THE BEST OF OMNI SCIENCE FICTION

COLLECTOR'S EDITION FEATURING:
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ALFRED BESTER
BEN BOVA
ORSON SCOTT CARD
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THE BEST OF OMNI SCIENCE FICTION
EDITED BY BEN BOVA AND DON MYRUS
THE BEST OF
OMNI
SCIENCE FICTION

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THE GREAT EXPERIMENT. It is difficult to understand, now that Omni magazine is such an obvious success, how great a risk Bob Guccione took when he decided to launch "the magazine of the future."

No one had ever dared to produce a magazine that blended factual science, science fiction, fantasy, and sophisticated graphics into a single handsome package of extremely high quality—and high cost.

Publishing "experts" predicted that the magazine would never get off the ground. It would contain science fiction! Who would read that stuff? The only people who read science fiction then were tiny groups of fanatics who never lifted their noses up from their digest-sized magazines and paperback books. They preferred this literary isolation.

Even within the science-fiction community itself, considerable doubt was expressed about an "outsider" bringing out such a magazine someone who wasn't intimately connected with science fiction from childhood.

I had a deeper worry. Omni immediately captured the attention of millions of readers. Science fiction was no longer confined to digest-sized magazines and a relatively small and "in group" readership. As Omni's fiction editor, I wondered whether the science-fiction writers would come through for Omni. Could they write stories that would entertain those readers who had never read science fiction before?

Take a look!

In just the first twelve issues of Omni, science-fiction writers from Asimov to Zelazny came through with memorable, exciting stories. This anthology presents the cream of the first years crop: ten fine new stories by such Old Pros as Harlan Ellison and Robert Sheckley as well as such newer stars as George R. R. Martin and Orson Scott Card.

And in keeping with Omni's breadth of subject material, we include in this volume some of the pictorials that, for the first time, opened up the visual side of science fiction to your future-seeking eyes. We offer an interview with Arthur C. Clarke, perhaps the best-known and most respected science-fiction writer in the world.

The great experiment that is Omni has proved to be a stunning success. Turn the page and learn why.

—BEN BOVA
FOUND!

Thousands of lives were jeopardized by Computer-Two's malfunction... so we had to go aloft and set things straight

BY ISAAC ASIMOV

Computer-Two, like the other three that covered each other's tails, circled the Earth, was much larger than it had to be. It might have been one-tenth its demoted and still contained all the volume it needed to store the accumulated and accumulating data to control all space flight. They needed this extra space, however, so that Joe and I could get inside, if we had to. And we had to.

Computer-Two was perfectly capable of taking care of itself. Ordinarily, that is, it was redundant. It worked everything out three times in parallel and all three programs had to match perfectly. If these answers didn't match, if they did not, the answer was delayed for a few seconds while Computer-Two checked itself, found the malfunctioning part and replaced it.

There was no sure way in which ordinary people would know how many times it caught itself. Perhaps never. Perhaps twice a day. Only Computer-Central could measure the time delay induced by error and only Computer-Central knew how many of the component spares had been used as replacements. And Computer-Central never talked about it. The only good public image it perfection.

And it's been perfection. Until now, there was never any call for Joe and me. We're the troubleshooters. We go up there when something really goes wrong. When Computer-Two or one of the others can't correct itself, it's never happened in the five years we've been on the job. It did happen now and again in the early days, but that was before our time.

We keep in practice. Don't get me wrong. There isn't a computer made that Joe and I can't diagnose. Show us the error and we'll show you the malfunction. Or Joe will, anyway. I'm not the kind who sings one's own praises. The record speaks for itself.
Anyway the time neither of us could make the diagnosis.

The first thing that happened was that Computer Two lost internal pressure. That's not unprecedented and it's certainly not fatal. Computer Two can work in a vacuum after all. An internal atmosphere was established in the old days when it was expected there would be a steady flow of repairmen fiddling with it. And it's been kept up out of tradition. Who told you scientists aren't chained by tradition? In their spare time from being scientists they're human too.

From the rate of pressure loss, it was deduced that a gravel-sized meteoroid had hit Computer Two. Its exact radius, mass, and energy were reported by Computer-Two itself using that rate of pressure loss and a few other irregularities of data.

The second thing that happened was the break was not sealed and the atmosphere was not regenerated. After that came errors and they called us in.

It made no sense. Joe let a look of pain cross his homely face and said, "There must be a dozen things out of whack!"

Someone at Computer-Central said, "The hunk of gravel ricocheted very likely."

Joe said, "With that energy of entry it would have passed right through the other side. No ricochets. Besides even with ricochets, I figure it would have had to take some very unlikely strikes."

"Well, then, what do we do?"

Joe looked uncomfortable. I think it was at this point he realized what was coming. He had made it sound peculiar enough to require the troubleshooters on the spot — and Joe had never been up in space. If he had told me once that his chief reason for taking the job was because it meant he would never have to go up in space he had told it to me 24 times with a pretty high number.

So I said it for him. "We'll have to go up.

Joe's only way out would have been to say he didn't think he could handle the job, and I watched his pride slowly come out ahead of his cowardice. Not by much; you understand — by a nose. Let's say.

To those of you who haven't been on a space ship in the last fifteen years — and I suppose Joe can't be the only one — let me emphasize that initial acceleration is the only troublesome thing. You can't get away from it of course.

After that it's nothing. Unless you want to count possible boredom. You're just a spectator. The whole thing is automated and computerized. The old romantic days of space pilots are gone totally. I imagine they'll return briefly when our space settlements make the shift to the asteroid belt as they constantly threaten to do — but then only until additional computers are placed in orbit to set up the necessary additional capacity.

Joe held his breath through acceleration or at least he seemed to. I must admit I wasn't very comfortable myself. It was only my third trip. I've taken a couple of vacations on Settlement-Rho with my husband, but I'm not exactly a seasoned hand."

After that was relieved for a while but only for a while. He got despondent.

I hope this thing knows where it's going, he said pettishly.

I extended my hand forward, palms up, and left the rest of me swaying backward a bit in the zero gravity field. "You" I said, "are a computer specialist. Don't you know it?

Sure. But Computer Two is off."

We're not hooked into Computer Two."

"There are three others. And even if only one were left functional, it could handle all the spaceflights undertaken on an average day.

"All four might go off. If Computer Two is wrong, what is to stop the rest?"

Then we'll run this thing manually.

"You'd do it? I suppose you know how — I think not?"

"So they'll talk me in."

For the love of Eniac, he groaned.

There was no problem. Actually we moved out to Computer Two as smooth as vacuum, and in less than two days after takeoff we were placed into a parking orbit not ten meters behind it.

What was not so smooth was that about twenty hours out we got the news from Earth that Computer Three was losing internal pressure. Whatever had hit Computer Two was going to get the rest and when all four were out spaceflight would grind to a halt.

It could be reorganized on a manual basis, sure but that would take months at a minimum; possibly years and there would be serious economic dislocation on Earth. Worse yet several thousand people now out in space would surely die.

It wouldn't bear thinking of and neither Joe nor I talked about it. But it didn't make Joe's disposition sweeter and less face it, it didn't make me any happier.

Earth hung more than two hundred thousand kilometers below. But Joe wasn't bothered by that. He was concentrating on his tether and checking the cartridge in his reaction gun. He wanted to make sure he could get to Computer Two and back again.

You'd be surprised — if you've never tried it — how you can get your space legs if you absolutely have to. I wouldn't say there was nothing to it and we did waste half the fuel we used but we finally reached Computer Two. We hardly made any bump at all when we struck Computer Two. (You hear it of course in vacuum because the vibration travels through the metalloid fabric of your spacecraft — but there was hardly any bump — just a whisper.)

Of course our contact and the addition of our momentum altered the orbit of Computer Two slightly but tiny expendi-
tures of fuel compensated for that and we didn't have to worry about it Computer-Two took care of it for nothing had gone wrong with it as far as we could tell that affected any of its external workings.

We went over the outside first naturally. The chances were pretty overwhelming that a small piece of gravel had whizzed through Computer-Two and left an unmis- takable hole. Two of them, in all probability one going in and one coming out.

The chances of that happening are one in two million and on any given day—well, money that it will happen once in six thousand years. It isn't likely but it can you know. The chances are one of six million and thirteen billion that on any one day it will be struck by a meteor large enough to demolish it.

I didn't mention that because Joe might realize that we were exposed to similar odds ourselves. In fact any given strike on us would do far more damage to our soft and tender bodies than to the stolid and much-enduring machinery of the computer and I didn't want Joe more nervous than he was.

The thing is, though, it wasn't a meteorid.

"What's this?" said Joe finally.

It was a small cylinder stuck to the outer wall of Computer-Two. The first abnormality we had found in its outward appearance. It was about half a centimeter in diameter and perhaps six centimeters long. Just about cigarette size for any of you who've been caught up in the antique fad of smoking.

We brought out our small flashlights.

"I said, That's not one of the external components.

"It isn't one, muttered Joe. There was a faint spiral marking running round the cylinder from one end to the other. Nothing else. For the rest it was clearly metal but of an odd gruny texture—at least to the eye.

Joe said. "It's not tight."

He touched it gently with a fat and gauntleted finger and it gave. Where it had made contact with the surface of Computer-Two it lifted and our flashlights shone down on a visible gap.

There was the reason. Gas pressure inside. The gas had entered through the hole from within to where it had expanded the cylinder.

"What for?"

"To keep it from going out of Earth's atmosphere."

"Oddly enough I do. And what caused it?"

"I don't really know. I've never seen one that would leave a perfectly round hole."

"What's the hole?"

"No, But I didn't think I could look and it's not visible."

"It may have fallen or been shot."

"It could have been shot from the atmosphere."

It didn't look the way."

"It could have been shot from the atmosphere."

"I'll call us Joe."

"Sure. And we won't answer will we?"

"They'll assume something happened."

"They're going to send up a report."

"You know Computer-Central?"

"It will take them two days to decide on that. We'll have something before then and once we have something we'll call them."

"I can't believe it."

"That's the only thing there. The only thing there is."

"One is enough, said Joe, gloomily. He looked at the smooth aluminum of the wall and in the light of the flash the perfect circle of black was beautifully evident."

"It wasn't difficult to place a seal over the hole. It was a little more difficult to reconstitute the atmosphere. Computer-Two's reserve gas-tending supplies were low and the controls required manual adjustment."

The gas generator was limping, but we managed to get the lights on.

"Eventually we opened up the gas and the cylinder began to drop, " said Joe, softly.

So I did the same.

There was a mark on the wall just next to the hole. I had noted in the light of my flash when I was adjusting the seal. When the lights came on it was obvious.

"You notice that Joe? I asked.

"I notice."

"There was a slight narrow depression in the wall, not very noticeable at all, but there beyond a doubt if you ran your finger over it. It could be noticed for nearly a meter, it was as if someone had scooped out a very shallow sampling of the metal so that the surface was distinctly less smooth than elsewhere.

"I said. "We'd better call Computer-Central downstairs.

"If you mean back on Earth, say so, said Joe. "I hate the long distance talk."

"I hate everything about space. It's why I took an Earthside job— I'm a machinist on Earth—or what was supposed to be one."

"I said impatiently. "We'd better call Computer-Central back on Earth.

"What for?"

"To tell them we've found the trouble."

"Oh, What did we find?"

"The hole."

"Oddly enough I do. And what caused it?"

"It wasn't the atmosphere. I never saw one that would leave a perfectly circular hole with no signs of buckling or melting."

"I never saw one that would leave a perfectly circular hole with no signs of buckling or melting."

"It took the cylinder out of its suit pocket and smoothed the dent out of its thin metal wall."

"Well, what caused it?"

"I didn't hesitate. I said. "I don't know."

"If we report to Computer-Central, they'll ask the question and we'll say we don't know and what will we have gained? Except hassle?"

"They'll call us, Joe."

"Sure. And we won't answer will we?"

"They'll assume something happened."

"They'll send up a report."

"You know Computer-Central?"

"It will take them two days to decide on that. We'll have something before then and once we have something we'll call them."

"I can't believe it."

"That's the only thing there. The only thing there is."

"One is enough."

"One is enough."

There weren't any armchairs. "Though for that matter there was no gravitational field either or any centrifugal imitation of it."

"We both floated in midair drifting slowly this way or that. Occasionally one of us touched the wall and gently rebounded. Or else part of one of us overlapped the other."

