been sold and bought. "Does she not also serve the gods?"

He saw the men exchange a glance, and realized that neither knew her name. To them she was only a female body to be used. He looked his question into her eyes.

Fearfully, she touched her brow and bent to him. "I am called Suralyn, your eminence," she said in a timid, small voice.

"And I am Isak," Isak said. "I would have you know me by that name. No other."

"But you are . . ." The thought vanished from her tongue as a new one came. Impulsively, she took a step toward him. "Can you say how. . . ?" She cast an apprehensive glance back over her shoulder to the man who owned her, who watched their exchange in brooding silence.

Isak slipped down off the railing. He took and held both her hands. He was conscious of her scent—the scent of perfumed oil—and her near-nakedness and youth, and the fears that burned in her, and sensed that should he demand it she would be given to him as carelessly as a discarded bone. He was the Prophet. Considering his own uncertain prospects, though, to ask would be no kindness.

"I do not know your fate," he said. It hurt that he had to speak that truth. "I do not even know my own." And, to Rikk, who now came forward to reclaim his property, "Care for her. Serve the gods."

Rikk's hand clamped her bare shoulder. "With pleasure," he said, smiling fiercely, and took her away.

The procession went on. Isak hardly noticed. He sat and wondered what else he could have done, and nodded to the

faces as each name was given to him. And he knew he could have done nothing but what he had done. Which had been nothing. Deep within the swirl of his thoughts a doubt remained. Had it been Kalynn, would he have done so little?

It hadn't been, nor could it have been. Therefore, he told himself, the question was meaningless. Still it troubled him because he did not know what he would have done. He wished the dancer hadn't made him think of her, even as he thought of her.

And even as he thought of her, another part of his mind was aware that the Twinned Ones, Gold Ephron and Embrous Zwicky, had risen and stood low under Alpher above the serrate profile of the mountains, adding their light and their colors to Alpher's blaze. The Twinned Ones, who never were far from one another. He wished he could go back to their hiding place. His and Kelynn's. It had been pleasant there; the last place he had known quiet and peace, the only place in all his life he could think of as having been his own.

The last group of five was being brought up when a servant came from within the mansion and spoke anxiously to Maggitoro's ear. Maggitoro paused to listen, was still a moment, then resumed the presentation of his guests.

When it was done and the last guest was going back down the steps, Maggitoro went to the rail and looked down. Many of them were crowded around the roasting pit, where sweating servants in breechclouts and mittens cut strips of dripping meat from the carcass with black knives that flashed in Alpher's light. Maggitoro turned to Isak.

"A marvelous thing," he said. "A crowd has gathered at my gate. Rabble from the city. Servants of the other Houses. They have learned of your presence and they wait for sight of you."

Isak glanced to Ebron, who scowled as he advanced. "How do they know?" he demanded. "It was agreed no one would know but those within your walls."

"And such as must be told to arrange his passage," Maggitoro said with an exaggerated sigh. "What power in all the world can stop a servant's tongue?"

"A well-placed knife—" Ebron began, but Isak touched his sleeve.

"I will go to them," he said. "I must, if I would serve the gods."

Ebron gave a sour glance, but said nothing.

"Do not the gods want me to tell all who will hear me?" Isak asked. Without waiting for a reply, or to see if anyone followed, he crossed the portico and entered the mansion's hall. Behind him he heard the sound of feet—Ebron and his escort, he supposed—but he did not look back. A true Prophet would have known who followed.

Dick and I knew when we talked how stupid the whole concept was—that a public image was based upon some truths, some half-truths, some innocent rumors, and a few nasty lies. It meant general overexposure and self-consciousness (as opposed to self-awareness) and the constant danger of accepting someone else's evaluation of you in place of your

own—your own being practically impossible to make already.

—Mimi Farina

The gate was barred. The gatekeeper stood before it, framed between the stone-and-mortar pillars that contained it, and also between the two of Isak's escort who had stayed with him. They looked fierce, hot-eyed, steeled for battle against high odds. Through the gate came the mumble of massed voices like the roar of a stormy sea on a rocky shore. As Isak approached, the gateman stepped forward.

"Prophet," he began. "I—"

Isak went past him and opened the view slit.

The crowd that waited saw the flicker of the shutter. Excitement blazed, and the rumble of their voices turned to shouts. "Where is the Prophet?" "We must hear the Prophet!" and, beseeching, "Give us the voice of the Prophet!"

It was like all the other crowds he had seen: a chaotic mass of men, women, urchins, a few babes in arms. Some wore the liveries of important Houses, others were in tradesmen's smocks or aprons, some wore rags. All had anxious faces. Hands reached toward him, clutching the air. The gate groaned against the weight of them.

He let the shutter drop and turned. The gatekeeper, Ebron, and all his escort stood waiting. The gatekeeper turned a thumb to a ladder in the cove where the gate's enclosing tower joined the wall. The ladder led up to a walkway on the wall's inner side. Isak ignored the suggestion. "Open it."

"No," Ebron said. He pointed to the ladder.

"A priest would do that," Isak said. "I would have them see that I neither fear them nor set myself above them." He rapped his hand on one of the postern gate's brass lockbolts. "Open it."

The gatekeeper looked a question to Ebron. Ebron fumed, scowled, gnashed his teeth, but finally—scuffing the dirt—he nodded. "Know that I warned against it," he snapped.

One by one, with much rattle and clash, the gatekeeper lifted the bolts. The voices of the crowd stilled expectantly. The gate swung open with the snarl of a squeaky hinge. Isak stepped out, feeling uneasy at the mass of people before him; he hoped it did not show in his stride or the way he swung his glance from one part of the crowd to another. For the thousandth time he wished he had some new thing to say, but there was nothing. He could feel their eyes, their anxious hunger.

At the crowd's edge, close to the avenue's verge, an old weary drome crouched in the harness of an equally ancient work-scarred cart. On the seat hunched a white-grizzled man with wet, sagging eyes and much-mended, unclean clothes. The crowd gave way in virtual silence as Isak went to him.

"May I sit with you?" Isak asked.

The old man was startled. "Eh?" Then he understood. "Oh. Aye. But . . ." With an age-twisted hand he gestured behind him.

It was a honey cart. Now that he was close Isak could smell the ripe stink of it, and hear the buzz of coprophagous bugs. Too late, though, to turn aside. "Do not we all serve the gods?" he asked and pulled himself up. Still

amazed, the cartman moved to make room for him on the narrow seat.

From that small height he could see all the crowd. There were more than he had thought. Faces turned upward, they pressed close to the honey cart, squeezed together, waited breathless. A ragged woman reached toward him with the stump of an arm.

"I can only give you truth," he said. "If you are sick, if you are crippled, I cannot heal you. Nor can I make for you a change in your fortunes. My name is Isak. I have a foretelling; nothing else. A foretelling that promises both terror and hope."

He told it to them. The overtaking and the darkness were now only twelve of Alpher's passings off. He had begun to explain the significance of it—the displeasure of the gods and what they would have men do to serve them—when the interruption came.

His escort had emerged from the gate when he began to speak. With half his mind he had seen them mingle with the crowd and had thought little of it. Now, though, two had edged and elbowed their way behind a tall, muscular man in tunic and leggings; the cloth was natural-colored, mostly grey and black with random threads of red and blue. It showed little obvious wear. A prosperous man, and with the part of his mind that watched Isak wondered why they should be interested in such a man—they looked so intent—or whether it was accident that brought them together behind that man. All doubt vanished when suddenly they seized the man's arms and bore him to the stones. One mounted his back, a knee against his spine.

Surprised oaths burst from that part of the crowd close enough to see. From farther away came wordless questions. Isak stopped talking.

The one with his knee in the man's back grabbed a fistful of ear and turned the man's head to reveal his face. "Under the helm of a Guard this face has shown."

For the space of a breath Isak struggled to understand what it meant. The captive tried to wriggle free; the other captor joined his companion, settling his knees on either side of their victim's right elbow. The knife between his fingers pricked the man's throat. "Drink?" he inquired. That ended the fight.

"Wise. Wise," the man with the knife approved.

"Are you sure?" Isak asked.

Captor number one now had his knife out also. With a few quick strokes he slashed the man's tunic from collar to skirt and, spreading the cloth, exposed the band of puckered scars under the shoulder blades.

"Do ye still doubt?"

Isak had seen such scars at the baths too often not to be convinced. Honor scars resembled nothing else. Not only was this man a Guard, but one of more than common rank. Yet there was still some cause to be uncertain. Had no man ever changed the way in which he served the gods?

"Has he weapons?" Isak asked.

The two captors looked at each other. "We shall inquire," number two said with a flash of teeth. He scuttled back, knife still prepared to stab, while his partner took his knee from their victim's back. "Up, offal." His blade nibbled a rib.

Isak winced, as if the knife had touched him too. It was a needless cruelty. "Don't," he said. "Whatever else, he is a brave man."

"And if he held iron to *my* throat?"

"Were you to do as you say he would," Isak said, "you would show yourself no better." He put the hardness of command into his voice and was amazed to hear it ring from his tongue. "Serve the gods."

They stood their captive on his feet and hobbled his wrists behind him with a cord looped from one, up and around his throat, and down again to the other. Against that taut cord the man strained to breathe while, with rough efficiency, his captors sliced the clothes from his body.

"No tools," number one reported, and cast the last piece of cloth aside.

Ebron had squeezed his way through the crowd. "With bare hands such a one is dangerous."

Isak gestured to him to be silent. He leaned forward to study the captive as carefully as he could.

The man stood with feet slightly apart, trying to breathe against the pressure of the cord. A fully mature, hard-fleshed body; dark curly hair on chest and limbs. His face was dark with gorged blood. His lips were pulled back in a grimace of effort and pain. His eyes were desperate.

"Why are you here?" Isak asked.

It brought renewed effort to breathe, new struggle against his bonds. His captors moved close with their knives. Number two pricked his back where a single stroke could uproot a kidney. His throat uttered a wordless croak; whether an attempt to speak or only proof that he could not, Isak wasn't sure.

"Loose him," Isak said. "Let him speak."

"Escape, you mean," number one objected.

"Would they let him?" Isak asked with a glance at the tightly packed crowd. "Does anyone love the Guards?"

Number one followed the direction of his gaze. The crowd glowered back. He looked to Ebron for advice. Ebron looked grim but, before his audience, was restrained from open disagreement. Shrugging, number one cut the hobble cord with one brutal slash of his blade. Both he and his partner backed off a step, knives still at ready.

After one convulsive half-step when his arms came loose, the Guard stood where he was. He breathed deep, as if he had been long under water. He swung his arms, flexed his shoulders, and rubbed them to work out some of the pain. Slowly, the deep purple color of his face drained away. Only after a long time did he again raise his eyes to Isak.

Isak had been waiting. "Why did you come?" he asked again.

The man tried to speak. His voice came out a strangled rasp. He put a hand to his larynx. Coughs racked his body.

"Let him drink," Isak said, and only then wondered what could be offered. He looked around.

"My pleasure," a voice from above said. Startled, Isak looked up. Maggitoro's guests—even the host himself—watched from the top of the wall. One tall man reached a long arm out and down, a jeweled wine mug in his hand. A boy slipped from the crowd, leaped

the ditch, and, finding fractional toeholds between the stones, climbed up to take it. Impudent, hanging one-handed, he took a sip before handing it down to a hand that reached up from below.

Over the heads of the crowd from hand to hand it went and into the Guard's shaking grasp. He drank, breathed deeply, drank again. Ebron snatched the empty vessel.

The Guard looked up at the wall, scanned the faces, no longer sure who the donor had been. He raised a hand. "Honor to the gods," he got out hoarsely, and touched his brow. He turned. "And you, Prophet. I am grateful for my life."

It was credit he had not earned; the man might still die. "I gave you nothing you did not have already," Isak said. "You have not said what sent you here."

"Is a Guard so different from other men?"

A growl came from Ebron's throat. "Do you deny you serve the priests? That you live in the Temple's shadow, feeding from its tit, and do its evil work?"

The Guard did not flinch, though Ebron's hand chopped within a fingernail's thickness of his nose. He set his weight evenly on both feet, set his eyes level. "I serve the gods," he said, and though his voice was made a whisper by the harm done him, there was strength in it. "All my life I have served them." He breathed deep. "Until now, I had thought that to wear the Temple's leather and its scars and to obey the priests' commands did service to them, no matter how strange those commands might seem." His feet moved a little. He looked down at the stones.

"And now?" Isak asked.

The Guard looked up again. "Your grace, I do not know. I have spoken to my fellows. Many of us now are not sure what we should believe. Some still do not doubt, but others—more of us than not—only know that we cannot believe both what the priests have told us and what we have heard of your prophecy. So I have come not as a Guard, but as a man. I want to know what truth is. I want to know how we should serve the gods. I do not know if what you say will be either, but I sought to hear what you would say."

Isak considered the man. Ebron would say he spoke a fabrication crafted to buy his life. Looking down, though, into that face that looked up, bravely proud, sure even now that he served the gods, Isak sensed truth. Not the truth of demonstrable fact, but the more difficult truth of a scrupulously honest man. For the space of several breaths, through a silence that stretched out and out until it had to collapse or burst, Isak felt envy for the simplicity of that man's life.

Only then did he realize their roles had been reversed. The Guard, the prisoner who stood at hazard of his life, had become the questioner and he, Isak, was now the one who must answer. Nor was it only the Guard who waited for his reply. All who watched, all who could hear, waited; all that sea of faces. He took a breath and tried to shape a thought that would be equal in honesty to the honesty of the man before him, yet would serve the fight against the priests, and even so would serve also the gods.

No glib response, no pre-created argument would do it. He tried to salve the dryness from his tongue—wished he too could summon a mug of wine. The words came hard.

"I know of nothing I can say that will prove I speak truth," he said. "I have no special wisdom. Only a foretelling. Nothing I can give you will make its truth evident. You must yourself choose to believe or not believe."

"Then how, your grace—?"

"My name is Isak," Isak said. "I do not claim to be more than myself."

"Aye. Very well. But how?"

"When the darkness comes you will know who has given you truth and who has given falsehood."

"And if it does not come?"

"Then also you would know," Isak said. "But it will come, and it will come when I have said, twelve passings from now, when Gamow overtakes the Pale One. And . . ." Suddenly the thought was a blaze in him. "And I will say this to you. If, then, knowing you have served false tongues—if then you throw down your pike and your sword, or if you turn them against those who gave you false guidance, you will show how you have truly served. Go back to your fellows. Tell them I said this, and let each take the choice of his own conscience. Go in honor." He nodded to the men of his escort. "Let him go."

The voice of the crowd was a breathed-out sigh. Then, "Honor to the gods!" He did not see who shouted it first; then all were shouting it. "Honor to the gods and to their Prophet! To the Prophet! The Prophet!"

Taken by surprise, he could only sit there. It was an acclamation he had not sought, but could neither prevent nor reject. "My name is Isak," he murmured, almost as if in pain, but only the honey-cart drover beside him was close enough to hear.

> *The difficulty lies in learning that we ourselves encompass forces equally great.*
>
> *—Gene Wolfe*

Ebron declared it unwise to return to the city by the way they had come. Whether the Guard had spoken truth or not, it was too likely Isak's whereabouts were known; and though he might be safe so long as he remained in the preserve, his descent down the steps or by the road would not escape notice.

"Likely they would be waiting for us down there," he said.

Two of their escort were dispatched with messages, to go down with that part of the crowd which was returning to the city. Another was sent along with two of Maggitoro's servants to retrieve their swords. At a fountain under the cliff's high brow, a stone that the casual eye would have thought part of the living rock rolled easily aside to reveal a cavern's mouth. Uneasy, grim, the escort men traded glances. Torches were lit with mumbled prayers. Ebron nodded them inside, then Isak. He himself followed. The stone thumped heavily into place, sealing them in. But for the nervous flame of the torches, darkness held them. One of the escort groaned as if in mortal pain.

The way ascended. Sometimes it climbed by steep flights of stairs, but more often by long, twisting galleries whose walls gleamed with slime while

cold mud squelched underfoot and made the going treacherous. It was a wearisome climb.

"Hatchling, you did well," Ebron said when they paused at the top of a stairway for breath. Gloom lay below them; ahead, the tunnel led off into blackness. Around them, the stone walls oozed a clammy chill.

Praise from Ebron was as unexpected as a feast in the desert—too unlikely to be taken without question. "I did only what I thought the gods would have me do," Isak said.

That brought a skeptical snort from the old man.

"I did not want to see his blood," Isak said.

"Before this is done, you'll see enough," Ebron said. "Hope only that none is your own."

"If the gods would have it, what power of mine could prevent them?"

Ebron hawked his throat clear and spat. "The gods! Have you no grasp of what you've done?"

Puzzled, Isak stared at him. Ebron nodded with satisfaction, his surmise confirmed.

"Whether you schemed to that end or not, hatchling, you won that crowd, and the High Houses too. The priests would have you dead and your tongue in parts, but you gave that man his life when our men had it in his throat. They liked that. Do you think the priests would be so generous?"

"I do not want to be like the priests," Isak said, as if no further explanation was needed.

Ebron's laugh was scornful, humorless. "And then you told him—do you claim there was no cleverness in it?—that a Guard who turned his sword against those false tongues would serve the gods. Do you say—and think I will believe?—you do not understand the blow those words struck?"

Isak looked out into the darkness. It was softer to the eyes than the blaze of torches. There was some turn of Ebron's mind he could not grasp. "I only thought, if such a man is of the Guards, were they our enemy? And I saw they were not, except that they serve the priests. But if they did not serve the priests, but served the gods instead . . . do you know my thought?"

"I see it," Ebron said, "and I see you have not followed it to all its consequences. Consider: by themselves the priests could never hold the Temple. Children with eating knives could drive them out. But while they own the Guards, it will be very hard. Perhaps beyond the effort we could mount, and even should we win it would come at the cost of much blood. But if the Guards—even if only some of them—are persuaded to stand aside, or even better, wet their blades with the blood of priests, our prospects become significantly better. And you, hatchling, blundering and thoughtless, you have given us the tool that will cut them apart. No longer must they stand with the priests out of fear they must share the fate of the priests."

"But if we could not win against them, what had they to fear?" Isak wondered.

"Death as men," Ebron said. "Each man himself. What that one saw eye to eye when the blade pricked his throat." His voice savored the memory of it. "And do you say—speak truth now,

hatchling—do you say you had no thought of how the High Houses would see it?''

''I was hardly aware they watched,'' Isak said. ''My attention was all on that man. He wanted to know truth, and how to truly serve the gods. I think . . . I think I felt a kinship to him.''

Ebron laughed a harsh, savage bark of a laugh. ''Hatchling, you amaze me. I speak truth: you do. In some ways you are as unschooled as a babe.'' He made a sign to their escort for the procession to resume. The tunnel was wide here. Torchlight flickered off slicked walls. Wet, crumbled stone mushed underfoot. Ebron held to Isak's side.

''The High Houses, hatchling, have been hesitant to join us for doubt we could win. I told you that. Now you have shown them a device that will make us able to win, and shown them also—yes!—the remarkable skill you have of winning men to your cause. Therefore—no, they have said nothing; that is not their way—you have won them also. All but the most boneless. And even they will come, for they will fear even more the consequence for them should we win without their aid. And you, hatchling, you saw none of it!''

He could as easily have seen the spot between his shoulder blades. ''I understand the gods,'' Isak said. ''That is, I know one aspect of them. People do not follow a pattern. Even two men who fight each other—both can serve the gods, even as they fight. I think that people . . . I do not think I will ever understand them.''

The way led on. It gave no choices. More flights of steps lifted upward. Long galleries probed through stone. Here and there, the walls showed the mark of tools, but more prevalent was the patina of time; slimed walls and chilly darkness. On a stair step the treadstone crumbled under Isak's foot and he sprawled on wetness. ''You see?'' he cried. ''I am not a prophet!''

Once they clambered over a rockfall. Once they waded a cold, trapped pool. Twice more they stopped for breath and rest before, at last, the passage narrowed and a great dark boulder blocked their way. The walls were dry here, and on one side it was not native rock but fitted, mortar-chinked stones. Three of their escort—as many as could put their shoulders to it—shoved and groaned. With a grinding protest it moved, gave way, and turned aside.

More darkness lay beyond. They filed through the opening, sealed it behind them, and went on. Slowly now, the darkness thinned. Another rockfall blocked them; they picked their way over it, and now the light was perceptibly of greater strength. They turned a corner and a shaft of Alpher's blaze burned down before them. A crumbling, grime-dusted flight of steps took them upward.

Alpher shone down, with the Twinned Ones close beside, and from the east Bright Dalton sent his rays.

Blinking in that abrupt, cruel light, Isak stopped and looked for bearings, and knew where he stood. All around him, time-battered towers and half-fallen walls, the ruined shell and bones of what had been a fortress. Amid those tumbled stones, Isak pondered the old castle. Great expense and toil had raised it; brave assault had stormed it at the

cost of blood and limbs and many lives. He wondered if either the building or the taking of it had been worth the doing, and why those now forgotten men might have thought either was. Underfoot was rubble. Overhead was sky.

Oh yet we trust that somehow good
Will be the final goal of ill.
—Alfred, Lord Tennyson

The wagon was warped through the narrow gate from the alley into the bakery's yard, and there the sacks of grain were offloaded onto a platform at the back of the building and stacked under an awning. When the wagon had gone, the baker himself cut the cords on Isak's sack and helped him out of it. High buildings all around blocked much of the sky from view, but the doubled edge of a shadow against one eastward wall told Isak the Twinned Ones were halfway down the western sky, while a brighter illumination higher up told him that Alpher, not yet down, stood lower still. Groggy from the suffocating weight of grain bags around him and on top of him, he leaned against one of the tall milling stones and stretched some of the cramp out of his limbs.

"Your grace . . ." the baker offered timidly.

Isak forced strength into his posture; he still had a role to play. "My name is Isak," he said.

The baker seemed not to hear. "Upstairs . . . if you will accept . . ." He nodded to the door.

"Of course," Isak said, and followed him.

In the family quarters above the shop, the baker's woman gave him a chunk of still-warm bread, a scrap of meat, and a mug of moderately decent wine. She did not speak, and seemed fearful of him; a fear she communicated to the toddlers, both of them, who peered around pieces of furniture.

Such awe he had not sought. It pained him. When his wine mug was empty, the woman moved quickly to fill it again, and as quickly retreated. "I would prefer to be an ordinary person," he said. He was, after all, nothing else.

"But you are not," she said, as if astonished he would speak to her. Plump she was, with long brown hair in braids and a round, very ordinary face from which watched apprehensive eyes. Made bold by the exchange of words, the smaller of the children came out from behind a settee and stood gravely looking at him.

Wanting to show he was no danger, he held out a hand to her, and she came. At his knee she paused, looked up at him. She tried a timid smile which touched him to respond with one of his own. Encouraged, she grabbed two tiny fistfuls of his robe and tried to pull herself up. He put his mug aside and, conscious of the woman's gasp behind him, lifted the child to his lap. Still she hadn't made a sound. She snuggled down, her head against his breastbone, as if to hear the beat of his heart.

"Please," the woman said. "Do not think badly of her."

Isak was startled. That hadn't been his thought. The child's golden hair was silken under his hand. "Did I object?" he asked. "Should I be feared?"

"But you are . . . you are the Prophet."

"I had no choice in the matter," he said. He looked down at the child. "She is the first in a long time to whom I have been only a person. Therefore to be valued."

The woman humphed. "A warm lap," she said with wry scorn. "She is a greedy child. Her father spoils her."

"And you?"

She was still a moment, and he realized he had touched something in her. "I worry about the life she will have," she said. She nodded toward the boy, still lurking behind a couch. "That one also. Each time the tithe man comes . . . Could you . . . ?"

"I can change nothing," Isak said, feeling hurt that he had to speak that truth. "I do not have that power. Nor do I know the fate of anyone. It is possible she will be happy." Even to his own ears it sounded lame. "If the Temple is taken, there would be hope."

"Could it make so much difference who sits in the Temple?"

"I would like to believe it," Isak said. "But I do not know." He stroked the child's hair, that golden wealth. "I have hope," he said, and tried not to think his doubts. The little girl snuggled deeper into his lap. He wished he could stay there.

O it's broken the lock and splintered the door,
O it's the gate where they're turning, turning;
Their boots are heavy on the floor
And their eyes are burning.
—W. H. Auden

Bright Dalton rose and he made ready to go out. When Red Bethe came soon after, he went. Alpher stood low in the west. Already his escort was in the marketplace, dispersed to every corner, aisle, and cul-de-sac. Their weapons were concealed, their garb was varied, but he knew them. Even from the back he could pick them out, he knew them so well. That one ahead of him, waving his hands as he harangued the man at a shellfish stall . . .

"I say he speaks truth," that one declared. "Why else would the Temple want his tongue?"

The merchant said something too soft for Isak's ears.

"Very well. Doubt if ye must," came the reply. "But when the darkness comes, how then will you serve the gods?"