"Keep your foot out of my mouth" said Joe, and he pushed it away violently. It was a mistake because we both began to turn.

Of course, that's not how it looked to us. To us it was the interior of Computer-Two that was turning, which was most unpleasant and it took us a while to get relatively motionless again.

We had the theory perfectly worked out in our planet-side training, but we were short on practice. A lot short.

By the time we had steadied ourselves I felt unpleasantly nauseated. You can call it nausea or astronausea or space sickness but whatever you call it, it's the heaves and it's worse in space than anywhere else. Because there's nothing to pull the stuff down. It floats around in a cloud of globes and you don't want to be floating around with it. I held it back.

"Joe, I said. "It's clearly the computer that's at fault. Let's get it inside."

"Anything to get my mind off my insides and let them quiet down. Besides, things weren't moving fast enough."

"I kept thinking of Computer-Three on its way down the tube—maybe Computer-One and Four by now, too. A lot of fortunes in people in space with their lives hanging on what we did."

"Joe looked a little greenish too but he said, "First I've got to think. Something got in."

"I said, "It was a meteorid because whatever it was chewed a neat hole out of the hull."

"I don't think it cut out, because I didn't find a circle of metal anywhere inside."

"No."

"But I hadn't thought to look."

"I looked and it's nowhere in here."

"It may have fallen around."

"With the cylinder covering the hole till I pulled it away?"

"A likely thing."

"Did you see anything come flying out?"

"No."

"Joe said, "We may still find it here."

"I said, "but I doubt it."

"It was somehow dissolved and something got in."

"What something? Whose is it?"

"Joe's was remarkably ill-natured."

"Why do you bother asking questions to which there are no answers?"

"If this was last century I'd say the Russians had somehow stuck that device outside of Computer-Two—no offense. If it was last century you'd say it was the Americans."

"I am decided to be offended. I said, "We're trying to say something that makes sense this century too, giving it an exaggerated Russian pronunciation."

"We'll have to assume some dissident group."

"I said. "We'll have to assume one with a capacity for spaceflight and with the ability to come up with an unusual device."

"Joe said, "Spaceflight presents no difficulties, if you can tap into the orbiting
computers illegally—which has been done. As for the cylinder that may make more sense when it is analyzed back on Earth—downstairs as you space buffs would say.

"It doesn't make sense," I said. "Where's the point in trying to disable Computer-Two?"

"As part of a program to cripple space flight."

Then everyone suffers. The dissidents, too.

But it gets everyone's attention doesn't it and suddenly the cause of whatever it is makes news. Or the plans is to just knock out Computer-Two and then threaten to knock out the three others. No real damage but lots of potential and lots of publicity.

He was studying all parts of the interior closely edging over it square centimeter by square centimeter. I might suppose the thing was of nonhuman origin.

"Don't be silly. You want me to make the case? The cylinder made contact after which some thing inside ate away a circle of metal and entered Computer-Two. It crawled over the inside wall, eating away thin layer of metal for some reason. Does that sound like anything of human construction?"

"Not that I know of, but I don't know everything. Even you don't know everything."

Joe ignored that. "So the question is: how did it—whatever it is—get into the com puter, which is after all reasonably well sealed. It did so quickly since it knocked out the resealing and air regeneration capacities almost at once."

"Is that what you're looking for?" I said pointing.

"He tried to stop too quickly and somesaulted backward crying 'That's it!'"

In his excitement he was thrashing his arms and legs which got him nowhere of course. I grabbed him and for a while we were both trying to exert pushes in uncoordinated directions which got us nowhere either. Joe called me a few names but I called him some back and there I had the advantage. I understand English perfectly better than he does in fact, but his knowledge of Russian is—well—fragmentary would be a kind way of putting it. Bad language in an misunderstood language always sounds very dramatic.

"Here it is," he said when we finally had sorted ourselves out.

Where the computer shielding met the wall a small circular hole appeared. When Joe brushed aside a small cylinder it was just like the one on the outer hull, but it seemed even thinner. In fact, it seemed to disintegrate when Joe touched it.

"We'd better get into the computer said Joe.

The computer was a shambles.

Not obviously. I don't mean to say it was like a beam of wood that had been ridded by termites.

In fact, it you looked at the computer casually you might swear it was intact.

Look closely; though, and some of the chips would be gone. The more closely you looked the more you realized were gone. Worse, the stores that Computer-Two used in self-repair had dwindled to almost nothing. We kept looking and would discover something else missing.

Joe took the cylinder out of his pouch again and turned it end to end. He said, "I suspect it's after high grade silicon in particular. I can't say for sure of course but my guess is that the sides are mostly aluminum and the flat end is mostly silicon."

"I said. "Do you mean the thing is a solar battery?"

"Part of it is. That's how it gets its energy in space—energy to get to Computer-Two energy to eat a hole into it to energy to—"

I don't know how else to put it. Energy to stay alive.

"You call it alive?"

"Why not? Look, Computer-Two can repair itself. It can reject faulty bits of equipment and replace them with working ones. But it needs a supply of spares to work with. Given enough spares of all kinds it could build a computer just like itself when properly programmed. But it needs the supply. So we don't think of it as alive. This object that entered Computer-Two is apparently collecting its own supplies. That's suspiciously lifelike.

"What you're saying," I said "is that we have here a microcomputer advanced enough to be considered alive."

"I don't honestly know what I'm saying."

"Who on Earth could make such a thing?"

"Who on Earth?"

I made the next discovery. It looked like a stubby pen. Drifting through the air I just caught it out of the corner of my eye and it registered as a pen.

In zero gravity things will drift out of pockets and float off. There's no way of keeping anything in place unless it is physically confined. You expect pens and coins and anything else that finds an opening to drift wherever the air currents and inertia lead it.

So my mind registered Pen and I groped for it absently and of course my fingers didn't close on it. Just reaching tor something sets up an air current that pushes it away. You have to reach over and steady behind it with one hand and then reach for it with the other. Picking up any small object in midair is a two handed operation.

I turned to look at the object and pay a little more attention to retrieval. Then realized that my pen was safely in its pouch I left it for it and it was there.

"Did you lose a pen, Joe?" I called out.

"No."

"Anything like that? Key? Cigarette?"

"I don't smoke. You know that."

"A stupid answer. Anything?" I said in exasperation. "I'm seeing things here."

"No one ever said you were stable."

Joe. "Over there. Over there."

He lunged for it. I could have told him it would do no good.

But now though our poking around in the computer seemed to have stired things up. We were seeing them wherever we looked. They were floating in the air our tents.

I stopped one at last. Or rather it stopped itself for it was on the elbow of Joe's suit. I snatched it off and shouted.
Joe jumped in terror and nearly knocked it out of my hand.

I said, "Look!"

There was a shiny circle on Joe's suit where I had taken the thing off. I had begun doing it the way through.

"Give it to me," said Joe. He took it gingerly and put it against the wall to hold it steady. Then he shouted, "Gently ... the paper-thin metal!"

There was something inside that looked like a line of cigarette ash. It caught the light and glinted, though like lightly woven metal.

There was a moisterous about it. It wobbled slowly one end seeming to seek blindly.

The end made contact with the wall, and stuck. Joe's finger pushed it away. It seemed to require a small effort to do so. Joe rubbed his finger and thumb and said: "Feels cool."

"It's the metal worm," I don't know what else to call it—seemed limp now after Joe had touched it. It didn't move again.

I was twisting and turning trying to look at myself.

Joe said, "I said for Heaven's sake, have you got one of them on you anywhere?"

I don't see one. "Yes."

Well, look at me. You've got to watch me, Joe, and I'll watch you. Our suits are wrinkled, we might not be able to get back to the ship.

Joe said: "Keep moving then."

It was a gross feeling, being surrounded by things hungry to dissolve your suit wherever they could touch it. When any showed up, we tried to catch them and stuff out of their way at the same time which made things almost impossible. A rather long one drifted close to my leg and I kicked at it, which was stupid for I had hit it; it might have stuck. As it was the air current, I set up brought it against the wall, where it stayed.

Joe reached hastily for it—too hastily.

The rest of his body rebounded as he somersaulted one box and shot the wall near the cylinder lightly. When he finally righted himself, it was still there.

"I didn't smash it, did I?"

No, you didn't. "I said, "You missed it by a decimeter. It won't get away."

I had a hand on either side of it. It was twice as long as the other cylinder had been. In fact it was like two cylinders stuck together longways, with a construction at the point of joining.

Act of reproducing, said Joe as he peeled away the metal. "This thing was inside was a line of dust. Two lines. One on either side of the construction."

"It doesn't take much to kill them," said Joe. "He relaxed visibly. "I think we're safe."

They seem alive. "I said reluctantly."

"I think they seem more than that. They're viruses—or the equivalent."

What are you talking about?"

Joe said, "Granted. I'm a computer technologist and not a virologist. But it's my understanding that viruses on Earth or downstairs as you would say consist of the nucleic acid molecule coated in a protein shell."

When a virus invades a cell, it manages to dissolve a hole in the cell wall or membrane by the use of some appropriate enzyme and the nucleic acid slips inside leaving the protein coat outside. Inside the cell it finds the material to make a new protein coat for itself. In fact it manages to form replicas of itself and produces a new protein coat for each replica. Once it has stripped the cell of all its, the cell dis- solves and in place of the one invading virus there are several hundred daughter viruses. Sound familiar?"

"Yes. "Very familiar. "It's what's happening here. But where did it come from Joe?"

"Not from Earth obviously or any Earth settlement. From somewhere else, I suppose."

"They drift through space till they find something appropriate in which they can multiply. They look for sizable objects ready made of metal. I don't imagine they can small ones.

But large metal objects with pure silicon components and a few other succulent matters like that are the products of intelligent life only. Right?" said Joe—"which means we have the best evidence yet that intelligent life is common in the universe—since objects like the one we're on must be quite common, or it couldn't support these viruses."

And it means that intelligent life is older, perhaps ten billion years old—long enough for a kind of metal evolution forming a metal/silicon/orujidra as we have formed a nucleic/protein/water life. Time to evolve a parasite on space-age artifacts."

I said: "You make it sound that every time some intelligent life form develops a space culture, it is subjected before controlled to parasitic infection.

Right. And it must be done sooner. Fortunately these things are easy to kill, especially now when they're forming. Later on when ready to build Computer Two I suppose that will grow thicker their shells stabilize their interior and prepare as the equivalent of spores to drift a million years before they find another home. They might not be so easy to kill then."

"How are you going to kill them?"

I already have. I just touched that first one when it instinctively sought out metal to begin manufacturing a new shell after I had broken open the first one, and that touch finished it. I didn't touch the second but I kicked the wall near it and the sound vibration in the metal shook its interior apart into metal dust. So they can't get us—or any more of the computer—if we just shake them apart now.

He didn't have to explain further—or as much. He put on his gauntlets slowly and banged at the wall with one. It pushed him away, and he kicked at the wall where he next approached it.

You do the same! he shouted.

I tried to, and for a while we both kept at it. You don't know how hard it is to hit a wall at zero gravity—at least on purpose—and do it hard enough to make it clang. We missed as often as not or just stuck a glancing blow that sent us whirling but made virtually no sound. We were paring with effort and aggravation in no time.

But we had advanced ourselves. We had it up and eventually gathered up more of the viruses. There was nothing inside but dust in every case. They were clearly adapted to empty, automated space objects which like modern computers were vibration free. That's what made it possible I suppose to build up the exceedingly nickly complex metallic structures that possessed sufficient instability to produce the properties of simple life.

I said: "Do you think we got them all?"

"How can I say? If there's one left it will cannibalize the others for metal supplies and start all over. Let's bang around some more."

We did until we were sufficiently worn out not to care whether one was still left alive.

Of course. I said parfing. "The Planetary Association for the Advancement of Science isn't going to be pleased with our killing them all.

Joe's suggestion as to what the PAAS could do with itself was forceful but impractical. He said, "Look, our mission is to save Computer Two. A few thousand lives and, as it turns out, our own lives, too. Now they can decide whether to renovate this computer or rebuild it from scratch. It's their baby.

"The PAAS can get what they can out of these dead objects and that should be something. If they want live ones I suspect they'll find them floating about in these regions."

I said: "All right. My suggestion is we tell Computer Central we're going to jury-rig this computer and get it doing some work anyway and we'll stick till they send up from our home planet whatever is necessary to prevent any reinstallation. Meanwhile they'd better get to each of the other computers and set up a system that can set it to vibrating strongly as soon as the internal atmosphere shows a pressure drop."

Simple enough, said Joe sarcastically. "It's the luck we found them when we did.

"Wait a while," said Joe, and the look in his eye was one of deep trouble. We didn't find them. They found us. If metal life has developed do you suppose it's likely that this is the only form it takes?

What if such life forms communicate somehow and across the vastness of space? Others are now conveying on us for the picking. Other species too—all of them after the lush new fodder of an asset untouched space culture. Other species! Some that are sturdy enough to withstand vibration. Some that are large enough to be more volatile in their reactions to danger. Some that are equipped to invade our settlements in orbit. Some for the sake of Univar that may be able to invade the earth for the metal wealth of its cities.

What I'm going to report is what I must report is that we've found!
One danger that haunts science fiction is the looming form of threatening robots. The earliest of these were constructed of flesh and bone and would now be called androids: Frankenstein's monster (1817), and Capek's R.U.R. (1923), Rossum's Universal Robots, the source of the term. The idea that if you built it it couldn't be good carries on through C. C. Campbell's The Aviator (1930), in which the perfect artificial man becomes dictator of the world and has to be destroyed.

It was only with the construction of metal robots—obedient machines—that mechanical man began operating on the side of justice. In the early pulp magazine, Frank Reade's Steam Man fought the Indians for the good guys, and Eando Binder's robot, built for peace to prove its worth to mankind, was smart enough to choose sides against the Nazis in Adam Link Fights a War. Edmond Hamilton's Captain Future could count upon the faithful robot Krag, as well as the faithful but not so nice...
android. Lothar, to aid him at all times.
A later development is the part man, part metal (or plastic) creature. This theme and the psychological effects of bionic engineering have been explored successfully in Budry's Who (1958) and more recently in the preposterous bionic man, woman, dog, hamster, etc. TV series. The authors of these stories never seem to realize that all mechanical substitutes for human parts are far weaker than the originals. The bionic man needs a wheelchair—not a springboard to leap over buildings. We must slip far into the future to rationalize a superior technology that makes the creature work well, as in Saul Dunn's Mandroid, who is only 10 percent human, the rest being manufactured parts.
A touch of order entered robotic ci-
cles in 1940 with Asimov's Robby and Liar. The mechanical men now began to clank about radiating security, since they had the Laws of Robotics stamped into their positronic brains. Asimov gets full credit for these laws, and countless are the writers who have utilized them.

1. A robot may not injure a human being, or through inaction, allow a human to come to harm.
2. A robot must obey the orders given it by human beings except where such orders
would conflict with the First Law.

3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.

Once the robotic threat had been removed, the infinitely varied relationships of robot with man could be explored. Clifford Simak, in his City series, shows mankind evolving and leaving the earth to the robots.

Clifford Simak, in his City series, shows mankind evolving and leaving the earth to the robots.

and highly evolved dogs. Jack Williamson's With Folded Hands (1947) does discover a danger in robot control, but a benevolent one. To prevent man from being hurt, the robots are stunting all development of the human race. With all the robotic goodness around it was a pleasure to see Alfred Bester's F amend about a slightly insane robot. Having once as-
signed man's attribute to a machine, we must consider the relationship of this intelligent machine with man's mystical nature. Boucher's The Quest for Saint Aquin asked if it is possible to have a robot saint. Silverberg answered the question years later with 6000 News from the Vatican. It you can have a robot pope — then why not a saint? Of course these are just the human-appearing robots, although there is no good reason at all to shape a robot in this manner, except that it looks nice and it is handy to have around the house. Real robots, the ones actually in use in industry today, look nothing at all like the classic diank. The commonest are just collections of machine tools and mechanical manipulators. SF also has nonhumanoid robots of this kind. The computer-controlled, fully automated spaceship has been with us for quite a while. Fully automated cities, usually so well designed that they keep operating after their inhabitants are gone, have had their day, and fully automated trains ran first in the pages of science fiction. At sea we have Bass's Godwhale, a sentient giant robot designed for harvesting plankton for undersea food processing plants. In Space—and at war again—are Saberhagen's Berserkers, super war machines, launched by alien nuts, whose job it is to zip about the galaxy destroying all forms of life.
COUNT THE CLOCK THAT TELLS THE TIME

BY HARLAN ELLISON

When I do count the clock that tells the time,
And see the brave day sunk in hideous night,
When I behold the violet past prime,
And sable curls all silver'd o'er with white,
When lofty trees I see barren of leaves
Which erst from heat did canopy the herd,
And summer's green all girded up in sheaves
Borne on the bier with white and bristly beard,
Then of thy beauty do I question make,
That thou among the wastes of time must go...

William Shakespeare
The 13th Sonnet

Walking in the cool and cloudy absolute dead middle of a Saturday afternoon one day Ian Ross felt lost and vaguely frightened. Lying there in his bed, he was disoriented and it took him a moment to remember when it was and where he was. He was in the bed where he had awakened every day of his 35-year-old life. When it was the Saturday he had resolved to spend doing something. But as he lay there he realized he had come to life in the early hours just after dawn if he looked as though it would rain, the sky even through the high French windows, and he had turned over and gone back to sleep. Now the clock-radio on the bedside table told him it was the absolute dead middle of the afternoon and the world outside his window was cool and cloudy. Where does this time go?” he said.

He was alone. As always there was no one to hear him or to answer. So he continued lying there wasting time feeling vaguely frightened. As though something important were passing him by...
A fly buzzed him. He circled, buzzed him again. It had been annoying him for some time. He tried to ignore the intruder and stared off across Loch Tummel to the amazing flush tones of the October trees preparing themselves for winter’s disingenuous attentions and the utter absence of tourism. The silver birches were already a blazing gold, the larches and ash trees still blending off from green to rust in a few weeks the Norway spruces and the other conifers would darken until they seemed mere shadows against the slate sky.

Perthshire was most beautiful at this time of year. He had taken the time to learn to pronounce the names – Schiehallion, Killiecrankie, Pitlochry, Aberfeldy -- and had come here to sit. The dream. The one he had always held, silent close to him unspoken in his idle thoughts. The dream of going to Scotland. For what reason he could not say. But this was the place that had always called and he had come.

For the first time in his life Ian Ross had done something. Thirty seven years old rooted to a tiny apartment in Chicago virtually friendless, working five days a week at a drafting table in a firm of industrial designers, watching television till sign off blurring the two and a half rooms till every picture hung from the walls in perfect true with the junctures of walls and ceiling entering each cookbook notation in the little ledger with a fine point ink pen, unable to remember what had happened last Thursday that made it different from last Wednesday seeing himself reflected in the window of the cafeteria slowly eating the $2.95 Christmas Dinner Special, a solitary man, somehow never marking the change of the seasons save to understand only by his skin that it was warmer or colder never tasting joy because he could never remember having been told what it was reading books about things and subject matter topics not people because he knew no few people and knew none at them drawing straight lines, feeling deserted but never knowing where to put his hands to relieve that feeling a transient man passing down the same streets every day and perceiving only dimly that there were streets beyond those streets drinking water and apple juice and water replying when he was addressed directly looking around sometimes when he was addressed to see if it was in fact himself to whom the speaker was speaking, buying grey socks and white undershirts slinging out the windows of his apartment at the Chicago snow, staring for hours at the invisible sky feeling the demon wind off Lake Michigan rattling the window glass in its frame and thinking this year he would repatriate and the year failing to repatriate combing his hair as he always had cooking his own meals alone with the memories of his mother and father who had died within a year of each other and both from cancer never having been able to speak more than a few awkward sentences to any woman but his mother Ian Ross had lived his life like the dust that lay in a film across the unseen top of the tall wardrobe cabinet in his bedroom colorless unnoticed inarticulate neither giving not taking.

Until one day he had said: "Where does the time go? And in the months following those words he would come to realize he had not in any remotely valuable manner lived his life. He had wasted it. Months after the first words came unbroken and tremulous he admitted to himself that he had wasted his life.

He resolved to actualize at least the one dream. To go to Scotland. Perhaps to live. To rent or buy a crofter’s cottage on the edge of a moor or overlooking one of the lochs he had dreamed about. He had all the insurance money still out by. He had touched a cent of it. And there in that far chill place in the north he would live walking the hills with a dog by his side smoking a pipe that trash a fragrant pen- nant of blue white smoke hands thrust deep into the pockets of a fleece lined jacket.

He would live there. That was the dream.

And from King’s Cross Station he had taken the 2130 sleeper to Edinburgh and he had walked the Royal Mile and gazed in wonder at Edinburgh Castle high on the bluff overlooking that bountiful city and finally he had rented a car and had driven north out the Queensberry Road across the bridge that spanned the Firth of Forth up the A-90 till he reached Pitlochry. Then a left a random left but not so random that he did not know it would come out overlooking the Queens View said to be the most beautiful view in the world, certainly in Scotland, and he had driven the twisting narrow road till he was deep in the hills of Perth.

And there he had pulled off the road and gotten out of the car leaving the door open and walked away down the October hills to finally sit staring at the Loch gazing and blue and silent as the mirror of his memory.

Where only the buzzing fly reminded him of the past.

He had been 35 when he said “Where does the time go?” And he was 37 as he sat on the hill.

And it was there that the dream died.

He stared at the hills at the valley that ran off to left and right at the sparkling water of the Loch and knew he had wasted his time again. He had resolved to do something but he had done nothing. Again.

There was no place for him here.

He was out of phase with all around him.

He was an alien object. A beer can thrown into the grass. A broken wall undented and
falling back into the earth from which it had been wrenched stone by stone
He felt lonely starved incapable of clenching his hands or clearing his throat
A run from another world - set down in foreign soil drinking air that was not his to drink.
There were no tears no pains in his body no deep and trembling sighs. In a moment with a lyl buzzing the dream died for him. He had not been saved had in fact come in an instant to understand that he had been a child to think it could ever change. What do you want to be when you grow up? Nothing. As I have always been nothing

The sky began to bleach out
The achingly beautiful golds and oranges and yellows began to drift toward sepia. The blue of the loch slid softly toward chalkness like an ineptly prepared painting left too long in direct sunlight. The sounds of birds and forest creatures and insects faded the gain turned down slowly. The sun gradually cooled for Ian Ross. The sky began to bleach out toward a gray-white newsprint colorlessness. The lyl was gone. It was cold now very, very cold now.
Shadows began to superimpose themselves over the dusky mezzotint of the bloodless day.
A city of towers and minarets as seen through shallow disturbed water: a mountain range of glaciers with snow untracked and endless as an ocean an ocean with massed serpent-necked creatures gliding through the jade deeps; a parade of ragged children bearing crosses hewn from tree branches; a great walled fortress in the middle of a parched wasteland; the yellow earth split like strokes of lightning all around the structure a motorway with hundreds of cars speeding past so quickly they seemed to be stroboscopic lines of colored light a battlefield men in flowing robes and riding great-chested stalled stallions the sunlight dancing off curved swords and helmets a tornado careening through a small town of slabback stores and houses lifting entire buildings from their foundations and flinging them into the sky a river of lava burst through a fissure in the ground and boiled toward a shadowy indemnity of an amusement park with throngs of holiday tourists moving in cloths from one attraction to another
Ian Ross sat frozen on the hillside. The earth was dying around him. No it was vanishing fading out dematerializing. All the sand had run out of the hourglass around him as if the were the only permanent fixed and immutable object in a metamorphosing universe suddenly cut loose from its time-anchor.
The world faded out around Ian Ross the shadows boiled and seethed and slithered past him caught in a cyclonic wind-tunnel and swept away past him leaving him in darkness.
He sat now still quiet too isolated to be frightened.
He thought perhaps clouds had covered the sun.
There was no sun.
He thought perhaps it had been an eclipse that he deep concentration of his hopeless state had kept him from noticing.
There was no sun.
No sky. The ground beneath him was gone. He sat barely sat but on nothing surrounded by nothing seeing and feeling nothing save a vague chill. It was cold now very, very cold now.
After a long time he decided to stand and do stand there was nothing beneath or above him. He stood in darkness.