Hand at throat, the merchant began a response but stopped as the crowd aswirl around Isak parted. Isak was careful not to change his stride or shift the direction of his gaze. The merchant pointed an unsteady finger. "Hold! Is that . . . ?"

The escort man turned. "Why, yes, I do believe . . ." He caught Isak's sleeve. "Are you . . . ?"

"My name is Isak," Isak said. The two disputants traded glances.

"Tell us. Is it true? Shall there be darkness?"

"There shall be darkness, and the Temple shall be shaken," Isak said.

It was a planned exchange; not for a particular moment, but to be used as opportunity permitted. But the question that broke from the merchant's tongue

was spontaneous. "How can I know you speak truth?"

"Can a man serve the gods and not speak truth?"

"Ah! But do you serve the gods?"

"If I do not, my life is wasted," Isak said.

"How can I know?"

Isak stood calm before the merchant's agitation. "I do not ask you to believe," he said. "You know my foretelling, or you would not ask what you have asked. When the overtaking brings darkness you will remember that I told of it. Then you will know, and will know also how the gods should be served."

The escort man let go of his sleeve. He moved on. Even in the short time he had paused, a crowd had gathered around him, but a way opened for him to pass and a murmur of words and wordless awe spread from around him across the marketplace. Far off he heard shouts of disbelief, amazement, excitement, hope.

He made his way through the square. Shoppers and merchants interrupted their haggling to watch him pass. Several times he had to pause as questioners pressed around him. It was always the same questions; he had learned how to answer them long before. Only the question he silently asked himself gave him hesitation: the question of where solid truth ended and became the truth that could be made true by men's efforts, and whether one was different from the other in the view of the gods.

A legless, tongueless beggar plucked the edge of his robe in mute appeal. At first, when he looked down, Isak thought it was a dwarf, but then he saw the stumps, the puckered scars, the crude, short crutches the creature used, the open, hollow mouth with broken, twisted teeth, and the pleading eyes.

"I do not have the power," Isak said, but the words turned thick in his throat. He touched the man's brow, knowing it would do no benefit even though it was the thing asked, and passed on. Behind him, the rattle of coins falling into the alms bowl took him by surprise, but as the Prophet he could not show it. He could not even turn to see.

He wished he could be himself again. Only himself. Yet how could he, with the gods to serve?

"How do I know?" he echoed a salt merchant's question. He pointed to the eastern sky where Dalton sent his glare past a tenement's cupola. "As I know the Pale One shall rise when he stands highest. The coming of darkness is no more strange to me."

The salt merchant stared at him, amazed. Almost against his will he glanced toward Dalton, then to Isak again. In his eyes Isak saw conviction form, even before the Pale One rose. "Serve the gods," Isak said, level-gazed, and moved on.

The marketplace had been one of the city's first. It clung to a crestline where the slope of the land coming down from the base of the cliffs abruptly steepened. On the side toward the river were tenements thickly crowded, step by irregular step descending toward the docks, warehouses, and wagon yards of the floodplain. In the opposite direction, extending to the cliffs and even clawing a little way up those steep ramparts, were homes of the more well-to-do. The people of both districts and of the

blended zone between crowded the stalls, haggled the merchants, sampled the wares. Hawkers' cries and the scent of hot sausage filled the air. The grind of pushcart wheels, the mumble of a thousand voices each with its own words, and the whisper of sandals on stone hushed and thundered. A spice seller opened a bale and sent a pulse of fragrance out into the space around his stall. Bright Dalton burned down.

"Why do I ask such a price for my korch polyps? You must ask?" a plump fruit seller protested. Sensing opportunity, Isak paused. Engrossed in their business, neither merchant nor customer noticed.

"First," said the merchant, "you must have heard the crop was poor, this round. I do not know why; the grove keepers are decent folk; but with a disappointing harvest they must now ask a higher price or starve."

"They can eat korch polyps, can't they?" his customer argued.

The merchant persisted. "And the boatmen. They must bid one against another, or have nothing to fill their boats. An empty boat does not pay for its voyage, and if there are not enough korch polyps to fill all the boats, what then?"

"The boatmen can net eels."

"When the water is low?" the merchant asked. "And then, when the boat has come to the dock down there, I must offer a price that is equal to the other fruitmongers', knowing that some will be spoiled and some too green, or I shall have no korch polyps for my trade. What can I say to a man such as yourself who asks where my korch polyps are? That I have none, though there are some to be found all over the city? He would think I had no skill at my trade. He'd buy nothing. May I ask what trade is yours?"

"I work leather, and I shall eat turnips and yams. Times be hard."

"It is said the yam harvest also was poor. I thought only the tithe collectors had not heard."

"Then turnips," snapped the leather worker. Turning away, he came face to face with Isak. As recognition broke he blinked, stood still, one hand raised as if to speak though no sound came.

Instead it was the fruitmonger who spoke. "Ask him."

It broke whatever stilled the leather worker's tongue. "Your grace, what would you do?"

Such questions had come to Isak hundreds of times. In that circumstance he would have been surprised only if it had not been asked. Still it was a question he had to think about. To give full truth would be to say he knew nothing of their prospects, yet that would leave both men dissatisfied, his own commitment abdicated, and the campaign against the Temple not advanced. Would such response be proper service to the gods?

All that he had pondered every time. No new insights came. "The gods have let me see only what they have wanted me to see," he said. "For greater knowledge I must guess and hope, like any man."

"Your grace, that is not what I asked," the leather worker objected.

Isak nodded. "But you must know that I speak only as a man. I believe that when the Temple has been cleansed the gods will send better times, but that

is only a belief I hold. It did not come from the gods. First, though, they will send the darkness—that much they have revealed to me—and I believe that then a time of disorder will come. I do not know if it will be brief or long. But to your question: had I the coin, I would buy, for it might be long before I could hope to taste korch polyps again. I would want the memory of that taste to stay with me through the time of troubles, until the better times have come. But it is meaningless to say what I would do.'' He spread his arms, to show that the cord at his waist held no purse. ''I do not have a coin.''

''You have paid its coin!'' the fruitmonger crowed as his hand chose a large korch polyp from the basket and thrust it into Isak's hand. ''My finest! More than its price!'' And loudly—no one nearby could fail to hear. ''Did you hear? The Prophet has said 'Better times!' ''

The leather worker could only yield. ''Before such assurance, who be this one to doubt?'' He tossed a coin that flashed in Dalton's light and which the fruitmonger snatched from the air as if he had been snatching coins all his life. With a plump korch polyp in each hand, the leather worker strolled off into the crowd.

''Better times!'' the fruitmonger hailed, dropping the coin into his purse. ''Honor to the gods!''

Isak gave the korch polyp to a ragclad crone with a withered arm, a useless leg, and a face that hung slack on one side. With her good hand she thrust it to her mouth, nodding gratitude even as she sucked the juice. When Isak had gone past he heard behind him again the clatter of coins in her alms bowl.

Was it possible he could change their lives by such a momentary touch? He did not dare look back, for fear he would see who followed him.

The shadow posts fronted a shallow forecourt midway along the northern edge of the marketplace. Their location was such that no building's shadow blocked the gods' light on them; and equally no merchant's awning was allowed to put them in shade. It was different from most emplacements, though; instead of the usual solitary pillar there were two, for they dated from an earlier time when it was thought there was significance to where and how the shadows of two gods would cross.

Isak stood before them for a time, trying to satisfy himself as well as he could with only his eyes to measure with that both stood properly vertical; it was a problem with old posts, but these had been well maintained. While a modest crowd watched from a respectful distance—for the Prophet was conversing with the gods—he paced the stones to confirm that the markers were correctly lodged. Their system of measures was also of an older convention, so it was slow work. Dalton and Bethe cast diverging shadows westward, while the Twinned Ones, low in the west, threw theirs, more narrowly divergent, eastward. Alpher was gone from the sky. He was standing between the two dark patches that the shadows of the two posts made where they crossed—casting shadows of his own, which also made dark patches where they intersected the others—when Kalynn slipped from the

crowd and stood, for a moment hesitant, in the open space between.

He saw her, and in the quick turn of his head she saw that he saw and came toward him. Not knowing what to say or do, he did not move. In his random course through the city he had seen so many women who, for the space of a caught breath, he had thought to be Kalynn, that now he did not dare to hope. But as she came to him, instead of differences, he could see only more resemblance. Instead of doubt, he felt a certainty grow in him until no shred of doubt remained.

She walked with a heavy, flat-heeled stride, for the child was still in her. The swelling of her body, gross before, seemed now on the verge of bursting. When she came near and raised up her hands to take his hands, which he had not known he had raised, the jeweled gold cuff caught a coruscating flash of the Twinned Ones' light, a thousand sparkling, many-colored stones, and though he had never seen it before he knew beyond question what it had to be.

She saw the direction of his glance and looked away. "I wanted to see you, Isak." Her voice had strain in it, as if some force compelled her to explain. "A bride of the gods who carries their child should have a right to talk to their Prophet, shouldn't she?"

There were so many false assumptions in those words that he could only stammer. His confusion made her smile. "I know," she said with a glance back at the crowd. "It's not truth—none of it. But no one will wonder about us meeting like this, even if what they think isn't truth."

"The priests would know," Isak said. "If we fail . . ."

Her chin came up. "We're not going to fail. But even if we do, would they wonder about what a silly girl has done? One they have worked their will upon?" She shook her head. "They'll have worse things to think about."

He had to nod, though doubts still whispered through his thoughts. Wrong assumptions led to false conclusions, and to guess how another mind—a mind equally misguided by assumptions—might judge things, was the wildest folly. He said, though, "Have you been well?"

"As well as I could hope," she said with a lift of her shoulders and a downward glance. "Very soon now, and the midwife is encouraging. But I wanted to see you—before."

The thought came that there might be no after for either of them, but he did not speak it. "You know there is not much I can do," he said. "I wish it was different, but I am not master even of my own life."

She smiled a small smile at that. "The city is full of talk about you. The miracles you've done. Your prophecies."

"I've done no miracles," he said.

She put a finger to his lips. "I would prefer to believe in miracles," she said firmly.

"It would not be truth," he protested.

"Everyone else believes in them."

"That does not make them truth," he said. "Do the priests? Does your father? His friends? They who have turned me to their purpose?"

A waggle of her hand dismissed such

questions. They were irrelevant. "Isak, what I'm trying to say, you're . . . well, important. What you say, what you do, where you go, they know you. They believe in you. You . . ." She stopped another objection with a quick flutter of fingers. "I don't mean they're all sure the darkness is coming. That's a hard thing to believe, even harder than the miracles. But when it does come, they won't be surprised, because you said it would, and after that they'll believe anything about you. You'll be the most powerful man in the world."

He wondered how much of that was true foretelling, how much wild exaggeration. And he wondered too if saying that was the reason she had wanted to see him and, if so, why. He kept those puzzles to himself. "More powerful than your father's friends?" he asked. It was a danger he had not thought of before. "I do not think His Lordship will allow that."

A frown touched her brow. The thought was new to her also. "Maybe he won't be the one who decides."

So she hadn't been trying to warn him. Was it something else she wanted to say? "Nevertheless," he said, "it would be convenient for him if I do not live."

"What will you do?"

He had no skill at scheming, and knew it. The other players in the game never moved the way he expected. "I do not know," he said. His tongue felt dry. "Perhaps the gods will help, though that is not a thing I can count on." Even to his own ears it sounded lame.

She looked away; he could see only the pinched, tight corner of her eye, the thin-pressed corner of her mouth. Blindly her hand sought his arm. She turned her face to him again. Her eyes glittered with wetness. "How can you stand there and say things like that? You're going to do nothing?"

"What will happen will happen," he said. It was like a cold wind blowing through his bones. "I will have to think. I will do what I can."

She could neither look at him nor look away from him. "Isak, why couldn't we have met somehow differently?"

It was an odd question. Odd and absurd. "It could not have happened," he said.

"It could have happened a thousand ways!"

He shook his head. "You are a prosperous merchant's daughter," he said. "You live in a fine house. You had friends, a whole society that I was not part of. I was a scribe, indifferently taught, given only a booth in the Narrow Streets shrine and a wage that left me thin and often barefoot. We might have passed on the street, though I doubt you would by choice have gone through the districts where I normally was. But if we had, you would not have noticed me, nor would I dare have gone near to you."

As he spoke, she had looked down, perhaps to contemplate the pattern of light and dark shadows around them—shadows made by the shadows of the posts on either side of them; perhaps seeing nothing at all. Only when his voice stopped did she look up, her grey eyes for a moment direct and clear.

"Then maybe not everything is as terrible as it could be," she said, almost

wistfully, as if it was a thing she needed very much to believe.

He had no answer. He could think of no words that would make her see the reality that surrounded them, trapped them, quite possibly doomed them. Still, in pain, he would have spoken and his mouth had opened and his tongue had tensed to shape the words he had not yet found when interruption came.

"Mistress! Guards!"

He whirled. He knew that voice, though it was a moment before he knew its owner's name. By then Hobur was already lurching stiff-limbed across the stones, one arm reaching toward them. "Guards be coming!"

Isak caught her arm. "Go with him. Hide in the crowd. And hide that . . ." In his urgency, he could not adequately speak of the cuff she wore, but his nod and his uncommon lack of words was more eloquent than any words could have been. "It's me they want."

"I know that," she said needlessly. "Isak . . ."

He stood on tiptoe, trying to see over the heads of the crowd. Where a street came into the marketplace, Guards were piling out of a high-sided wagon. Others, already out, were advancing through the crowd which scattered from the tips of their swords. Not one of his escort was in sight except a long-limbed young man who fled ahead of the crowd.

"With such courage as that shall the Temple be cleansed?" Hobur roared.

Isak looked to another street. A wagon blocked that way also, and the bobbing helms of advancing Guards, and a crowd in flight before. Another street? The same.

He thrust Kalynn to Hobur. "Care for her," he said in haste, and whirled to run.

"Isak!" Her voice rang clear behind him. The paving stones struck hard at his feet. "I wish it was yours!" she cried. "Isak! My baby! I wish it was yours!"

He leaped a row of vendor's stalls, pelted on through a shambles of tubers, shellfish, and bolts of iridescent cloth. Behind him other shouts now rose: consternation, outrage, urgent commands. He darted through another stall. "Serve the gods!" he gasped to the startled merchant, dodged a pile of green and purple melons, found open space, and ran. From behind he heard nothing now. All he knew was the hardness of stones, the ache and heave of his breath, the beginnings of fatigue in his limbs. He changed direction again in the hope it would confuse pursuit through this warren of potmakers' wares, awnings, and baskets of eels slowly leaking their fetor under Dalton's pallid glare. No thought of destination was in him; only the instinct of a hunter's prey. As he ran, an iron certainty grew in him that no street out from the marketplace would be open. The Guards would hold them all.

Ahead he glimpsed the baker's shop and felt the burn of his straining lungs. He made for it, deaf now to any sounds of pursuit, too afraid to look behind. He stumbled against a trestle of warm-scented loaves as he passed, scattering them chaotically and bringing the woman to her feet. One of the children started to scream and the other watched amazed as he plunged into the shop and the shop's dull quiet, the hulking oven radiating heat more shrivelling even than Alpher's blaze. He seized a barrel and

with all his desperate strength tipped it and sent it wobbling on its rim toward the doorway he'd come through, hoping to block it, and lurched on. The courtyard door opened inward to his grasp, and for an instant he stopped on the threshold, beholding the sight of a Guard in cuirass and helm standing over the baker's body which lay on the turf in a pond of blood, his shoulder joined to his body by only a twisted scrap of flesh. And for an instant more he and the Guard looked at each other dumbly before the Guard began to raise his pike and his throwing stick, and Isak slammed the door and thrust the heavy bar into its chocks and whirled to run, and as he turned felt the tip of the Guard's pike drive through the solid door and nick his arm.

No use to go back out the way he'd come. He looked around. A stairway to his left led down, but a cellar without a way out would be no better than a tomb. Half hidden beyond the ovens, the stairway to the family quarters rose. Isak took it two and three steps at a time.

He burst out into the large room. Here, only so little a time ago, the child had cuddled warm in his lap, but now there was no one, no help, no hiding place. Above, dark with shadow, heavy beams held up a high, blind ceiling; no skylight, no stairway upward, not even a laddered hatchway to the higher lofts. At the front, tall, high-set windows let in the gods' light. He crossed the distance, climbed up on a bench, looked out. It was a long drop to the marketplace below, and it would only put him back in the Guards' grasp. He craned his neck to look upward. If he stood on the sill . . . if his fingers and toes could find a grip . . .

To think was to act. Here and there, scabs of plaster had peeled from the wall, exposing timbers and coarse brick. He tested the plaster, found he could scratch out places for his fingers. He kicked off his sandals and started to climb out. The wayfarer's robe interfered with his movements; he struggled out of it. Back behind him came the scuff of fast feet coming up the stairs. He clawed at the wall; a crust of plaster came away in his hand. Probing anxiously with his foot, he found a notch no deeper than a fingernail. He tried it; so long as his toes had strength it would hold him. He edged away from the window sideways and upward, prying out new handholds as he went, somehow finding new points of purchase for his toes. Bright Dalton burned uncommonly warm on his nakedness. He hardly knew it.

Gritty plaster caked like wedges under his fingernails and turned the tips of his fingers raw. Once he glanced down—those upturned faces far below!—and for a long, sick moment he clung unable to move before, taking a breath, he was able to make himself go on. A Guard leaned out the window, yawped an oath, and tried to stab him with his pike, but by then Isak had almost reached the narrow cleft between that building and the next, more than a pike's length away. The Guard straddled the windowsill, drew back his arm to throw, lost his balance. Catching himself, cursing, he dropped his weapon. Isak heard it clatter on the stones below.

Then he was into the cleft, scraping skin from his shoulders and rib cage and

knees as he squeezed between the walls. There was hardly space to breathe but, a hand's breadth at a time, slowly, he started upward. Hard edges of brick gashed his body, flayed skin from his back, his elbows, chest, and thighs. Horrible masses of filth—bat droppings, grime, wind-wafted trash, and decomposed relics of the bats themselves—came loose in his hands, pelted his face, invaded his mouth and his eyes and all the places on his body where the skin was gone; and everywhere in all those places, burning burning burning. Whole lifetimes of filth and the tiny, delicate scatter of bats' bones that crackled under his desperate hands. He gritted his teeth and squeezed his eyes to slits and clawed his way upward toward the only hope left him, that narrow band of dazzling sky, mindless of pain and the ache of failing strength and the foulness choking his throat.

It seemed forever. The bricks tore his fingertips. The wall behind him raked his shoulders like an endless succession of fangs and rubbed sulphurous filth in his wounds. His toes and fingers were bloody stubs, all normal feeling gone. All he could feel was pain. Slowly that band of blazing sky came nearer.

Then he reached up, and his hand found nothing. He almost fell, and knew that if he had fallen the bricks would have stripped the flesh from his bones as he went down. He reached again more carefully and found where the rotted rafter stub had been, and—bracing his back against the cruel bricks behind him—edged himself up with his toes. Now he could get his hand up over the capstone at the top of the wall, and after another effort his other hand was beside it.

He hung there, trying to catch his breath through the acrid smut in his breathing passages, trying to gain back the strength he had spent to come this far. His fingers began to slip in their own blood. He dug in his toes. His arms felt like hollow, dry husks; no flesh, and only fire where his hands had been.

He pushed himself up. He flung an arm over the capstone, hung there, heaved another breath, and pushed again. The bricks under foot gave way and he dropped, wrenching his arm almost out of its socket, but it stopped his fall. Feet scrabbling frantically for purchase, he dangled and heard the rattle of filth cascading down between the walls and the sobs of his own despairing agony. But then, hearing that voice and realizing it was his own, he stopped. A distant, still-calm part of himself took control.

Ignoring pain, he let his arm carry his weight and carefully probed his toes among the fouled bricks for a crevice that would take his weight, found one, then another, and another higher up than before. With an effort that brought pain like a sawblade to his weight-bearing shoulder he got his other arm over the capstone. Too exhausted and miserable to move ever again, he hunched over, eyes shut, so wearied in his relief that, if he had still had the strength, he would have cried.

A sound made him look up. He saw the sword first, its tip not a hand's breadth from his throat. Only when the Guard spoke did he notice the hand that held it, or the cuirass, or the twin-crested helm.

"Does you yield?" the Guard demanded.

Isak might have let go, let his arms slip, let himself fall and accept death, but quick, rough hands took hold of his shoulders and dragged him up onto the rooftop. They sprawled him on the tiles like a whipcracked eel. A swordpoint pricked his naked belly, down low, in unmistakable threat. A battle-shod foot nudged his ribs.

"How now, Prophet?" A Guard's voice—a different Guard's—sneered, then chuckled. "Some Prophet, eh, lads?"

If he saw anything after that, Isak never remembered. Bright Dalton's glare blinded him.

END OF PART THREE

For permission to use the quotations included in this installment, I want to thank—

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Usually we devote one cover to a serial, when the first installment appears. In our next issue (7/20/81) we deviate slightly from usual practice and give a *second* cover, by Wayne Barlowe, to the conclusion of Dean McLaughlin's *Dawn*. It's such a striking scene that we just had to—you may think you know how the story ends, but chances are Dean takes it a good step beyond what you expect.

Barlowe has also done a set of drawings for our fact article, "Extraterrestrial Zoology." This is the follow-up we promised to "Xenobiology," by Dr. Robert A. Freitas, Jr. This one gets into speculations on the physical forms life might take in a wide variety of environments, and Barlowe's "textbook sketches" illustrate a few of the possibilities.

And then we'll have stories, including (space permitting) some by Steven Gould, Timothy Zahn, Joseph Green, and Thomas A. Easton, plus a thought-provoking editorial by Reginald Bretnor on the prevention of war and the value of empires.

IN TIMES TO COME

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Solar Wind, Peter Jones, Perigee, 92 pp., $10.95
Destination Moon, Robert A. Heinlein (ed. David Hartwell), Gregg, pages unknown, $15
The Next Whole Earth Catalog, ed. Stewart Brand, Point/Random House, 608 pp., $12.50

THE MUTANTS ARE COMING!

This month I offer a column full of mutants.

No, I don't mean books about mutants, I mean mutant books. There isn't one book on this month's list that isn't *warped* somewhichway; they're all dwarves or giants or hypertrophies or hybrids of some sort. Which is not to say that any of them is necessarily a "bad" book, whatever that means. (Some people consider a book bad if it kisses them on the first date. Me, I think the only "bad" books are those that give you mental clap.) But lookie here: I have, in order, a pair of brilliant Siamese twins who were artificially joined after birth; a novel that should have been either a novella or a *much* bigger novel; a novel that should have been an epigram; a book containing two books and

one ending; a book that should have been at least two books; a book that should never have been one book, a book that probably does not really exist (or does it?); a one-man art folio featuring work by a dozen people; a novel that became a movie that became a novella that became a book; and a magazine that weights two and half kilos.

Sometimes it just sort of *rains weird* for several days straight.

The first mutant on the list, **Binary Star #5,** is also one of the best, a highly successful mutation which I hope will breed true. Reasoning that two heads are better than one, and in fond remembrance of the old Ace Doubles, Dell editor Jim Frenkel created the Binary Star series a few years ago. Each book contains two novellas, one by a "name" writer, the other by a less-well-known writer (the exception being #1, which featured Leiber & Spinrad, both Names) plus a handful of illustrations. It has been pretty generally agreed for many years that the novella is the natural length of the SF story, long enough for background and development without being padded. It is also hard as hell to *sell*—too long for most magazines, too short for a book. The Binary Star format offers a well-paying novella market, *and* offers lesser-known authors a chance to piggyback on more established colleagues. I applaud.

All the Binary Stars so far (you can see why I don't abbreviate that title, right?) have been at least good, but not since #1 has one been superb—as is the one under discussion, #5.

Top-billed is "Nightflyers" by the Hugo- and Nebula-winning George R. R. Martin, which needs little discussion here since it originally ran in *Analog* last year. I rate it at very, very good, which is to say, down near the bottom limit of George's range of excellence.

But the second story has not appeared anywhere before, and that is why you should run out and buy the book. Because Vernor Vinge's "True Names" is *so* damned good it deserves to be on the Hugo list, and this is the only look at it you're likely to get before balloting time.

I don't know why Vinge failed to secure a magazine publication for this splendid novella—I think if it had run here in Analog it would have been assured a Hugo nomination, whereas now I'm going to have to do a lot of drum-beating for it. (It could just as easily have appeared, to equally good effect, in *F & SF* or any other forum.)

Its title derives from its extraordinary central image/premise, which I think is the first *new* concept I've seen in SF in a long while. When men can interface *directly* with the computer network, says Vinge, in a true brain-to-machine hookup they will become as wizards, able to work mighty magics in The Other Plane. And like wizards, they will be vulnerable *only* to one who knows their True Name. . . .