He could remember everything that had ever happened to him in his life. Everything of it with absolute clarity. It was something he had never experienced before. His memory had been no better or worse than anyone else's but he had forgotten all the details. Many years in which nothing had happened during which he had wasted time - almost as a mute witness at the dull

He was out of phase with all around him. An alien object. A run from another world drinking air that was not his to drink. In a moment with a fly buzzing the dream died for him.

rendition of his life.
But now as he walked through the limbo that was all he had been left of the world he recalled everything perfectly. The look of horror on his mother's face when he had sliced through the tendons of his left hand with the lid from the tin can of pink lemonade he had been four years old. The teel of his new Thorn Macan shoes that had always been too tight from the moment they had been bought but that he had been forced to wear to school every day even though they rubbed him raw at the back of his heels. He had been seven years old. The Four Freshmen standing and singing for the graduation dance. He had been alone. He had bought one ticket to support the school event. He had been 16. The taste of egg roll at Choy's the first time. He had been 24. The woman he had met at the library in the section where they kept the books on animals. She had used a white lace handkerchief to dry her temples. 'It had smelled of perfume'. He had been 30. He remembered all the sharp edges of every moment from his past. It was remarkable in this nowhere.
And he walked through gray spaces with the shadows of other times and other places swirling past. The sound of rushing wind as though the emptiness through which he moved was being constantly filled and emptied endlessly without measure or substance.

Had he known what emotions to call on for release he would have done so. But he was numb in his skin. Not merely chilled as this empty place was chilled but somehow inured to feeling from the edge of his perceptions to the center of his soul. Sharp clear drawn back from the absolute past he remembered a day when he had been 11. When his mother had suggested that for his birthday they make a small party to which he would invite a few friends. And so (he remembered with diamond-bright perfection) he had invited six boys and girls. They had never come. He sat alone in the house that Saturday all his comic books laid out in case the cake and party favor and pin-the-tail on the donkey did not hold their attention sufficiently. Never came it grew dark. He sat alone with his mother occasionally walking through the living room to make some consoling remark. But he was alone and he knew there was only one reason for it. They had all forgotten it was simply that he was a waste of time for those actually living their lives. Invisible by token of being important. A thing un noticed on a street who notices the mailbox the fire hydrant the crosswalk lines? He was an invisible useless thing.
He had never permitted another party to be thrown for him.
He remembered that Saturday now. And found the emotion. 26 years late to react to this terrible vanishment of the world. He began to tremble uncontrollably and he sat down where there was nothing to sit down on and he rubbed his hands together feeling the tremors in his knuckles and the ends of his fingers. Then he felt the constriction in his throat he turned his head this way and that looking for a nameless exit from self-pity and loneliness. And then he cried. Lightly softly because he had no experience at it.

A crippled old woman came out of the gray mist of nowhere and stood watching him. His eyes were closed or he would have seen her coming.
After a while he shuffled opened his eyes and saw her standing in front of him.
He stared at her. She was standing. At a level somewhat below him. As though the invisible ground of this nonexistant place was on a lower plane than that on which he sat.
"That won't help much" she said. She wasn't surly but neither was there much succor in her tone.
He looked at her and immediately stopped crying.
"Probably just got sucked in here" she said. It was not quite a question though it had something of query in it. She knew and was going carefully.
He continued to look at her hoping she
could tell him what had happened to him. And to her? She was here too.

"Could be worse," she said, crossing her arms and shifting her weight on to her twisted left leg. "I could’ve been a Saracen or a ribbon clerk or even one of those hairy prehumans. He didn’t respond. He didn’t know what she was talking about. She smiled wryly remembering. First person I met was some kind of a retard. Little boy about 15 or so. Must have spent what there’d been of his life in some padded cell or a hospital bed. something like that. He just sat there and stared at me. I dropped a little couldn’t tell me a thing. I was scared out of my mind. ran around like a chicken with its head cut off. Wasn’t till a long time after that before I met someone who spoke English.

He tried to speak and found his throat was dry. His voice came out in a croak. He swallowed and wet his lips. "Are there many other unhother people were not all alone?"

"Lots of others. Hundreds thousand. God only knows, maybe whole countries full of people here. No animals though. They don’t waste the way we do."

"What of the?"

Time son. Precious lovely time. That’s all there is just time. Sweet flowing time. Animals don’t know about time.

As she spoke a slapping shadow of some wild scene whirled past and through them. It was a great city in flames. It seemed more substantial than the vagrant wisps of countryside or sea scenes that had been ribboning past them as they spoke. The wooden buildings and cypress towers seemed almost solid enough to crush anything in their path. Flames leaped to ward the gray dead-skinned sky enormous tongues of crackling flame that ate the city’s gut and chewed the phantom image leaving ash. (But even the dead ashes had more life than the grayness through which the vision swirled.)

Ian Ross ducked. frightened. Then it was gone.

"Don’t worry about it son," the old woman said. "Looked a lot like London during the Big Fire. First the Plague. Then the Fire. I’ve seen it’s like before. Can’t hurt you. None of it can hurt you."

He tried to stand. found himself still weak. "But what is it?"

She shrugged. "No one’s ever been able to tell me for sure. But there’s some around in here who can. Though. One day I’ll run into one of them! If I find out and we ever meet again I’ll be sure to let you know. Bound to happen."

"But her face grew infinitely sad and there was desolation in her expression. "Maybe. Maybe we’ll meet again. Never happens. but it might. Never saw that retarded boy again. But it might happen."

She started to walk away hobbled awkwardly. Ian got to his feet with difficulty but as quickly as she could. "Hey wait! Where are you going? Please lady don’t leave me here all alone. I’m scared to be here by myself."

She stopped and turned. lifting oddly on her bad leg. "Got to keep moving. Keep going you know? If you stay in one place you don’t get anywhere. There’s a way out. you’ve just got to keep moving till you find it. She started again saying. over her shoulder, "I guess. I won’t be seeing you again. I don’t think I do."

He ran after her and grabbed her arm. She seemed very startled. As if no one had ever touched her in this place during all the time she had been here.

Listen. you’ve got to tell me something. whatever you know. I’m awfully scared. don’t you understand? You have to have some understanding.

She looked at him carefully. "All right. as much as I can. then you’ll let me go."

He nodded. "I don’t know. whatever happened to me. or to you. Did it all fade away and just disappear and everything that was left was just this. just this gray nothing."

He nodded. "She nodded. "How old are you son?"

"I’m 37. My name is Ian."

She waved her hand away with an impatient gesture. "That doesn’t tell me anything. I can see you don’t know any better than I do. So I don’t have the time to waste on you. You’ll learn not to just keep walking. just keep looking for a way out."

He made lists. "That doesn’t tell me anything. What was burning city are these shadows that go past all the time? As to mark his question a vagrant filmy phantom caravan of cassowary-like animal drifted through them.

She shrugged and sighed. I think it’s history. I’m sure. I’m guessing you understand. But I think it’s all the bits and pieces of the past. going through. on its way somewhere."

He walked. She shrugged again. and her silence indicated—well. a kind of helpless appeal to be let go—that she could tell him nothing further.

He nodded resignedly. "All right. Thank you."

She turned with her bad leg trembling. she had stood with her weight on it for too long. And she started to walk off into the gray limbo. When she was almost out of sight. she found herself able to speak again. and he said. too softly to reach her. "Goodbye. Lady. Thank you.

He wondered how old she was. How long she had been here. It he would one time. far from now be like her. It was all over and if he would wander in shadows forever. He wondered if people died here.

Before he met Catherine. a long time before he met her. he met the lunatic who told him where he was. what had happened to him. and why it had happened.

They saw each other standing on opposite sides of a particularly vivid phantom of the Battle of Waterloo. The battle rage past them and through the clash and slaughter of Napoleon’s and Wellington’s forces they waved to each other.

When the sliding vision had rushed by leaving emptiness between them. the lunatic rushed forward. clapping his hands as if preparing himself for a long arduous but pleasurable chore. He was of indeterminate age but clearly past his middle years. His hair was long and wild. he wore a pair of rimless antique spectacles and his suit was worn through the century. "Well. well. well... he called across the narrowing space between them. so good to see you sir."

Ian Ross was startled. in the timeless time he had wandered through this limbo and he had encountered cookles and Berbers and Thracian traders and silent Goths an endless stream of hurrying humanity that would neither speak nor stop. This man was something different. Immediately Ian knew he was insane. But he wanted to talk.

The elder man reached Ian and extended his hand. "Coward sir. Justinian. Cowper. Alchemist. metaphysician. consultant to the forces of time and space. appointment. Yes, time! Do I perhaps in you. sir only recently come to our little Valhalla. one in need of illumination? Certainly! Definitely I can see that is the case."

Ian began to talk, something almost anything in response. but the wildly gesticulat old man pressed on without drawing a breath. "The most recent manifestation the one we were both privileged to witness was. I am sure you are aware. the pivotal moment. at Waterloo in which the Little Corporal had his fat chewed good and proper. Fascinating piece of recent history wouldn’t you say?"

Recent history? Ian started to ask him how long he had been in this gray place but the old man barely paused before a fresh torrent of words spilled out.

Stunningly reminiscent of that marvelous scene in Stendahl’s Charterhouse of Parma in which Fabrizio young. innocent. fresh to that evening. found himself walking across a large meadow on which men were running in all directions. noise. shouts. confusion. and he knew not what was happening and not till several chapters later do we learn—ah! marvelous!—that it was in fact. the Battle of Waterloo through which he moved. totally unaware of history in the shaping all around him. He was there. while not there. Precisely our situation wouldn’t you say?"

He had run out of breath. He stopped and Ian plunged into the gap. "That’s what I’d like to know. Mr. Cowper. What’s happened to me? I’ve lost everything. I can remember everything. too. I know. I should be going crazy or frightened. and I am scared. but not out of my mind. with it. I seem to accept this. whatever it is. I don’t know how to take it. but I know I’m not feeling it yet. And I’ve been here a long time."

The old man slipped his arm around Ian’s back and began walking with him two gentlemen strolling in confidence on a summer afternoon by the edge of a cool
The world was vanishing as if all the sand had run out of the hourglass around him, as if he were the only fixed and immutable object in a universe suddenly cut loose from its time-anchor.

When he was quite close he could see that she was sitting cross-legged on nothing; she was asleep. Her head was propped on one hand the bracing arm supported by her knee. Asleep.

He came right up to her and stood there simply watching. He smiled. She was like a bird he thought with her head tucked under her wing. Not really but that was how she saw him. Though her cupped hand covered half her face he could make out a sweet face; very pale skin a mole on her throat her hair was brown cut quite short. Her eyes were closed he decided they would be blue.

The Greek Senate the Age of Pericles men in a crowd—property owners—screaming at Lycurgus's exhortations in behalf of socialism. The shadow of it sailed past not very far away.

Ian stood staring and after a while he sat down opposite her. He leaned back on his arms and watched. He hummed an old tune the name of which he did not know.

Finally she opened her brown eyes and stared at him.

At first momentary terror startled chagrin, curiosity. Then she took umbrage

How long have you been there?"

"My name is Ian Ross."

"I don't care what your name is!" she said angrily. "I asked you how long you've been sitting there watching me."

"I don't know. A while."

"I don't like being watched. You're being very rude."

He got to his feet without answering and began walking away. Oh well.

She ran after him. "Hey wait!"

He kept walking. He didn't have to be bothered like that. She caught up with him and ran around to stand in front of him. "I suppose you just think you can walk off like that!"

"Yes. I can. I'm sorry I bothered you. Please get out of my way if you don't want me around."

"I didn't say that!"

"You said I was being rude. I never said I was a very well-mannered person and you were just being insulting."

He walked around her. She ran after him.

"All right. Okay. Maybe I was a little out of sorts. I was asleep after all."

She stopped. She stood in front of him. Now it was her move. "My name is Catherine Molnar. How do you do?"

"Not too well. That's how."

"Have you been here long?"

"Longer than I wanted to be here. That's for sure."

"Can you explain what's happened to me?"

He thought about it. "Walking with someone would be a nice change. "Let me ask you something."

Ian Ross said beginning to stroll off toward the phantom image of the Hanging Gardens of Babylon waiting past them. "Did you waste a lot of time sitting around not doing much much watching television a lot?"

They were lying down side by side because they were tired. Nothing more than that. The Battle of the Ardennes. First World War was all around them. Not a sound. Just movement. Mist, fog, landslides, shadows, trees all around them. Some corpses lay in the middle of no-man's-land. They had been together for a space of time. It was three hours; it was six weeks; it was a month of Sundays. It was a year to remember it was the best of times. It was the worst of times. Who could measure it? There were no signposts, no town clocks, no grandfather clocks; no change of seasons; who could measure it?"

They had begun to talk freely. He told her again that his name was Ian Ross and she said, "Catherine Molnar again."

She confirmed his guess that her life had been empty. "Plain," she said. "I was plain."

"No. I'm not. I'd rather say I've had nice cheekbones or a trim figure. It won't change a thing. If you want plain. I've got it."

"He didn't say she had nice cheekbones or a trim figure. But he didn't think she was plain."

The Battle of the Ardennes was swirling.
away now
She suggested they make love
Ian Ross got to his feet quickly and
walked away.
She watched him for a while keeping
him in sight. Then she got up, dusted off
her hands though there was nothing on
them an act of memory and followed him.
Quite a long time later after trailing him but
not trying to catch up to him, she ran to
match his pace and finally gasping for
breath reached him.
'I'm sorry' she said
Nothing to be sorry about'
I offended you.
No you didn't I just felt like walking
'Stop it Ian I did offended you
He stopped and spun on her 'Do you think
I'm a virgin? I'm not a virgin'
His vehemence pulled her back from the
edge of boldness 'No of course you re
I never thought such a thing.' Then she
said 'Well I am'
'Sorry' he said 'because he didn't know
the right thing to say if there was a right
thing'
'Not your fault' she said. Which was the
right thing to say.

From nothing to nothing: Thirty-four
years old, the properly desperate age for
unmarried, unmarried women, Catherine
Molnar, Janesville, Wisconsin.

Sweating the tacks in her jewelry box,
ironing her clothes, removing and re-
olding the sweaters in her drawers, hang-
ing the slacks with the slacks, skirts with
the skirts, blouses with the blouses, coats
with the coats all in order in the closest
reading every word in Time and Reader's
Digest, learning seven new words every
day never using seven new words every
day mopping the floors in the three room
apartment, putting aside one full evening
to pay the bills and spelling out Wisconsin
completely never the WI abbreviation on
the return envelopes. Listening to talk radio
calling for the correct time to set the clocks
spooning out the droppings from the kitty
box repasting photos in the album of
scenes with round-faced people pinching
back the buds on the oleads, calling Aunt
Beatrice every Tuesday at seven o'clock
talking brightly to the waitress in the
orange and blue uniform at the chicken pie
shoppe repainting fingernails carefully so
the moon on each nail is showing. Heating
morning water for herself alone for the cup
of herbal tea, setting the table with a cloth
napkin and a placemat doing dishes
going to the office and straightening the
bills of living precisely from nothing to
nothing. Thirty-four

They lay side by side but they were not
covered. There was more to it than that
'I hate men who can't think past the pit-
low' she said, touching his hair
'What's that?'
Oh it's just something I practiced to
say after the first time I slept with a man. I
always felt there should be something oth-
real to say instead of all the things I read in
novels
'I think it's a very clever phrase.' Even
now he found it hard to touch her. He lay
with hands at his sides.
She changed the subject 'I was never
able to get very far playing the piano. I have
absolutely no give between the thumb and
first finger. That's essential you know
You have to have a long reach a good
spread. I think they call it to play Chopin. A
tenth that's two notes over an octave. A
tenth, a perfect octave these are just
tactile. The tenth Octave is good enough I
don't have that
'I like piano playing.' he said,
realizing how silly and dull he must sound
and frightened (very suddenly) that she
would find him so that she would leave him.
Then he remembered where they were and he
smiled. Where could she go? Where could
he go?
'I always hated the fellows at parties who
could play the piano all the girls clustered
around those people. Except these
years it's not so much piano not too many
people have pianos in their homes any-
more. The kids grow up and go away and
nobody takes lessons and the kids don't
buy pianos. They get those electric
guitars

Acoustic guitars
'Yes those I don't think it would be much
better for fellows like me who don't play
even if it's acoustic guitars
They got up and walked again.

Once they discussed how they had
wasted their lives how they had sat there
with hands folded as time filled space
around them swept through was drained
off and their own chronicle he had told
her about the lunatic; she said it sounded
like Benjamin Franklin. He said the man
hadn't looked like Benjamin Franklin but
maybe it might have been had been
learned of all potency.

Once they discussed the guillotine
executions in the Paris of the Revolution
because it was keeping pace with them.
Once they chased the Davonien and ac-
moral caught it. Once they were privileged
to enjoy themselves in the center of an
Arctic snowstorm that held around them for
a measure of measureless time. Once they
saw nothing for an eternity but were truly
chilled unlike the Arctic snowstorm that had
had no effect on them—by the winds
that blew past them. And once he turned
her to her and said 'I love you Catherine'

But when she looked at him with a gentle
smile he noticed for the first time that her
eyes seemed to be getting gray and pale.
Then not too soon after she said she
loved him too.

But she could see must through the flesh
of his hands when he reached out to touch
her face.

They walked with their arms around each
other having found each other. They said
many times and agreed it was so that they
were in love and being together was the
most important thing in that endless world
of gray spaces even if they never found their
way back.

And they began to use their time to
gather setting small goals for each day
upon awakening. We will walk that far we
will play word games in which you have to
begin the name of a female movie star from
the last letter of a male movie star's name
that I have to begin off the left letter of a
female movie star. We will exchange shrills
and blonde and see how it feels for a while
we will sing every camp song we can re-
member. They began to enjoy their time
together. They began to live.

And sometimes his voice faded out and
she could see him moving his lips but there
was no sound
And sometimes when the mist cleared
she was invisible from the ankles down and
her body moved as through thick soup.
And as they used their time they became
alien in that place where wasted time
had gone to rest.

And they began to fade. As the world had
leached out for Ian Ross in Scotland and
for Catherine Molnar in Wisconsin they
began to vanish from limbo. Matter could
never be created or destroyed but it
could be disassembled and sent where it
was needed for entropic balance.

He saw her pale skin become transparent.
She saw his hands as clear as glass.
And they thought too late it's too late.
Ink stains marks of their selves were
drawn off and were sent away from that
gray place. Were sent where needed to
maintain balance. One and one and one
separated on the wind and blown to the
farthest corners of the tapestry that was
time and space. And could never be re-
called. And could never be rejoined.

So they touched there in that vast limbo
of wasted time. For the last time and
shadows existed for an instant and then
were gone. He first leaving her behind for
the merest instant of terrible loneliness
and loss and then she without shadow
pulled apart and scattered followed Separation
without hope of return.

There was the faintest keening whine of
matter fleeing.

There was the soundless echo of a dis-
membering.

The universe was poised to accept re-
stored order.

And then balance was regained as if
they had never been.

Great events hushed in mist swirled past.
Ptolemy crowned King of Egypt. The Battle
of the Teutoburger Forest Jesus crowned
the founding of Constantinople. The Van-
dals plundered Rome. The massacre of
the Omeyyad family. The Court of the Fuyawas
in Japan. Jerusalem falling to Saladin
and on and on great events empty
—time and the timeless population
trudging past endlessly endessly
unaware that they last, hopelessly and
in too late. Two of their nameless order
had found the way out.
"I'll never forget you, Xeena. I'll see your face in every omelet. I'll never again touch another dish of 'coq au vin.'"
INNER DOMAINS

Uncharted regions of bone and sinew become fantastic art in the service of science

BY KATHLEEN STEIN

Early in my study of vertebrate structure, I became entranced by the aesthetic pleasure I derived from contemplating the organic form," says the renowned medical artist Paul Peck. Like his predecessors from Da Vinci to Andrew Wyeth, Peck contradicts the myth that the artist is at continual odds with the stringent discipline and accountability of the scientific method. To the contrary, the instant the artist records an observation—a leaf, sunlight falling on a pool of water, the complexities of a human face—he is participating in a scient-

Peck's three-dimensional rendering of the various fibrous and netlike components of connective tissue (top). Inner structure of the kidney (top right) depicts thousands of glomeruli and tubules; neurons (below)
"I was determined," says Peck, "to create art that would reveal the harmony in living organisms.

Life event. Before the invention of the camera, medical illustration was the only means—other than dissecting corpses—of learning anatomy. Although photography has now replaced the illustrator's function in recording the appearance of objects, the camera is not able to disentangle important elements or simplify and clarify relationships. That is the work of art. In the case of anatomy, the arrangements of organs and their vessels and nerves are so intricate and the relationships so hidden by overlying tissue, that a photograph tends to confuse rather than clarify. Medical art captures the essence of life, a more subtle task. In fact, advancing photographic technology has done art a favor in this respect.

The structure of bone (above left). Right ventricle of the heart (above right). Gallstones (below right). Lung section (below) painted by Frank Armitage for a pharmaceuticals house.
I would reveal especially those microscopic structures—in a manner to fire the imagination.

Armitage's conceptualization of the brain's optic system (above left) Nerve synapse (right). The exposed tendon sheaths of the hand, palm-side facing up (below left), dorsal view (right). Acrylic on mat board.
Dear Senator, I'm writing to you because you are our senior Senator and because you said at election time last year that you were our servant and that we should write to you immediately if we had any grievances. You were very definite, and you even got a little huffy and said it was actually a citizen's duty to write to his Senator and let him know what was going on. Well, Senator, I thought about that a lot. Naturally, I didn't believe the part about you being our servant. You've got to spend a lot of time earning 50 times or 100 times or 1000 times what we do. But the thing about writing to you, which you were so insistent on, that part got to me.

Your words puzzled me at first when you said we should let you know what was going on here. I mean, you were raised in this city same as me, and a man would have to be blind, deaf, dumb, and stupid not to know what's happening here. But I decided that I was being unfair: you've got to spend a lot of

It was a prime corpus, complete with reconditioned heart, lungs, and enriched glands.

BODY GAME
BY ROBERT SHECKLEY
your time in Washington so maybe you are out of touch. Anyway I am taking you at your word and taking the liberty of writing to you. Specifically I want to tell you about my grandfather's retreat body because it's a specific grievance something you ought to know about and maybe even do something about.

At the time all this began Grandfather was a healthy sprightly 92 year old with all his own teeth still, a full head of white hair and not an ounce of spare meat on his bones. He'd always taken care of himself hadn't even had to wear glasses until he was 80-something. The old boy had worked for 50 years until he retired him at age 65 with a pretty generous pension considering that he had been a second grade comptometer operator. With the pension and social security and what he saved Grandfather was able to pull his own weight and not be a burden to the rest of us which was lucky since we were barely able to manage it financially speaking.

The old boy just lay around the apartment for a while sleeping late and watching television. He always made his own meals and he always washed up afterwards. Evenings he went down to the park and sat with some other old-timers. Then home to bed. He was very good with our kids on Sundays he'd take them to Sheephead Bay and they'd walk along the shore and look for seashells. He went fishing too just to pass the time and once he caught a sand shark though it got close to shore through all the garbage and chemical junk is beyond me. We boiled it up for a couple of days and ate it and it wasn't bad if you used enough ketchup.

But the old guy was getting bored. He'd worked for 50 years and he simply didn't know how to retire gracefully. He moped around for a while, then made up his mind and went out looking for a job.

Well of course that was just plain silly and we told him so. Man of 40 can't find anything these days much less a man of 70 which was Grandfather's age at the time. But he went on trying. He'd wake up every morning and take his longevity serum prescribed by the Medicare people wash and shave off he'd go.

He didn't find a thing of course and finally he had to swallow his pride and rent a job as a garbage sorter's assistant. It didn't cost him much which was lucky because he didn't have much. But he could never get use to the idea of paying money every day in order to work when the government was willing to pay him to not work. It was a useful job and I do it damn well he used to tell us. Why in God's name must I pay in order to work a useful job. I do it well.

As if that had anything to do with it.

Well he held that job or others like it for nearly 20 years. But then someone invented self-consuming garbage and my grandfather and a lot of other men were out of work. Grandfather was about 90 now and he still had a lot of ideas about useful jobs. But he wasn't feeling well. This was the first time in his life he hadn't felt well. We took him to Doc Saunders at the U Thant Memorial Socio Medical Center on East 133rd Street. It took us the better part of a day to hike up there. Those moving sidewalks cost five bucks a ride and that's too much just to get around.

Doc Saunders had an office filled with one hell of a batch of instruments. He ran a three day checkout on Grandfather. At the end of it he said 'There's nothing wrong with you except old age. Your heart's just about used up and your arteries can't stand up to pressure. There's more but that's the most important."

'Can you replace anything Doc?' Grandfather asked.