It is a splendid analogy, and Vinge develops it fully without ever taking time from a very exciting and action-packed plot. His characters are "vandals," sort of third-generation Phone Phreaks who are clever enough to "live" undetected within the global computer network, ripping off computer time, bollixing up IRS and other Establishment programs, generally having fun. They know each other only by their image-construct identities, "associate" together out of mutual respect in small groups called "Covens" on The Other Plane. The Coven we follow includes Robin Hood, The Slimy Limey, Wiley J. Bastard, DON.MAC, The Red Witch, The Mailman (he's al-

ways slow to respond), and our hero, Mr. Slippery. Slip is given two very tough problems. First, he learns that some member of the Coven, identity unknown, has begun systematically "enslaving" the other members. This is complicated by the second problem: the Feds have learned Mr. Slippery's True Name! They want him to roll over for them, nark on his colleagues. This is all within the first few pages, mind you—from there the pace accelerates sharply. I will not give anything away, but I will say I turned the last fifty pages in breathless haste. Then I went back and re-read it twice to marvel at the carpentry.

The story is a marvelous mixture of hard-science SF and sword-and-sorcery imagery. Vinge posits that in a direct neurocybernetic interface, the information would be analogized by the brain into symbols it is comfortable with. The "place" in which the Coven "meets," for example, is or seems to be a castle, guarded by a program which manifests itself as a firebreathing dragon, sitting in a magma moat, wearing an asbestos T-shirt. Fail to satisfy it, and it will "kill" you, dumping you back into the real world—a fate most Wizards seem to regard as very little better than death.

Vinge set himself about fifteen challenges in this story, any one of which might have wrecked a lesser writer, and pulled them all off with appalling ease. No point listing them all—but the most important one to my mind is this: he succeeded in making me *feel*, for over an hour, what it is like to be more than human. That is one of SF's major challenges, and it is bloody hard to do.

Do not miss this ingenious and truly original story—it is one of those that, when you're done, you wish the author were present so you could applaud. Combined with George Martin's usual quality, it makes this book an extraordinary buy.

It says here that Roger Zelazny's **Bridge of Ashes** was published five years ago by New American Library. To steal Keith Laumer's line, it must have been done with great stealth; my ears prick up at the sound of Zelazny's name and I swear I never heard it go by. I first noticed it in a Gregg Press catalog a few months ago, and ordered it on sight. Even Zelazny's failures are interesting, and if someone at Gregg thought this was worth printing on acid-free paper and sewing into buckram boards, it was probably *very* interesting. . . .

Sorry. Just interesting.

The hell of it is that there are materials here for either of two very good stories. If *BoA* were either half or twice its present length, it would be terrific, but as it stands it's either an inflated novella or the skeleton of a large novel. Either way it's a non-viable mutation.

The central story, to me, is that of Dennis Guise. His problem is that in a world in which telepaths have gained social acceptance (don't ask me how), he is by far the most powerful telepath ever born. There seems to be no limit to his range. This is a problem? You bet. His own personality never has a chance to form, shocked into catatonia at birth from the dreadful cacophony of all that *noise*, the din of all that thinking.

In adolescence Dennis begins to imprint. His mind reaches out around the planet, selects a personality, and *adopts* it. For a while Dennis *becomes* the person on whom he is imprinting, sees through that person's eyes, mimics the

speech and actions of a stranger thousands of miles away. His therapists see this as a healthy sign. Then he learns to reach across, not space, but *time*, imprinting on personalities not now alive.

This sounds very interesting, yes? A monumental premise for a novella. But to get this far takes Zelazny 70 pages, during all of which time the book's protagonist literally has no personality with which the reader can identify. Worse, these 70 pages *start* on page 25—Zelazny spends the first twenty-odd pages, before we even meet Dennis Guise's body, in planting a "ticking bomb" for Dennis to deal with when he grows up. The bomb is then forgotten until the last 40 pages. Perhaps it had been better forgotten altogether, for it is a ticking bomb of great apparent preposterousness. There are these aliens, see, who since the dawn of time have been secretly manipulating the evolution of the human race, because it is the simplest, most efficient way they can think of to give Earth the atmosphere of "sulfur dioxide, nitrogen oxides, methyl mercury, fluorocarbons 11 and 12, tetracloroethylene, carbon tet, carbon monoxide, polychlorinated biphenyls, organic phosphates and numerous other industrial effluents and discharges" which they find congenial to life. "In short, they devised the human race as a planoforming agent, designed and programmed so perfectly that it would not only do this job for them, but would self-destruct when it was completed."

Now I don't know about you, but here are some of my problems: if these pollutants are essential to the aliens, what did they live on for the millions of years it took for their experiment to yield the slightest result? If the pollutants are non-essential but desirable, why were they worth millions of years of painstaking effort? If primitive human technology could produce enough to do the trick in a scant couple of centuries, why didn't the aliens do it themselves, eons ago? Analogize into human terms: you want the garage cleaned out, so you birth a child and lock it in the garage with a supply of food. You lose the use of the garage, of course, but in only twenty years the garage has been straightened up and that sticking window in the back has been pried open.

A mysterious Dark Man, possessed of literally indescribable powers (at least, I never figured out their nature or limitations), opposes the aliens. There is a hint that he is a renegade alien, corrupted by love of a human woman, but nothing is done with this. He has done fairly well in opposing the aliens over the centuries (it says here), but now a climax approaches and all will be lost unless he has the help of Dennis Guise. What does Guise have to offer? I'm not sure we ever find out.

Back to our original story. How does Guise (a little too cute, that name, even for Zelazny) break free of his vampiric mode of vicarious living? Zelazny omits to state; Guise just does. What does his own personality turn out to be like? We never really get to find out, because almost from the moment he "wakes up" he gets entangled in the Dark Man vs. aliens shootout.

Spoiler Warning! Here comes the ending. Spoiler Warning!

Worst of all, when it all comes down, when the greatest telepath man has produced confronts the deadliest menace

man has ever faced, the result is a climax so subdued that it would fail to register on the most sensitive seismograph ever built, a stifled sneeze of a showdown after which Guise (and you) must be *told* that the battle is over and he has won.

Won what? An end to pollution? Millions of years of conditioning vanish overnight? Beats me. The Dark Man dies before he can say.

I wish Zelazny had dumped the ancient aliens and written a brilliant novella about the *interior* struggle of a telepath with no "off" switch trying desperately to fence off his own ego. Failing that, I wish he'd developed the alien plot line sufficiently to make it plausible and meaningful, and *woven it into* Guise's story. The ticking bomb must be constantly heard ticking or there is no suspense. Mention it only at beginning and end and it takes on the aspect (and raises up the attribute) of a plot contrivance.

I always enjoy reading Zelazny; he's so *civilized,* so moral; his words chase each other fluidly and fluently. His theory of exactly *how* the aliens created mankind is ingenious and, I think, original. But I'd have to describe this book as a misshapen thing with many features of interest.

On Wings of Song has (as do the majority of SF paperbacks, and I'll say more about that later) a misleading cover. We see a jubilant young man soaring high above cultivated farmland, eyes on the stars. That is the first and last cheerful thing about this elegantly and exquisitely depressing book. I said earlier that the book ought to be an epigram; the epigram is: We humans show a modicum of natural, untrained talent, but when it comes to pure sadism, we just aren't *in* it with God.

It's just barely possible, Disch seems to say here in fable form, that there is a way of escaping from the endless parade of horrors that is modern life—but *you* probably won't find it . . . *certainly* not if you deserve it.

The scene is a relatively near-future Earth falling apart at every seam, a matter of years before the return of the Dark Ages. Some people can fly. That is, they can leave their bodies and become "fairies," creatures of pure spirit. Three things seem to be required: a song—for only song fully unites both hemispheres of the brain (poppycock); and, apparently, sheer good luck. There's no explaining why some aspirants get off and some don't; it doesn't seem to be a matter of training or aptitude or attitude or song chosen or how much or little you want it; some do and some don't, that's all.

Daniel Weinreb grows up in the Free State of Iowa, where the Undergoders have had flying declared illegal, and where singing is forbidden because it leads to the hard stuff. Naturally, therefore, Daniel's sole ambition in life is to sing, to fly. In this endeavor he is systematically persecuted by malign fate (read: the author) for more than 300 pages. Again and again his hopes are raised, a little higher each time, and it gets to the point where you wince every time the lad's fortunes take a turn for the better. It just gives him something new to lose. He is wrongfully imprisoned and abused. He marries a rich girl, and on their wedding night they strap

on flying rigs together (before consummating the marriage) and give it a try, and she gets off and he doesn't. He spends the next thirteen years impoverishing himself to keep her vacant body alive against the event of her return. To that end, and to pursue his dream of song and successful Flight, he is forced to sell himself into sexual slavery, to become the perfumed whore of a eunuch Meistersinger. (I find it interesting that, now that it's permissible to mention or portray homosexuality in SF, many male writers—Delany, Disch, Card—seem determined to paint it as a strictly B&D, master-slave trip. In recent SF, loving gay relationships seem almost to be the exclusive province of female writers, gay or straight.)

There's no sense giving a Spoiler Warning here; I've already implied how it turns out. It all turns out to have been for nothing. Daniel's beloved was *not* flying those thirteen years, but imprisoned in timeless stasis in a "fairy trap" set by her own father; Daniel's sacrifice was useless. Daniel never does fly. He never gets so much as a hint *why* he can't fly. He becomes famous for writing and singing songs *about* flying, becomes the national symbol of flying, whom everyone assumes can fly, and one night in concert, while he is *pretending* to fly before a capacity crowd, he is assassinated by a crazed old schoolteacher from his youth.

Irony can be delicious—but this is pigging out.

I once complained in this column about a story collection on the grounds that every story in it was a powerful downer—and drew heavy fire from a few readers on the grounds that this was not a valid criticism. These correspondents made it quite plain that they *enjoyed* being depressed, and that SF which failed to lower their morale was "pablum." As George Harrison once said, "Let's get together; we could have a bad time." If any such masochists are listening, I will state that this book *is* one of the best bad times you could possibly have. It is wrought with immense wit and inventiveness and grace and style and precision. Disch is a major talent, with skills I here admit I envy. You know the one about the knife so sharp you don't know your throat's cut until you sneeze and your head falls off? That's what this one's like. It held my attention, tenderly but firmly, right up to the last page, and only then did I realize how badly I had been ripped, both up and off. That is, I'm forced to admit, a genuine artistic achievement. If you like being depressed, this is the best stuff since Ambrose Bierce went down.

The **Fuzzy Papers** is sort of the backwards of *Wings of Song*. We are encouraged to believe that God is not a sadist but a kindly old man. Must it be one or the other?

Here complete in one volume are both of H. Beam Piper's books about the Little Fuzzies. A large human corporation has been granted a charter to exploit the planet Zarathustra on the assumption that it bears no sentient life; surveys have not found any. Then a rugged-individualist prospector named Pappy Jack Holloway discovers the Little Fuzzies. They're protosentients, like supersaturated solutions needing only contact with human intelligence to crys-

tallize at once into true sentience. They're also the most adorable little furry critters you ever saw, with great big soulful eyes. They invalidate The Company's charter by existing.

Perhaps this book was spoiled for me because I read it after *Wings*. It's older stuff (1962 and 1964 are the two respective copyright dates), from a world which still placed value on hope, a world in which a happy ending was not yet considered evidence of naïveté. Having spent the previous two days soaking in cynicism (and much better written cynicism), I kept finding it all a bit sugary and pat. The deck is just as stacked, the outcome as thoroughly foreordained, as in *Wings of Song*—only in the other direction. The Company will do its best to have the Fuzzies either rated non-sentient or "accidentally" exterminated, but in the end all its power, money, and influence will be defeated with ease by a combination of frontier honor'n'courage and an absolutely incorruptible and fair Space Navy. And, of course, the clever, cute little Fuzzies themselves. The second book recapitulates the story without ringing any significant changes.

There would have been more to either of these books if, for instance, there had ever been the slightest doubt as to the Fuzzies' sentience, or if The Company had ever looked like succeeding, or if Pappy Jack had ever *once* wondered, for a brief instant while under fire, whether those cute furry critters were really worth dying for. The villains wear black hats and the heros wear white hats or brown fur and the outcome is never in doubt because the Universe is basically fair. After all, there are laws, written for the greatest good of all sentient beings, with no loopholes, enforced by Good Guys. Am I being cynical if I say that you've got to tell me a good deal more about how the Universe got that way before I'll believe it? I suspect books like *WoS* are written in overraction against books like *TFP*.

Damn it, I *like* happy endings. But I want to see characters work hard for them. I like books with heroes—but I want them to have to work at heroism. I like to see Love Conquer All—but I want it to work up a sweat in the process, endure a little trial or temptation or *some*thing.

And I'm sorry, but those Little Fuzzies just slip over the line (for me) into Entirely Too Cute. *TFP* would have been a better book, and Pappy Jack Holloway would have been more of a hero, if the Fuzzies had been repulsive.

Recommended for total escapists. Which describes me, at times.

The Great Science Fiction Series has only one major thing wrong with it that I can discern. It is not two or three times as long.

The series is an honored tradition in SF. (Ask the man who owns one.) An SF story often requires such elaborate and painstaking background carpentry that it seems wasteful to throw the whole set away after one use. The temptation to create a great interlocking tapestry of future-history can also be overwhelming. The money's good, too: you sell the individual stories to the magazines for top rates, then collect them in books as they pile up. If you can disguise the collection as an "episodic novel" the bucks get even better,

and by the time you pass trilogy size you're rolling in the stuff, because it is one of the crazy laws of publishing that there are millions of people who will reliably shell out dollars for *anything* that is, or appears to be, *long*. Having found a congenial place in which to hide from the world outside, they want to be able to spend a lot of time there.

Outside of SF this usually produces mistakes like *Rocky XIV* and *The Executioner #473* and "I Love Lucy," only rarely resulting in a *Godfather II* or a Travis McGee or a "M.A.S.H." For some reason I can't quite pin down, an SF series is usually (bar the occasional Perry Rhodent) pretty good. Maybe it's that SF, like those successes from other media named above, extends itself by developing the enormous potential latent in its *background*, instead of simply striking the same old notes on a familiar stage. Maybe we have an audience of higher average intelligence and taste. (I said "average." I also said "maybe," and I had my fingers crossed.)

Whatever the reason, our genre has produced some peachy sagas. Editors Pohl, Greenberg, and Olander have assembled representative specimens of 21 different series by 19 authors. I have no complaint whatsoever about the stories they picked—they're all good-to-great. But some of the selections are interesting. They didn't, for instance, include Asimov's robot series or his Foundation series, opting for the much shorter Wendell Urth series alone. Yet they picked both Blish's Cities In Flight series *and* his "Pantropy" series, which is not strictly speaking a series but a short story that grew into a novel. Anne McCaffrey gets two entries, Dragon and Ship-Who-Sang, but Niven does *not* get four for Draco Tavern, Svetz, and Early and Late Known Space (only the latter is represented, and by a story with no recurring character such as Louis Wu, Beowulf Shaeffer or Gil The Arm.) DeCamp & Pratt's Gavagan's Bar series is represented, but not their Harold Shea cycle. (Well, all right, the latter *is* fantasy more than SF.)

Even more surprising are some of the total omissions. I know, I know, that's not a valid complaint: any antho has to stop someplace, and this one is quite a large book as it stands. But how can a series sampler include Wilmar Shiras and omit Robert Heinlein's seminal Future History, for heaven's sake? (Come on, Spider, you know better than that, be fair: the rights were probably either unavailable or too expensive for PG&O's budget.)

All right. This book is chock full of first-rate stories: perhaps it will sell so well that the editors will be inspired to turn the anthology *itself* into a series. Then they can correct their omissions, and bring us a Bova Kinsman, a Dickson Dorsai, a Farmer Riverworld, a Haldeman Forever War, a Kuttner Gallegher, a Pournelle CoDominium, a Pangborn Davy-Cycle, a Schmidt Flying Earth, a van Vogt Null-A, a Varley Eight Worlds, a Williamson Seetee or Legion of Space, a Zelazny Invisible Man and a Heinlein. And others.

(I'd never be immodest enough to suggest my own series. Besides, it's in print.)

If you are not familiar with the majority of series in the Table of Contents, though, try this book: you'll make some new friends.

Dream's Edge is a collection of good-to-brilliant short stories which I recommend you either take with a grain of sugar or read one story a month for a year and a half or ignore altogether.

Its subtitle says it contains "Science fiction stories about the future of the Planet Earth." It might more accurately read, "stories about the *lack of* future of the Planet Earth." That's right, it's just what the world needs now: another collection of doomsday and ecodisaster scenarios. Out of twenty stories I count three, possibly four, that go so far as to suggest that science and/or technology might actually be of some positive benefit, stories that sound, however briefly, a note of partial optimism about the future. The rest assume that mankind is doomed, and deservedly so—the general feeling seems to be that it's a dirty shame man evolved to spoil such a nice harmless planet. I'm not surprised to find the Sierra Club sponsoring the publication of such racial self-hatred; I am surprised that a man of Terry Carr's intelligence and taste agreed to assemble it for them.

Ecodisaster stories first began to crop up in the 1950s, when dire warnings were desirable and necessary to cut through the idiot optimism of the Eisenhower years. They came into their own in the '60s, as the Baby Boom generation entered adolescence and began questioning all the complacent assumptions of their parents. Far from sitting on top of The Best Of All Possible Worlds, we discovered, we were using it up, running out of food, water, air, and room itself (though human civilization is still invisible from High Earth Orbit). Grim warnings were deemed necessary in order to wake people up to the consequences of inaction and inattention. Strong medicine was required.

Somewhere along the line, along about the Seventies, we got addicted to the medicine. Made cynical by the failure of humanity to straighten up in a single Summer Of Love, we decided it was doomed. We got bitter. We went from acid and grass to speed and smack and fear has a rush like speed and despair has a rush like heroin. The grim warnings got grimmer and grimmer until they stopped being warnings at all, became shrill screams of rage and pain. A warning presupposes that the warned are capable of benefitting in some way from the warning. If they are too stupid or lazy, they cannot be warned, but only cursed. Too many talented SF writers have chosen this latter task, often because they have noticed that the modern audience will pay as much to be cursed as it will to be instructed (or even amused).

Understand: I do *not* make that charge against *any* of the fine writers in this book (at this time), nor against its editor, who is well and justly known for his ethical integrity. *Every* artist has an occasional nightmare, some more than others. Writing is attempting to become telepathic with your race, and when you start getting telepathic, the first thing you notice is that half of your brothers and sisters are starving and the rest are in trouble. But you're supposed to *not stop there*, at that point. A whole book full of bummers is like a man in pain in the next hospital bed who insists on screaming at the top of his lungs. You empathize, but you wish he'd shut up.

I think despair is immoral, is despicable, is evil insofar as I invest that word with any meaning, precisely because it is a self-fulfilling prophecy—and a cowardly one. Dumbass passengers may perhaps be forgiven for panicking—but goddamn it, the *officers* of Starship Earth are supposed to remain calm and rational—to show courage under fire—to go in like the test pilot in Tom Wolfe's *The Right Stuff* saying, "I've tried A! I've tried B! I've tried C, what else can I (click)" WHAM!

And we, the science fiction nuts, the crazy futurists and future historians, the scientists and technology freaks—we, the writers and poets and singers and dancers and artists and philosophers and critics—we with our eyes on something more than soap opera and sports—*we* are supposed to be among the officers of this starship.

Its morale is as much our responsibility as is its education.

I don't think there is one person on Earth who needs to be scared to death, or ever was. I think there used to be a *lot* of people who needed to be shaken up, woken up, but I think that time was long past when each of the stories in this volume was written—in the '70s. They're awake now, gang, and scared enough to be on the verge of stampeding. (Of *course* they're not *all* awake—look at Washington—but anyone still asleep at this stage of the game is too dumb to be helped by one more book.) If the lifeboat is leaking, you may well need to get the attention of the passengers and motivate them to bail—but it is counterproductive to do this by repeating over and over again the inevitability of drowning.

If Dreams *have* an Edge, then they are not true worlds, but two-dimensional Flat Earths. Scylla is the belief, now at least a decade extinct, that we have no problems. Charybdis is the belief, now in metastasis, that we have no chance. Between them lies the only sane course.

HIATUS

representing a forty-eight-hour funk I can ill afford, since this column was overdue when I sat down to begin it. But work has been impossible since late Monday night, when they interrupted a re-run to tell me that one of the Nurk Twins is down, that gentle, funny Moondog Johnny has finished his last verse with an incredible discord, the sound of a shouting voice and a .38 vomiting everything in its stomach at once. I guess I'm ready, now, I haven't burst into tears once all day. So far.

Just finish the column I tell myself. Make no mention of it, they won't read this until six months later; by that time there'll be nothing left unsaid about John Lennon's murder, and much that should have been; they'll be sick of hearing about it. Be professional; it's got nothing to do with SF.

It's got everything to do with SF, with what I find upon rereading what I was saying when I was so horribly interrupted. Because John's murder was *so* like the ending of *Wings of Song*. At the most ironic moment possible, in the one city in the world in which he didn't feel he had to hide, just as he had figured out how to be happy and was beginning to transmute that musically into his Third and greatest Period, shot in the

back by a motiveless assassin on the steps of his own castle.

Aha, says a part of my mind. You rejected Disch's book and Carr's book because you rejected their world-view. Now it seems that world-view is more accurate than yours. Stuff like that happens, man writes a book about it, art reflecting life, simple cause-and-effect.

Ask your physics professor if he believes in cause-and-effect. If he answers either yes or no without hesitating, drop his course.

Life imitates art just as much as art imitates life. If artists pick up despair or fear and rebroadcast them amplified, a positive-feedback loop is set up, with negative effects. What you put your attention on prospers. What we all agree is so becomes so. This world is so crazy it drove John Lennon and Mark Chapman nuts. One responded with two decades of creation; the other with perhaps five seconds of destruction. The difference between them may have had something to do with the fact that one of them was born fifteen years earlier than the other. John was born into a world going into planetary war, but a world in which despair was simply not acceptable; he had an abominably traumatic childhood and grew up to be a Crazy Saint, a true Holy Goof. Chapman was born in 1955 when the world seemed its rosiest in many ways, and seems to have had a comfortable middle-class existence by Liverpudlian standards; but he grew to (physical) maturity in a world in which despair had become not only acceptable but almost mandatory, the very hallmark of superior intelligence: he went from longhair to Jesus freak to rentacop to killer by the age of twenty-five. About the age at which John Lennon was telling me he wanted to hold my hand.

We can all bring hope back, anytime we're ready.

Enough. I'm ready to go back to work now, thank you for your indulgence. And what I would like to commend to your attention right now is a book suffused in hope, by a man whose first daughter was gang-raped and whose second daughter was beaten to death in her early teens. A book saturated with sanity, by a man admittedly crazy as a bedbug. ("You may say I'm a dreamer," comes the echo, "But I'm not the only one . . .")

Robert Anton Wilson is a founder of the Institute for the Study of Human Future, a director of the Prometheus Society (which promotes immortality research), an active member of the L-5 Society, and a respected Libertarian. He is also a novelist and poet and playwright and science writer and student of the bizarre and the occult and the . . . well, just about anything generally considered far-out. He has been a psychologist and a *Playboy* editor (as opposed to a playboy editor, such as Doc Schmidt. There, I'm recovering.) and an ambulance driver in Harlem. Of himself he says, "Robert Anton Wilson is an imaginary being created by God. Since he is fairly bright, Wilson has figured this out and knows he has no real existence aside from the mind of God. Nonetheless, he still relapses into taking himself seriously on occasion."

His latest book, **The Illuminati Papers,** bears an Imprimatur by one Mordecai The Foul, a Nihil Obstat by Theophobia The Elder, a Non Illegiti-

mati Carborundum by Frater Soror, and a warning: "This is an important historical document. Do not use these pages as toilet tissue." There follow four invocational quotations, from Walt Whitman, Niels Bohr, Dogen Zenji, and the Marx Brothers. (Now, by me, them's credentials.) In the opening glossary, Wilson labels the basic technique of this and all his books "Guerilla Ontology." "Ontology is the study of being; the guerilla approach is to so mix the elements of each book that the reader must decide on each page 'How much of this is real and how much is a put-on?' This literary technique seems justified by the accelerated acceleration of new knowledge, new theories, new inventions, and new possibilities in our time, since any 'reality' map we can form is probably obsolete by the time it reaches print."

There follows a marvelous hodgepodge of articles and essays and interviews and quizzes and advertisements and polemics and poems and digressions and lectures, some of them credited to people with names like Hagbard Celine, Marvin Gardens, Justin Case, Epicene Wildeblood and the abovementioned Mordecai The Foul, High Priest of the Head Temple of the Bavarian Illuminati. The subjects covered range from the nature of stupidity to Ezra Pound to economics to Einstein to conspiracy to *Finnegan's Wake* to sociology to Korzybski to Puritanism to the haiku of Raymond Chandler to the nature of intelligence, with stops all around the known Universe—and elsewhere. It's the kind of book you find yourself reading aloud to anyone who'll stand still for it, the kind that either tickles your ribs or barks your shin on each page, that induces you to think, if only to refute something outrageous.