"Doc Saunders shook his head: 'Put in a new heart and I'd blow out your arteries. Patch and mend your arteries and your lungs couldn't oxygenate the blood flow. Do something about that and your kidneys would declare a holiday. Fact is your whole internal system is just plain worn out'.

"Grandfather nodded. He read the Daily News every morning. He knew about this stuff.

"What should I do?" he asked.

"Get a new job" Saunders said.

"Grandfather thought it over. "Well by God he said maybe a man my age ought to be ready to die but I'm not. Still too many things to look at you know what I mean? Sure I'm ready to put on a new body but the money."

"That's the problem. "Saunders said. "Medicare doesn't handle replacement you know."

"I know, "Grandfather said simply.

"Could you meet the price?"

"Don't see how Grandfather said.

For the next couple of days Grandfather sat on the curb near our apartment and thought. It wasn't too nice for him there. The kids would come by after school and shout at him. "Die old man why don't you die?"

Selfish old bastard using up air and food and water. Lousy old pervert why can't you die decent like old men are supposed to do? Die die greedy son of a bitch die!"

When I heard about that I swore I was going out there with a stick and raise some hell. But Grandfather wouldn't allow it. "They're just repeating what their parents say" he told me. "There's no harm in a child no more than in a parrot. And besides they're right probably I should die."

"Now don't start that I said."

"Die die. "Grandfather said. "Hell I've been waiting for 30 years and if it had an ounce of guts I damned well would die and good riddance to me."

"That's crazy talk. "I told him. "What do you think that longevity stuff is for if it meant for old men to die?"

"Maybe they made a mistake he'd say. "Like hell they did I came back. They taught me in school that people have been being living for long-life for hundreds and hundreds of years. You've heard of Dr. Faustus haven't you?"

"Famous Austrian doctor wasn't he?"

Grandfather asked.

"German I told him. A friend of Freud and Einstein and smarter than both of them. He put longevity on the map. You wouldn't argue with a brainy guy like that would you?"

"Maybe I didn't have all the facts straight but I had to say something. And I didn't want the old man to die. I don't know why because it didn't make any sense to have an old man in the house with things getting tougher every year. But I wanted him to live. He was never any trouble and the kids liked him and even May my wife said he was nice to talk to."

"Well he didn't pay any attention to my Faustus talk which I guess was about what it was worth. He sat with his chin on his chest and thought. He must have thought for ten minutes. Then he looked up and blinked like he was a little surprised I was still there.

"Sonny" he asked. "How old is Arthur Rockefeller?"

"One hundred and thirty or so I said."

"He's in his third body."

"And how old is Eustis Morgan Hunt?"

"Must be about the same age."

"And Blaise Eisenhower?"

"Must be a good 175. He's gone through four bodies."

"And Morris Mellon?"

"Around 210. 220. But what's that got to do with anything?"

"He gave me a pitying look. The poor are like children. It takes them nearly a hundred years just to grow up and then they still can't do anything because they're dying. But the rich can try to live forever."

"He didn't say anything for a while. Then he split into the street got up and went inside to the apartment. It was time for his favorite afternoon show."

I don't know how or where he got the money. Maybe he had savings tucked away or maybe he went to New Jersey and held up a candy store. Your guess is as good as mine. All I know is three days later he came up to me and said. "Johnny let's go body shopping."

"Body dreaming you mean I said."

"Shopping" he said again and showed me 380 dollars in his hand. And he wouldn't tell me where he got it or either—me his own grandson who's going to need a new body one of these days.

So we went body shopping.

\text{Senator I guess you know how it is with the poor. Everything costs more and is not as good. Where are you poor like us you don't want to go downtown to Saks's Body Shop for example or Lord & Taylor's Relife Center. You figure they'll laugh at you or arrest you for loitering. You simply don't shop there. You shop in your neighborhood.}\n
\text{In our case that means that we bring our business to Dapper Dan's Living Models store which is located at 103rd Street and Broadway. I'm not trying to get that company into trouble it just happens to be where we went.}
Maybe you've read what those places are like. Plenty of men, three or four good-looking bodies in the window junk inside. Always a couple of salesmen in sharp suits telling jokes on the videophone. These salesmen must mo the other because I never see anyone else in there.

We walked in and started looking over the goods. One of the salesmen came drilng over nice and easy smiling while he was still 60 feet away.

"Looking for a nice body?" he asked.

"No, just looking for a fourth for bridge." told turn.

He laughed. I was a very witty fellow.

"Take your time," he said. "But if there is anything specific—"

How much is that one? Grandfather asked.

I see that you're a man of taste," the salesman said. That is our Eton model—part of General Dynamics's new spring line. The Eton is six feet tall, 170 pounds of soft fat,. All its organs have received the Good Housekeeping seal of approval. General Clay Baxter occupies a head bit Eton. Did you know that? The brain and nervous system are by Dynasor and have been rated a best buy by Consumer Reports. Sculpturewise, this particular model came out very nicely—notice the facial soft tissues and the crinkly laugh lines around the eyes. You don't always get that sort of detail.

How much is it? Grandfather asked.

"I forgot to mention it comes with a ten-year guarantee on parts and labor backed by a Good Housekeeping seal of approval." How much?"

Well sir, this week we're having our annual sale. So, because of that, I can let you have this number for eight thousand and nine hundred dollars. We'll be 5 percent off list.

Grandfather shook his head. Do you actually expect to sell that thing up here?

"I don't expect the salesman told him. Sometimes a man hits it on the numbers or comes into an inheritance—"

"For eighteen grand it'd pay me to die," my grandfather said.

You got anything cheaper?"

The salesman had plenty of cheaper models. There was a Renault-Bofors Hombre for $10,000 and a Socony GM Eversman for $6,500. There was an Union Carbide Chrysler Go Man with plastic hair and glass eyes for $2,200 and a Texas Instrument Veracruzana without voicebox gyroceneter or protein conversion unit for $1,995.

"Hello! I wasn't interested in a new synthetic anyhow. Grandfather said. "You got a used-body department?"

"Yes sir we do."

"Then show me some good retreads."

He took us into a back room where the bodies were stacked against the wall like cordwood. It was like one of those old-time chamber of horror things. I mean honestly you wouldn't have worn one of those bodies to a dog fight. There really ought to be a law against selling that sort of thing—potted bodies with chewed ears, bodies still bloody with a new heart sewed on quick lab bodies that hadn't worked out bodies assembled out of parts found at wrecks and other disasters suicides' bodies with the wrists taped and a couple of quarts of new blood pumped in lepers' bodies with flesh-tone plastic sprayed over the sores.

We hadn't been expecting the retreads to be pretty, but we hadn't expected anything like this either. I thought Grandfather was going to turn around and march out of that store. But he didn't. Shaking his head a little, he picked out a pretty good-looking synthetic with an extruded arm and a leg missing. God knows it was no beauty but at least it didn't look as if it had just been pulled out of a train wreck.

"I might be interested in something like this," Grandfather said cautiously.

"You have a good eye for merchandise," the salesman told him. It just so happens that this little number will outperform a lot of the high-price new ones."

It isn't too bad, Grandfather said.

"Not a chance! This is a prime corpus. My dear sir, and it comes complete with reconditioned heart, extractor type lungs, heavy-duty liver, and enriched glands. This model comes with four kidneys as standard equipment, a double-insulated stomach and two hundred feet of Armour's finest intestine. What do you think of that sir?"

"Well I don't know," Grandfather said.

But the salesman knew. He took out about fifteen minutes for him to sell the lopsided body to my grandfather.

You get a one-month guarantee on re-" The grandfather got into it the following day and it lasted him three weeks. Then the heart began to race and flutter. One kidney shut down completely and the other three only worked part-time. A lung patch blew out the intestines stayed leaking and the liver began to crinkle.

Grandfather is in bed now and Doc Saunders says it's a day-to-day thing. The company won't make good on the body. They got some pretty nasty clauses in that contract of theirs and our block legal advisor says we could fight it in the courts for ten years and not be sure of the outcome. And in the meantime Grandfather would be dead.

So I'm writing to you first and primarily Senator to ask you to do something about this quick. While there's still time. My grandfather says that all I'll get iron is a form letter or maybe even a real letter from your secretary expressing regret at your inability to rectify this grievous wrong and that you'll probably mention how you've introduced or sponsored a bill before Congress that I do something about it if I ever gets passed. And all I'll own to is. So I and Grandfather expect he'll be dead because he didn't have the price of a decent body and nobody will do anything about it. That's business as usual right? Isn't that what always happens to the little people?"

But that brings me to the second reason I've written you. I've been talking it over with my buddies Senator and we all agree that my grandfather and all the rest of the poor people have been coned long enough. This Golden Age is not so nice for people like us. It's not safe. We want anything so much. We can't go on knowing that other people have privileges—like long-life—that we don't have. We figure that that stuff has gone on long enough.

We've decided that if you the other people in power don't do something about it then we're going to. The time has come to take a stand.

We're going to declare war.

You may think this is sort of sudden Senator. But it isn't really. You'd be surprised how many people have been thinking about this sort of thing. But each of us has thought we were alone and that every one else was satisfied. And now we learn that a hell of a lot of us have been thinking the same thoughts as Grandfather and doing a slow burn about it.

Before this we didn't know what to do. Now we do know.

We are simple men Senator and we don't have any big thinkers among us. We figure that all men ought to be roughly equal. And we understand that no laws are going to do that.

So our program is to kill rich guy. Do away with them entirely.

That may not sound very constructive as the tv says. But to us it looks simple straightforward and we think it'll be effective.

We're going to kill the rich when and how we can. And we're not going to discriminate against either. We don't care how the money was made nor what he uses it for. We'll kill labor leaders as well as bankers high-class criminals as well as big drug dealers. We'll kill all him and about him who has a lot more power than we do. We'll kill until the rich are like us or we're like them or until we all meet in the middle. We'll kill our own people it they profit off of this thing too. And we'll sure as hell kill senators and congressmen too.

So there it is. Senator I hope you help my grandfather. If you do it'll mean that maybe you see things our way and we'll be glad to put you on the deferred list and give you three weeks to get rid of the wealth you've been able to accumulate.

You know where to reach my grandfather. We're not going to reach at all. However this thing goes I'm dropping out of sight. Don't bother looking for me.

Remember—there's a hell of a lot more of us than there are of you. We've never been able to bring this thing off before. My grandfather tells me never in the history of the world. But what the hell there's got to be a first time for everything. Maybe we'll even make it this time. Pull down your Golden Age and build our own.

I don't expect you'll see it our way. So here's looking at you. Senator—right down the sights of a gun."

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UNACCOMPANIED SONATA

He was an artist, so he had to be kept under close control.

BY ORSON SCOTT CARD

When Christian Haroldsen was six months old, preliminary tests showed a predisposition toward rhythm and a keen awareness of pitch. There were other tests, of course, and many possible routes still open to him. But rhythm and pitch were the governing signs of his own private zodiac, and already the reinforcement began.

Mr. and Mrs. Haroldsen were provided with tapes of many kinds of sound and instructed to play them constantly, whether Christian was awake or asleep.

When Christian Haroldsen was two years old, his seventh battery of tests pinpointed the path he would inevitably follow. His creativity was exceptional; his curiosity, insatiable; his understanding of music, so intense that on top of all the tests was written "Prodigy." Prodigy was the word that took him from his parents' home to a house in deep deciduous forest where winter was savage and violent and summer, a brief, desperate eruption of green. He grew up, cared for by unsinging servants, and the only music he was allowed to hear was bird song and wind song and the crackling of winter wood; thunder and the faint cry of golden leaves as they broke free and tumbled to the earth; ram on the roof and the drip of water from icicles; the chatter of squirrels and the deep silence of snow falling on a moonless night. These sounds were Christian's only conscious music. He grew up with the symphonies of his early years only distant and impossible-to-retrieve memories. And so he learned to hear music in unmusical things— for he had to find music, even when there was none to find. He found that colors made sounds in his mind; sunlight in summer was a blanql chord; moonlight in winter, a thin, mournful wail; new green in spring, a low murmur in almost (but not quite) random rhythms; the fashion of red fox in the leaves, a gasp of sudden excitement. 

PAINTING BY EVELYN TAYLOR

SONATA

UNACOMPANIED
And he learned to play all those sounds on his instrument. In the world were violins, trumpets, and clarinets, as there had been for centuries. Christian knew nothing of that. Only his instrument was available. It was enough.