Try it, by all means. Some of you will find sections of it enraging or silly or just plain crazy, I'm sure. All I can tell you is, this man is my kind of crazy. I tried to get some copies for Christmas presents, but no bookstore in town has ever heard of it (Could I be hallucinating it?); if you run into the same trouble, send $7.95 (it's a large-format paperback, about 23 × 18 cm or 9⅛ × 7⅛ in.) plus a dollar postage to And/Or Press, PO Box 2246, Berkeley CA 94702—make checks payable to And/Or Press Book Conspiracy.

In the unsigned intro to **Solar Wind,** someone comes right out and says, "When [Peter] Jones started to paint covers for science fiction, he was told by art directors, 'Give us a Foss—any Foss.' " Jones made a brief gesture of rebellion—he did a Roger Dean imitation—and then buckled down to turning out Foss imitations. Good ones; you'd swear they was Foss. Shortly Jones branched out, producing with equal ease imitations of Freas, Berkey, Schoenherr, Gaughan . . . I mean to tell you, he not only got Frazetta down dead bang perfect, he actually mastered each of Frazetta's principal imitators just for swank. One day he had the happy thought of combining *several* masters into one painting. A Foss spaceship in a Sternbach cosmos, piloted by a naked woman of Frazettan steatopygia and a guy in a Moebius spacesuit; like that.

All right, Robinson, what's wrong with that? Call Jones the Rich Little of the Paperback Cover and you have not,

in my opinion, succeeded in insulting him. You think imitation is *easy?* His technical skill is appalling.

First, there is no *heart* to Jones's paintings, no emotional core. Anonymous seminude men and women menace or are menaced by others, or by machines; implausible starships drift in space; people fly on the backs of mythological creatures above improbable architecture—nothing *happens*. There is no person in any of these paintings about whom it is possible to give a damn.

Second, there is no *brain* to Jones's work. He either ignores or misunderstands the books he is theoretically illustrating. Allow me to cite two examples I find compelling:

This volume contains the cover Jones did for the Futura (British) paperback edition of *Stardance*. My wife Jeanne and I wrote that book; permit me to assume that you either read it in serialization here in *Analog* in 1977–78, or will rectify the omission with the Dell paperback at first opportunity. Foreground: two figures plainly intended to be Charley and Norrey. They are in Earth orbit—but the stars seem to have gone away somewhere, and the Moon is neither hellbright in sunshine nor invisible but a sort of uniform glowing grey. The "red firefly" aliens are present, but half of them have mysteriously turned blue (well, it's cold in space) and their sphere has become lenticular. Wait a sec—Charlie and Norrey never met the aliens together in Earth Orbit, not until they got to Titan . . . never mind. To protect themselves from vacuum, they are wearing helmets. Period. Hers is a sphere; his, inexplicably, is shaped like a floodlight-bulb screwed into his shoulders. They have no air supply, or if they do it is glued to their spines. How do they propel themselves through free space? Not with the wrist-, ankle- and waist-thrusters we described, no: she has *one* thruster on her right hip, facing "down" (toward her feet), and he has *one* on his left hip, similarly oriented; from the contrails (contrails? In vacuum?) we see that this makes them move "forward" together, at right angles to thrust—according, I presume, to Fig Newton's Laws of Motion.

Wait, I haven't told you the worst! Repeatedly Jeanne and I distinguished between ballet and modern dance in the book. But even a man who didn't read the book ought to have more sense than to put *toe shoes* on *any* kind of zero-gee dancer, for Christ's sake! *How do you go up on point in free fall?*

Finally (literally; the last illo in the book) we come to Jones's cover for the Futura paperback of my first novel, *Telempath*. Again let me assume that you read at least the first five chapters (ironically titled "By Any Other Name") here in *Analog* in 1976, or that you're going to race right out and buy the Berkley paperback which as I write has just been released in its third printing. This time let's look at background first. It seems to be New York City as seen from the East River about a half mile offshore of 43rd Street—there's the U.N., all right. But what the hell is the Empire State Building doing on 42nd Street and Second Avenue? And how did the Chrysler Building get to 43rd and Second? Never mind; switch now to the foreground. The Statue of Liberty has toppled from its base, shrunk in size by

about a factor of five (well, it ain't Sanforized), and *floated up the East River;* it has run aground opposite the U.N., where it stays, apparently leaning over backward at a 45° angle. Only the top of the head and the torch are visible above water. Perching on the crown, back to us, communing with a Muskie (a Richard Powers Muskie) is Isham Stone. (How did he *get* there?) I note with pleasure that his skin is Negroid; the art director must have mentioned that. Isham is wearing on his head a chamberpot wired to his ammo belt (?), and from the relationship between armspan and apparent height it seems someone has amputated both his legs at the knees.

Oddly, however, the left arm which is *supposed* to have been amputated has mysteriously regenerated. . . .

In this one book is represented all I loathe about SF book covers. Colorful as hell, though.

In 1948 George Pal decided that he wanted to make a movie about a trip to the Moon. He chanced to meet a writer newly arrived in town, who had written a trip-to-the-Moon novel called *Rocket Ship Galileo*. So Pal asked the writer, a chap named Heinlein, to script his movie in collaboration with a "seasoned pro" named Alfred Van Ronkel (cited in the credits later as "Rip Van Ronkel"). They scrapped the plot and all the characters, retaining one character's name and the central idea of men going to the Moon—then their script was "improved" by someone named O'Hanlon, and eventually became the movie *Destination Moon*. During production Heinlein served as (nonsense: he *bullied* as) technical adviser, and so it became the first technically accurate SF movie ever made—perhaps the last until *2001*. Then Heinlein put the story through one more mutation, boiled off the Van Ronkel and O'Hanlon and rendered it down into a novella, "Destination Moon," which ran in *Short Stories* magazine in September 1950, was anthologized *once* in 1958 and has never been collected. Two months earlier, in July, he had also published an article here in *Astounding* called "Shooting *Destination Moon*" which until this year had never been anthologized or collected to my knowledge.

Now Gregg Press has put together the novella, the article, 28 pages of quaint, corny publicity releases and stills from the movie, and an extremely knowledgable and insightful 9-page intro by David G. Hartwell, in one of their indestructible editions—a slim, rather pricey volume that will delight Heinlein completists, Fifties nostalgia freaks and SF cinebuffs. The novella is not Heinlein's best ("an inferior grade of diamond")—but the article is fascinating, the PR handouts are hilariously hokey, and Hartwell puts it all into historical perspective.

Finally, our last feature mutant. The mutation in question is increased intelligence.

I've spoken before in this column about the *CoEvolution Quarterly*, to which I am a satisfied subscriber. Well, I just got this quarter's issue, and it weighs in at two and a half kilos. It's got 609 pages, each 37.5 × 27.5 cm (say 8 × 12.5 in.), each crammed with fascinating information. I'm used to

getting good value from *CQ*, but this is ridiculous.

What it is, of course, is **The Next Whole Earth Catalog,** which us *CQ* subscribers receive as our Fall 1980 issue, for a little under a dollar a pound. *You* can buy it for $12.50, a hair over two and a quarter a pound. You can't buy pork chops for that price any more. And this is not pork chops but all (well, a significant portion of) the wonders of the world!

If you are one of the half-dozen people who missed the National Book Award-winning *The Last Whole Earth Catalog* and its *Epilog*, what is offered here again is nothing less than an access guide to everything you always wanted to know about—and a considerable number of things you hadn't *known* you wanted to know about. Under ten general headings there are hundreds upon hundreds of listings of books, tools, artifacts, and accessories of all kinds, grouped by genus and species and carefully indexed.

I've been *browsing* through this goddam thing for the last two months, and I *still* find something fascinating every time I heave it up on my lap and dive in. You want to know what the best tools are for most human enterprises and where to buy them as cheaply as possible? You want to know what's the best manual for any given activity? You want to know where you can get *stereo* color shots of Mars surface, with viewer? How to make meetings work? How to survive in the wilds? The precise chemical composition of natural foods? How to choose a spinning wheel, or a solar power system or a used car or a goat? What Rusty Schweickart (Apollo 9, first man EVA without an umbilical) thinks about urination and defecation in zero-gee? Do you want to know anything useful at all?

If so you can probably find access to the information or artifact you seek in this incredible catalog: current price, ordering address, etc. All items have been tested or vouched for by the *CQ* gang, major-league thinkers and doers. (Most of the hundreds of books listed can be bought through the Whole Earth Household Store at list price plus shipping.) Eleven percent of the listings are carried over from *The Last Whole Earth Catalog;* 17 percent from *The Whole Earth Epilog*. The remaining 72 percent is exactly half brand new and half culled from the last six years of *CQ*.

I don't care who you are or where you're at or whether you can spare the $12.50: you're crazy if you don't buy a copy of this book. Unlikely as it may seem, the mammoth-format paperback is built to survive multiple readings and considerable abuse—and sufficiently valuable to be guaranteed them. If you can't find a copy in your local Captain Book (or whatever), send a check for $12.50 made out to CoEvolution Quarterly to: CoEvolution Quarterly, PO Box 428, Sausalito CA 94966. While you're at it, throw in $14 (or $19 first class, U.S. and Canada) for a subscription to *CQ* itself. Here is a group of folks doing something positive about making the world smarter.

Oh, and the front cover is a color photograph of Terra as seen by the returning Apollo 17 crew; the back is a color shot of the Lunar surface at Earthrise. Both photos make me proud to be human.■

BRASS TACKS

Dear Dr. Schmidt:

A number of leading astronomers, past and present, would strongly disagree with the ideas and conclusions advanced in the science fact article, "Galaxy Formation," by Dr. John Gribbin (October 1980).

In 1914 Sir Arthur Eddington suggested that large quantities of matter may flow out of the nucleus of a galaxy into its spiral arms. In 1928 Sir James Jeans described the centers of galaxies "as points at which matter is being continually created."

And now the high energy physicists tell us that they fully expect to be able to convert virtual particles (short-lived) into real particles (long-lived) within the next few years. To do this they need to make a supermassive, atomic nucleus—and make it last long enough—so that new particles can be extracted from the Dirac ocean of virtual particles (what used to be called 'empty space' or the classical vacuum). It turns out that the best place to make a supermassive, *atomic* nucleus is within the supermassive, *galactic* nucleus of a spiral galaxy. Eddington and Jeans may have been right! In any case, the production of new particles in the laboratory will have a profound effect upon astronomy and cosmology. To put the situation bluntly: if new matter can be produced in the superdense, ultra-energetic cores of galaxies, who needs the BIG BANG?

The astronomers who have worked the hardest to show that galaxies eject other galaxies and sometimes fission into groups and chains of galaxies are Halton Arp of the Hale Observatories and Ambartsumian and Voronstov-Velyaminov in Russia. (Strangely enough, Gribbin, in his earlier books, *Galaxy Formation* and *White Holes*, reviews their work fairly and extensively.) Arp maintains that galaxy ejection/fission is the way new galaxies—and groups of galaxies—are formed. An enormous amount of observational material supports his view.

But of course if one *begins* with the assumption that galaxies condensed in an early (rapid-expansion!) stage of the Big Bang, one will interpret today's observations in line with this assumption. But to suggest that the issue is settled, as Gribbin does, is a disservice to Analog readers—especially in view of the new findings coming from where it's really at: the high energy labs.

SAM ELTON
714 Longfellow Ave.
Hermosa Beach, CA 90254

John Gribbin replies:

There is no conflict between my past writings on galaxy formation—or those of Arthur Eddington—and my recent article. The point I was trying to make (obviously not as clearly as I intended) is that until recently there was a major problem of explaining how galaxies formed in the Big Bang universe in the time available. The existence of that difficulty left the door open for exotic

ideas like white holes. But now there does exist a way to explain galaxies without invoking "new physics" and all within the framework of the standard cosmological model (and if you want to know more about that, *persuade Stan Schmidt to give me space for another article!). Occam's Razor then leaves us in no doubt which of the two alternatives is best. Intriguingly, though, there is mounting evidence that peculiar things may go on in some galaxies and quasars, as Arp in particular claims. I don't think the modern view summed up in my article is the last word on the matter, though it is the best word we have today and much better than my own old ideas. And no scientist should be afraid to discard his old beliefs, no matter how cherished, in the light of new evidence.*

JOHN GRIBBIN

Brighton, England

Dear Mr. Schmidt,

Suppose a foreign scientist approached me with the obvious attitude, "I don't really believe that you have the intelligence to communicate, but let's see you try."

Would I bother?

You BET I'd bother!

One should not underestimate the contrariness of the human spirit (and I suspect this will prove common among other intelligences). Recall the driving force of evolution: competition. If someone threw the gauntlet down like that to me, I would consider it a challenge to prove him wrong. As evolution has made competition instinctive among humanity, I expect that it will have done so with other intelligences as well. Viewed as a competition between the subject and the scientist, the instinctive urge will, I feel, be to show up the scientist and prove the subject's intelligence. Yes, I realize that I have just reinvented reverse psychology.

REGINALD ARFORD

Hollidaysburg, PA

Yes, some of us would bother, for just the reasons you say. But others might just as reasonably react, "I know I'm intelligent, and I'm not particularly interested in the opinion of someone with your snobbish attitude. So I'll just go about my business, and I don't care what you do."

Dear Stanley Schmidt:

The reflections on John Campbell's editorial (reprinted in the June Analog) by a bright woman mathematician, who wrote anonymously in the November issue, hit home. I would like to continue the discussion. I have been reading science fiction since the age of 9 or so and Analog since the age of 15. I, too, read Campbell's editorials (most all of them) the first time around. When I graduated from high school in 1959 in an honors program and entered the University of California with honors, the world was my oyster. I would follow the path of Mme. Curie, Enrico Fermi, A. H. Compton; we would have a space program and be rich in energy with nuclear power. To let off steam, we cruised the freeways of Los Angeles and bought gas for 29¢ a gallon. As she said, a lot has changed in 20 years. I suffered under professors who did not think women had any business in physics (after all, there was lab work where you got your hands dirty) and I flourished under professors who would take a receptive student even if it had green spots and purple ears.

High school reunions are interesting in that they provide feedback on your intuitive social projections. Imagine my amazement when the brightest guys in my class—as I then perceived them—are now running nurserys, fencing com-

panies, heavy equipment rentals, apple orchards, etc. Not a Feynman, Sabin, or Sagan among them. So I conclude that an IQ of 185 and honors in anything does not guarantee a successful life of public accomplishment.

What does? After 17 years of toiling in the vineyards of aerospace, I have coalesced my observations of success (meaning getting others to do what you want done or being able to work on what you want to work on) as motivation, persistence, sensitivity to the power architecture, and a tolerance for tedium. Not only does no one give you anything, you have to struggle to get a toehold in any power structure. That is not a negative statement; it is a statement of fact, principally true for men, since there are more of them. Women and minorities have had more opportunities lately due to legislation and they had better hurry up and use them because the door may be closing soon.

Education, particularly science and math, is in trouble for everyone, not just girls, in California. For too long the intelligent have been neglected in favor of the disadvantaged, and we need to let the overachievers as well as the underachievers move at their own pace rather than all move at the pace of the latter group. This is a subject that deserves a tome of its own, so let me return to the subject of women in science and math.

There are, and have been for many years, women working in the male-dominated fields of physics, mathematics, aeronautical engineering, space navigation and military research and development (yes, that means weapons), but nobody except our small circle of coworkers knows we are here because there are not many at all in highly visible upper management, be it university, industry, or government. What women need is public acknowledgement of our varied contributions. Then the prejudices fall away because they look *silly* in light of public experience. It was totally wonderful that a woman on the Voyager navigation team at the Jet Propulsion Laboratory discovered the volcanoes of Io, and that she was allowed to speak for herself on Carl Sagan's "Cosmos." That is exactly what we need more of—women doing a good, competent job and getting acknowledged for it. And we need more stories like Charles Sheffield's "Moment of Inertia" in the October issue. It was not too long ago in literature that Captain Jeannie Roker would have blackmailed for marriage to MacAndrew rather than a ticket to Alpha Centauri. Before that she wouldn't have existed.

Times have changed in 20 years. Gas is no longer 29¢ a gallon, but we are more aware of nonreducing contamination of the environment. There is no more "American Graffiti" or "Happy Days" lifestyle, but I can go on travel without getting any flak. (Do you realize that 15 years ago men wouldn't travel with a woman on business because they didn't want to carry her bags?)

Society's perceptions of reality change slowly, but they do change. I am disappointed that the space program has lagged so far behind our dreams and that we essentially threw much of our talent and expertise away when it was reduced to the token trickle that is the Space Shuttle, but I would rather be living in 1980 than in 1960.

Thank you for letting me express my views.

DIANE M. THOMPSON
649 Scott St.
Ridgecrest, CA 93555

Dear Mr. Schmidt:

Re: Science fact article, "Man's Biological Future" (November 1980)

I disagree with Mr. de Camp's statement that warfare no longer "has any particular selective effect" on human evolution.

This statement may be true for the wars fought by professional armies in the 18th and 19th centuries. However, with the coming of universal military service obligations in the great wars of the 20th century, war has had a very negative effect on the genetic pool of mankind, especially in the industrially advanced countries.

In every Western nation in the two World Wars, almost every physically and mentally fit male was inducted into some branch of military service. The only males between 18 and 30 (17 and 35 in some cases) who stayed home were those found unfit for military service on physical or mental grounds. In the United States, these were called the "4Fs," based on their Selective Service classification. It is my understanding that more men were rejected for mental reasons, chiefly low I.Q., than were rejected on physical grounds by the U.S. However, many of these rejects were not so badly handicapped as to be unable to breed. While the more able males were away in the war, the 4Fs often married the girls they left behind, since they had so little competition.

Furthermore, once in the armed forces, there was a differentiation in branch of service which was largely due to intelligence and education. The most qualified went into the Air Force and the submarine services, which suffered the highest rate of casualties. (In the U.S. armed forces, one in seven submariners lost their lives in W.W. II; about one in ten in the Air Corps). The least intelligent or least able men went into labor and trucking battalions, where the casualties were light. Thus, unlike in the earlier days of warfare, there was a tendency for the *smartest* men to be killed. Many of these men were so young that they did not have time to leave any children behind.

Even after the wars ended, the loss of so many high-quality men in combat meant that many women never married, or wound up marrying men of a lesser caliber than they otherwise would have, with the subsequent birth of less talented children. So, the effect of these casualties will be reflected in the genetics of many Western nations for generations to come.

FRED C. DAVIS, JR.

Baltimore, MD

But leave us not be too quick to dismiss 4Fs as categorically inferior, either. Consider Steinmetz, who I suspect would have been classified that way. . . .

Dear Mr. Schmidt:

Your editorial, "Self-fulfilling Prophecies," in the December 1980 issue illustrates very clearly why the so-called "behavioral sciences" are not, as yet, true sciences. It would seem that the further away the behavioralists move from mass behavior toward individual behavior the more the subjective views of the ones doing the research tend to influence the results. Perhaps someone would like to express that mathematically.

I know from personal experience that the mind-set of an individual can influence results. Several years ago, when I was in Jaipur, India, I met a Hindu under circumstances that precluded his knowing anything about me other than I was, obviously, an American. He offered to tell my fortune at a modest fee. I was waiting for someone, so I agreed in order to help the time pass. My men-

tal attitude was much the same as when I, as an engineer, ran tests on the strength of materials. I was an interested but detached observer, no more and no less. The information that he provided about me and my future were such that I can only describe them as "unbelievably accurate."

I told a friend of my experience after I returned to Karachi, Pakistan. His immediate, and natural, reaction was that he did not believe in such things. He also said that he had a trip planned that included Jaipur and he would try to get in touch with the Hindu "fortune teller." After he returned to Karachi he told me that, as far as he was concerned, the Hindu had not told him anything of significance. My reply was, "At least you got what you wanted." He looked at me with a puzzled expression and then said, "I never thought of that." In sum, he went there determined to thwart the Hindu and he succeeded. I had no "mind set" when I was there. At least I did not try to prove that the Hindu was a fake.

The difference in the mental attitude of the two of us, both engineers, illustrates clearly how the subjective element can influence the results of any "test" pertaining to the use of various mental abilities, be they human or animal. The problem is, how can valid tests be devised that remove the subjective element? As far as I am concerned, statistical analyses, no matter how refined, are not the answer.

WELDON ELLIS

Nashville, TN

Analog,

Please accept my heartfelt thanks for the October 1980 issue. "Moment of Inertia" had a woman as the "hero" and several women as scientists. "Ideologies" had a strong woman boss

and a mild male secretary. While I don't insist on a complete rôle reversal, I certainly did enjoy these stories. Holding a masters' degree in electrical engineering, a pilot's license, ham license, blue belt in karate, etc., I naturally resent the typical portrayal of women. These stories matter-of-factly assumed the humanity of my sex. Thank you.

FAITH LEE

East Kilbride
Scotland

You're welcome.

Dear Mr. Schmidt,

Re: Your answer to Mr. Katz's letter, Brass Tacks, October 1980.

''Sniperscopes'' (which is a *very* misleading word!) and other NOD (Night Observation Devices) can be of various types. The current military trend is toward ''passive'' systems, which don't reveal the observer's position. After all, with current infrared systems, turning on an I.R. spotlamp is the same as turning on a xenon ''White-Light'' lamp. Anyone in any type of modern AFV has I.R. systems, which can detect I.R. sources.

Most of the NOD *sights* in use today use light amplification, *not* I.R. These NOD amplify all ambient light and can give excellent results using only starlight, and faint starlight, at that.

The current U.S. Army sniper rifle, the 7.62 mm M21, can be fitted with a night scope that allows consistent hits to about 200 to 500 m. Combined with a ''sionics''-type sound suppressor, the night scope is very effective. The Marine Corps uses a different rifle, but the same night scope.

If Franson had used a light-amplifying NOD, instead of I.R., he wouldn't have started any fires!

ROY L. WILSON

Rt. 1, Box 272-D
Harlem, GA 30814

Or had a story! Also, please note that (as I indicated in the earlier Brass Tacks reply) I.R. systems can be passive, too, detecting any warm bodies or engines without producing any I.R. of their own. ■

● With the coming of the atom bomb, society could no longer look upon science fiction as childish escape literature. The science fiction writer had seen too much to which others were blind. It was clear by then, moreover, that the rate of change of society, sparked by technological development, had been continuing to increase throughout the nineteenth and twentieth centuries, and had now reached the point where decisions could no longer be made on the basis of present conditions only. In order to make intelligent decisions, the future would have to be foreseen.

ISAAC ASIMOV

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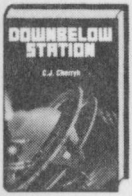

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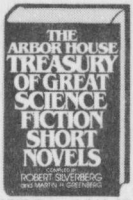

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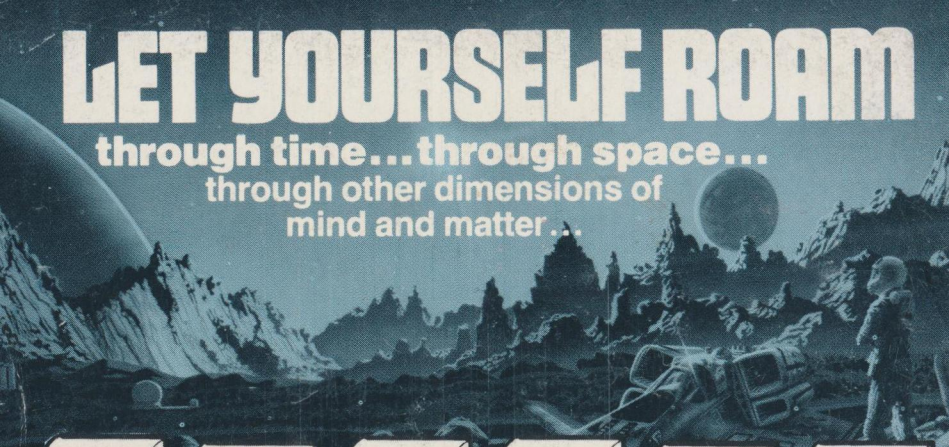

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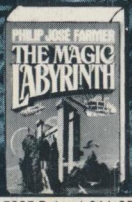

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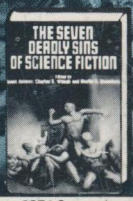

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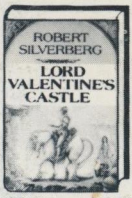

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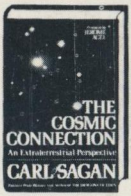

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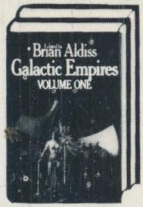

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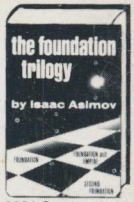

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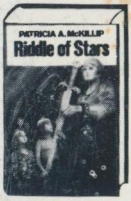

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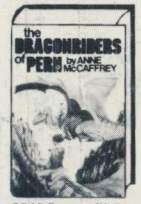

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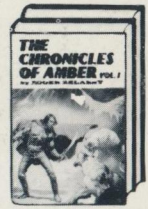

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