Christian lived in one room in his house which he had to himself most of the time. He had a bed (not too soft) a chair and table, a silent machine that cleaned him and his clothing, and an electric light.

The other room contained only his instrument. It was a console with many keys and strips and levers and bars, and when he touched any part of it a sound came out. Every key made a different sound, every point on the strips made a different pitch, every lever modified the tone every bar altered the structure of the sound.

When he first came to the house Christian played (as children will) with the instrument making strange and funny noises. It was his only playmate; he learned it well; could produce any sound he wanted to. At first he delighted in loud blaring tones. Later he began to learn the pleasure of silences and rhythms. And soon he began to play with soft and loud and to play two sounds at once and to change those two sounds together to make a new sound and to play again a sequence of sounds he had played before.

Gradually the sounds of the forest outside his house found their way into the music he played. He learned to make winds sing through his instrument, he learned to make summer one of the songs he could play at will. Green with its infinite variations was his most sublime harmony. The birds cried out from his instrument with all the passion of Christian's loneliness.

And the word spread to the listeners.

"There's a new sound north of here, east of here. Christian Haroldson, and he'll tear out your heart with his songs.

The listeners came. A few to whom variety was everything first; then those to whom novelty and opulence mattered most. At last those who valued beauty and passion above everything else. They came and stayed out in Christian's woods and listened as his music was played through perfect speakers on the roof of his house. When the music stopped and Christian came out of his house, they could see the listeners moving away. He was asked and was told why they came. He marveled that the things he did for love on his instrument could be of interest to other people.

He felt strangely even more lonely to know that he could sing to the listeners and yet never be able to hear their songs.

But they have no songs, said the woman who came to bring him food every day. They are Listeners. You are a Maker. You have songs and they listen.

Why?, asked Christian innocently.

They're what they want most to do. They've been tested, and they are happiest as Listeners. You are happiest as a Maker. Aren't you happy?

Yes, Christian answered, and he was telling the truth. His life was perfect, and he wouldn't change anything, not even the sweet sadness of the backs of the Listeners as they walked away at the end of his songs.

Christian was seven years old.

FIRST MOVEMENT

For the third time the short man with glassed and a strangely inappropriate mustache dared to walk in the underbrush for Christian to come out. For the third time he was overcome by the beauty of the song that had just ended: a majestic symphony that made the short man with glasses feel the pressure of the leaves above him, even though it was summer and they had months left before they would fall. The fall was still inevitable, said Christian's song, through all their life the leaves held within them the power to die, and that must color their life. The short man with glasses wept—but forbidden. I can't have my creativity polluted by hearing other musicians. That would make me initiate and derivative instead of original.

"Reciting the man said: You're just reciting that. This is Bach's music. There was reverence in his voice.

"I can't," Christian said.

And then the short man shook his head. He knew. You don't know. You don't know what you're missing. But I heard it in the song when I came here years ago. Christian. You want this.

"It's forbidden. Christian answered for him the very fact that a man who knew an act was forbidden still wanted to perform it was astounding, and he couldn't get past the novelty of it to realize that some action was expected of him.

There were footsteps and words being spoken in the distance, and the short man's face became frightened. He ran at Christian forced the recorder into his hands, then took off toward the gate of the preserve.

Christian took the recorder and held it in a spot of sunlight coming through the leaves. It gleamed daily. Bach! Christian said. "Then: Who the hell is Bach?"

But he didn't throw the recorder down. Nor did he give the recorder to the woman who came to ask him what the short man with glasses had stayed for. He stayed for at least ten minutes.

"I only saw him for thirty seconds," Christian answered.

"And?"

He wanted me to hear some other music. He had a recorder. "Did he give it to you?"

"No," Christian said. "Doesn't he still have it?"

"He must have dropped it in the woods."

He said it was Bach. "It's forbidden. That's all you need to know if you should find the recorder. Christian, you know the law."

"I'll give it to you."

She looked at him carefully. "You know what would happen if you listened to such a thing.

Christian nodded.

"Very well. I'll be looking for it. I'll see you tomorrow. Christian. And next time somebody stays after don't talk to him. Just come back in and lock the doors."

"I'll do that," Christian said.

"There was a summer storm at night. Nothing but wind and rain and thunder and Christian found that he could not sleep. Not because of the music of the weather—he slept through a thousand such storms. It was the recorder that lay against the wall. Behind the instrument. Christian had lived for nearly thirty years surrounded by this wild, beautiful place and the music he himself made. But now."

Now he could not stop wondering. Who was Bach? Who is Bach? What is his music? How is it different from mine? Has he discovered things that I don't know? What is his music? What is his music?
What is his music? Wondering. Until dawn, when the storm was abating and the wind had died down. Christian got out of bed, where he had not slept, but only tossed back and forth all night, and took the recorder from its hiding place and played it. At first it sounded strange to him. The speaker of noise odd sounds that had nothing to do with the sounds of Christian's life. But the patterns were clear and by the end of the recording which was not even a half-hour long, Christian had mastered the idea of fugue and the sound of the harpsichord had tricked his mind.

Yet he knew that if he let these things show up in his music, he would be discovered. So he did not try a fugue. He did not attempt to imitate the harpsichord's sound. And every night he listened to the recording, learning more and more until finally the Watcher came.

The Watcher was blind and a dog led him. He came to the door and because he was a Watcher, the door opened for him without his even knocking.

"Christian Haroldson, where is the recorder?" the Watcher asked.

"Recorder?" Christian asked, then knew it was hopeless. So he took the machine and gave it to the Watcher.

"Oh Christian, said the Watcher and his voice was mild and sorrowful. 'Why didn't you turn it in without listening to it?'

'I meant to, said Christian. 'But how did you know?"

"Because suddenly there are no fugues in your work. Suddenly your songs have lost the only Bach-like thing about them. And you've stopped experimenting with new sounds. What were you trying to avoid?"

This Christian said, and he sat down and on his first try duplicated the sound of the harpsichord.

Yet you've never tried to do that until now, have you?"

'I thought you'd notice."

"Fugues and harpsichord. The two things you noticed first—and the only things you didn't absorb into your music. All your other songs for these last weeks have been tinted and colored and influenced by Bach. Except that there was no fugue and there was no harpsichord. You have broken the law. You were put here because you were a genius, creating new things with only nature for your inspiration. Now, of course, you're derivative, and truly new creation is impossible for you. You'll have to leave."

'I know. Christian said. 'But I don't really understand what life outside his house would be like."

"We'll train you for the kinds of jobs you can pursue now. You won't starve. You won't die of boredom. But because you broke the law, one thing is forbidden to you now."

Music.

Not all music. There is music of a sort Christian that the common people can have. Radio and television and record music. But live music and new music—those are forbidden to you. You may not sing. You may not play an instrument. You may not tap out a rhythm.

"Why not?"

The Watcher shook his head. "The world is too perfect, too at peace, too happy, for us to permit a misfit who broke the law to go about spreading discontent. And if you make more music, Christian, you will be punished drastically, drastically."

Christian nodded, and when the Watcher told him to come, he came, leaving behind the house and the woods and his instrument. At first he took it calmly, as the inevitable punishment for his infraction but he had little concept of punishment, or of what existed from his Instrument would mean.

Within five hours he was shouting and striking out at anyone who came near him because his fingers craved the touch of the Instrument's keys and levers and strips and bars, and he could not have them, and now he knew that he had never been lonely before.

Sometimes, Joe went to the piano and lifted the lid and played every key on the piano. And when he had done that he put his head down on the piano and cried. It was like losing his bar.

It took six months before he was ready for normal life. And when he left the Retraining Center, a small building, because it was so rarely used, he looked tired and years older and he didn't smile at anyone. He became a delivery-truck driver because the tests said that this was a job that would least grieve him and least remind him of his loss and most engage his low remaining aptitudes and interests.

He delivered doughnuts to grocery stores. And at night he discovered the mysteries of alcohol and the alcohol and the doughnuts and the truck and his dreams were enough that he was in his way content. He had no anger in him. He could live the rest of his life, without bitterness.

He delivered fresh doughnuts, and took the stale ones away with him.

SECOND MOVEMENT

With a name like Joe, Joe always said, I had to open a bar and grill. Just so I could put up a sign saying Joe's Bar and Grill. And he laughed and laughed because after all, Joe's Bar and Grill was a funny name these days.

But Joe was a good bartender and the Watchers had put him in the right kind of place. Not in a big city but in a small town, a town just off the freeway. Truck drivers often came to town not far from a large city so that interesting things were nearby to be talked about and worried about and bitched about and loved.

Joe's Bar and Grill was therefore a nice place to come and many people came there. Not fashionable people and not drunks but lonely people and friendly people, in just the right mixture. Their clients are like a good drink. Just enough of this and that to make a new flavor that tastes better than any of the ingredients. Joe was a poet, he was a poet of alcohol and like many another person these days, he often said, my father was a lawyer and in the old days I had probably ended up a lawyer too. And I never would have known what I was missing.

Joe was right. And he was a damn good bartender, and he didn't wish he were anything else, so he was happy.

One night, however, a new man came in, a man with a doughnut delivery truck and a doughnut brand name on his uniform. Joe noticed him because silence clung to the man like a smell—wherever he walked people sensed it, and though they scarcely looked at him, they lowered their voices or stopped talking at all and got reflective and looked at the walls and the mirror behind the bar. The doughnut deliveryman sat in a corner and had a watered-down drink that meant he intended to stay a long time and didn't want his alcohol intake to be so rapid that he was forced to leave early. Joe noticed things about people and he noticed that this man kept looking off in the dark corner where the piano stood. It was an old, out-of-tune monstrously from the old days, for this had been a bar for a long time, and Joe wondered why the man was fascinated by it. True, a lot of Joe's customers had been interested, but they had always walked over and plunked on the keys, trying to find a melody, fainting with the out of tune keys and finally giving up. This man however seemed almost afraid of the piano and didn't go near it.

At closing time the man was still there and on a whim instead of making the man leave Joe turned off the plug-in music, turned off most of the lights, and went over and lifted the lid and exposed the grey keys.

The deliveryman came over to the piano. Chris, his math tag said. He sat and touched a single key. The sound was not pretty. But the man touched all the keys one by one and then touched them in different orders and all the time Joe watched, wondering why the man was so intense about it.

"Chris," Joe said.

Chris looked up at him.

"Do you know any songs?"

Chris face went funny.

"I mean some of those old-time songs, not those fancy ass electric tunes on the radio but songs. In a Little Spanish Town. My
mother sang that one to me.” And Joe began to sing, “In a little Spanish town,
I was on a night like this. Stares were peek-
a boing down, twas on a night like this.”

Chris began to play as Joe’s weak and
toneless baritone went on with the song.
But his playing wasn’t an accompaniment—
not anything Joe could call an accompaniment.
It was instead, an opponent in his melody an enemy to it, and the sounds
coming out of the piano were strange and
unharmonious and by God beautiful Joe
stopped singing and listened. For two
hours he listened and when it was over he
soberly poured the man a drink and poured
one for himself and clinked glasses with
Chris the doughnut deliveryman who could
keep that rotten old piano and make the
damn thing sing.

Three nights later Chris came back, look-
ing harried and afraid. But this time Joe
knew what would happen (had to happen),
and instead of waiting until closing time,
Joe turned off the piped-in music ten min-
utes early. Chris locked up at him pleasingly
Joe misunderstood—he went over and
lifted the lid to the keyboard and
smiled. Chris walked stiffly, perhaps reluct-
antly, to the stool and sat.

“Hey Joe, one of the last five customers
shouted, closing early?”

Joe didn’t answer. Just watched as Chris
began to play. No preliminaries this time no
scuffles and wanderings over the keys. Just
power and the piano was played as pianos
aren’t meant to be played: the bad notes
the out-of-tune notes were fit into the music
so that they sounded right. and Chris’s fing-
gers ignoring the structures of the twelve-
tone scale played it seemed to Joe, in the

None of the customers left until Chris
finished an hour and a half later. They all
shivered that final drink and went home
shaken by the experience.

The next night Chris came again and the
next, and the next, whatever private battle
had kept him away for the first few days
after his first night of playing he had ap-
parently won it or lost it. None of Joe’s
business. What Joe cared about was the fact
that when Chris played the piano, it did
things to him that music had never done,
and he wanted it.

The customers apparently wanted it too.
Near closing time people began showing
up. Apparently just to hear Chris play. Joe
began starting the piano music earlier and
earlier and he had to discontinue the free
drinks after the playing, because there
were so many people it would have put him
out of business.

It went on for two long, strange months.
The delivery van pulled up outside and
people stood aside for Chris to enter No
one said anything to him. No one said any-
thing at all, but everyone waited until he
began to play the piano. He drank nothing
at all. Just played. And between songs the
hundreds of people in Joe’s Bar and Grill
ate and drank.

But the merriment was gone. The laugh-
ter and the chatter and the camaradere
were missing, and after a while Joe grew
tired of the music and wanted to have his
bar back the way it was. He toyed with the
idea of getting rid of the piano, but the
customers would have been angry at him.
He thought of asking Chris not to come any
more, but he could not bring himself to

And so finally he did what he knew he
should have done in the first place. He
called the Watchers.

They came in the middle of a perfor-
mance, a blind Watcher with a dog on a
leash, and an earless Watcher who walked
unsteadily holding on to things for balance.
They came in the middle of a song and did
not wait for it to end. They walked to the
piano and closed the lid gently and Chris
withdrew his fingers and looked at the
bid.

“Oh Christian,” said the man with the
searing-eye dog.

“I’m sorry,” Christian answered. “I tried
not to.”

“Oh, Christian, how can I hear doing to
you what must be done?”

Do it,” Christian said.

And so the man with no ears took a laser
knife from his coat pocket and cut off
Christian’s fingers and thumbs right where
they rooted into his hands. The laser cauterized
and sterilized the wound even as it cut, but
still some blood spattered on Christian’s
uniform. And his hands now meaningless
palms and useless knuckles. Christian
stood and walked out of Joe’s Bar and Grill.
The people made way for him again and
they listened intently as the blind Watcher
said, “That was a man who broke the law
and was forbidden to be a Maker. He broke
the law a second time, and the law insists
that he be stopped from breaking down the
system that makes all of you so happy.

The people understood. It grieved them.
It made them uncomfortable for a few
hours—but once they had returned home to
their exactly right homes and got back to
their exactly right jobs the sheer content-
manship of their lives overwhemed their
momentary sorrow for Chris. After all Chris
had broken the law. And it was the law that
kept them all safe and happy.

Even Joe. Even Joe soon forgot Chris and
his music. He knew he had done the right
thing. He couldn’t figure out why a man like
Chris would have broken the law in
the first place, or what law he would have
broken. There wasn’t a law in the world that
wasn’t designed to make people
happy—and there wasn’t a law Joe could
think of that he wasn’t even mildly interested
in breaking.

Yet, once Joe went to the piano and lifted
the lid and played every key on the piano.
And when he had done that he put his head
down on the piano and cried because he
knew that when Chris lost that piano lost
even his fingers so he could never play
again—it was like Joe’s losing his bar. And
if Joe ever lost his bar his life wouldn’t be
worth living.

As for Chris, someone else began com-
ing to the bar driving the same doughnut
delivery van and no one ever saw Chris
again in that part of the world.
THIRD MOVEMENT

Oh, what a beautiful mornin' I sang the road crew man who had seen Oklahoma? four times in his home town.

"Rock me soul in the bosom of Abraham" sang the road crew man who had learned to sing when his family got together with guitars.

"Lead kindly light amid the encircling gloom" sang the road crew man who believed.

But the road crew man without hands who held the signs telling the traffic to Stop or Go Slow, listened but never sang.

"Why you never sing?" asked the man who liked Rogers and Hammerstein asked all of them, at one time or another.

And the man they called Sugar just shrugged. "Don't feel like singin" he'd say when he said anything at all.

Why they call him Sugar? a new guy once asked. "He don't look sweet to me.

And the man who believed said, "His initials are C.H. like the sugar C & H, you know. And the new guy laughed. A stupid joke, but the kind of gag that makes life easier on the road building crew.

Not that life was that hard. For these men too, had been tested, and they were in the job that made them happiest. They took pride in the work of sunburn and pulled muscles, and the road growing long and thin behind them was the most beautiful thing in the world. And so they sang all day at their work, knowing that they could not possibly be happier than they were this day.

Except Sugar.

Then Guillermo came. A short Mexican who spoke with an accent. Guillermo told everyone who asked, "I may come from Sonora, but my heart belongs in Milano."

And when anyone asked why (and often when no one asked anything), he'd explain, "I'm an Italian tenor in a Mexican body and I proved it by singing every note that Puccini and Verdi ever wrote." Carlo was nothing, Guillermo boasted. "Listen to this!

Guillermo had records and he sang along with them, and at work on the road crew he'd jam in with any man's song, and harmonize with it or sing an obscurity high above the melody, a soaring tenor that took the roof off his head and filled the clouds. "I can sing." Guillermo would say, and soon the other road crew men answered. "Damn right, Guillermo! Sing it again!"

But one night, Guillermo was honest and told the truth. "Ah, my friends, I'm no singer."

What do you mean? Of course you are! came the unanimous answer.

Nonsense! Guillermo cried, his voice theatrical. "I'll show you a great singer!"

If you never see me going off to record songs? Hey? This is a great singer! Nonsense! Great singers they raise to be great singers. I'm just a man who loves to sing but has no talent! I'm a man who loves to work on the road crew with men like you and sing his guts out, but in the opera I could never be! Never!

He did not say it loudly. He said it tentatively, confidentially. "Here is where I belong! I can sing to you like who to hear me sing! I can harmonize with you when I feel a harmony in my heart. But don't let thinking that Guillermo is a great singer, because he's not!"

It was an evening of honesty and every man there explained why it was he was happy on the road crew and didn't wish to be anywhere else. Everyone that is, except Sugar.

"Come on Sugar, aren't you happy here?"

Sugar smiled. "I'm happy, I like it here. This is good work for me. And I love to hear you sing."

"Then why don't you sing with us?"

Sugar shook his head. "I'm not a singer. But Guillermo looked at him knowingly. Not a singer. He! Not a singer! A man with out hands who refuses to sing is not a man who is not a singer!

What the hell did that mean? asked the man who sang folk songs.

"It means that this man you call Sugar is a fraud. Not a singer! Look at his hands. All his fingers gone! Who is it who cuts off men's fingers?"

The road crew didn't try to guess. There were many ways a man could lose fingers, and none of them were anyone's business.

He loses his fingers because he breaks the law and the Watchers cut them off! That's how a man loses fingers. What was he doing with his fingers that the Watchers wanted him to stop? He was breaking the law, wasn't he?"

"Stop, Sugar said: "If you want, Guillermo said, but the others would not respect Sugar's privacy."

"Tell us, they said."

Sugar left the room.

"Tell us," and Guillermo told them. That Sugar must have been a Maker who broke the law and was forbidden to make music anymore. The very thought that a Maker—even a lawbreaker—was working on the road crew with them filled the men with awe. Makers were rare, and they were the most esteemed of men and women.

"But why his fingers?"

Because, Guillermo said he must have tried to make music again afterward. And when you break the law a second time the power to break it a third time is taken away from you. Guillermo spoke seriously and to the road crew men Sugar's story sounded as majestic and terrible as an opera. They crowded into Sugar's room and found the man staring at the wall.

"Sugar is it true?" asked the man who loved Rogers and Hammerstein.

"Were you a Maker?" asked the man who believed.

Yes, Sugar said.

But Sugar, the man who believed said, God can't mean for a man to stop making music even if he broke the law."

Sugar smiled. "No one asked God."

Sugar, Guillermo finally said. "There are nine of us on the crew, nine of us, and we're miles away from any other human beings. You know us. Sugar. We swear on our mother's graves every one of us that we'll never tell a soul. Why should we? We're one of us.

But sing, dammit man, sing!"

"I can't," Sugar said.

"It isn't what God intended," said the man who believed. "We're all doing what we love best, and here you are, loving music and not able to sing a note. Sing for us! Sing with us! And only you and us and God will know!"

They all promised. They all pleaded.

And the next day as the man who loved Rogers and Hammerstein sang "Love, Look Away," Sugar began to hum. As the man who believed sang "God of Our Fathers," Sugar sang softly along. And as the man who loved folk songs sang, "Swing Low, Sweet Chariot," Sugar joined in with a strange, plain voice, and all the men laughed and cheered and welcomed Sugar's voice to the songs.

Slowly Sugar began inventing first harmonies of course, strange harmonies that made Guillermo frown and then, after a while, grin as he joined in, sensing as best he could what Sugar was doing to the music.

And after harmonies, Sugar began singing his own melodies with his own words. He made them repetitive, the words simple and the melodies simpler still. And yet he shaped them into odd shapes and built them into songs that had never been heard of before. It sounded strange and yet were absolutely right. It was not long before the man who loved Rogers and Hammerstein and the man who sang folk songs and the man who believed were learning Sugar's songs and singing them joyously or mournfully or angrily or gaily as they worked along the road.

Even Guillermo learned the songs, and his strong tenor was changed by them until his voice, which had, after all been ordinary became something unusual and fine. Guillermo finally said to Sugar one day, "Hey Sugar, your music is all wrong, man. But I like the way it feels in my nose! Hey you know? I like the way it feels in my mouth!"

Some of the songs were hymns. "Keep me hungry Lord. Sugar sang, and the road crew sang it too.

Some of the songs were love songs. "Put your hands in someone else's pockets. Sugar sang angrily. "I hear your voice in the morning. Sugar sang tenderly. "Is it summer yet? Sugar sang sadly and the road crew sang them too.

Over the months, the road crew changed, one man leaving on Wednesday and a new man taking his place on Thursday as different skills were needed in different places. Sugar was silent when each newcomer arrived until the man had given his word and the secret was sure to be kept.

What finally destroyed Sugar was the fact that his songs were so unforgettable. The men who left would sing the songs with their new crews and those crews would
learn them and teach them to others. Crew men taught the songs in bars and on the road, people learned them quickly and loved them, and one day a blind Watcher heard the songs and knew instantly who had first sung them. They were Christian Haroldsen’s music, because in those melodies, simple as they were, the wind of the north woods still whistled and the fall of leaves still hung oppressively over every note and—the Watcher sighed. He took a specialized tool from his file of tools and boarded an airplane and flew to the city closest to where a certain road crew worked. And the blind Watcher took a company car with a company driver up the road, and at the end of it where the road was just beginning to swallow a strip of wilderness, he got out of the car and heard singing. Heard a piping voice singing a song that made even an eyeless man weep.

“Christian,” the Watcher said, and the song stopped.

“You,” said Christian, “even after you lost your fingers?”

The other men didn’t understand—all the other men that is, except Guillermo. “Watcher!” said Guillermo. “Watcher, he done no harm.”

The Watcher smiled wryly. “No one said he did. But he broke the law. You, Guillermo, how would you like to work as a servant in a rich man’s house? How would you like to be a bank teller?”

“Don’t take me from the road crew!”

Guillermo said.

“It’s the law that finds where people will be happy. But Christian Haroldsen broke the law. And he’s gone around ever since making people hear music they were never meant to hear.”

Guillermo knew he had lost the battle before it began, but he couldn’t stop himself. “Don’t hurt him, man. I was meant to hear his music. Swear to God it’s made me happier.”

The Watcher shook his head sadly. “Be honest. Guillermo. You’re an honest man. His music made you miserable hasn’t it? You’ve got everything you could want in life and yet his music makes you sad. All the time, sad.”

Guillermo tried to argue, but he was honest, and he looked into his own heart. And he knew that the music was full of grief. Even the happy songs mourned for something, even the angry songs wept. He was, he knew, the only one who could hear the silence of things. Guillermo looked in his own heart, and all Sugar’s music stared back up at him, and Guillermo wept.

“Just don’t hurt him, please,” Guillermo murmured as he cried.

“I won’t,” the blind Watcher said. Then he walked to Christian who stood passively waiting, and he held the special tool up to Christian’s throat. Christian gasped.

“No. Christian. Christian. The words was just his lips and tongue. No sound came out. Just a hiss of air. ‘No.’

“Yes,” the Watcher said.

The road crew watched silently as the Watcher led Christian away. They did not sing for days. But then Guillermo forgot his grief one day and sang an area from La Bohème, and the songs went on from there. Now and then they sang one of Sugar’s songs because the songs could not be forgotten.

In the city the blind Watcher furnished Christian with a pad of paper and a pen. Christian immediately grabbed the pencil in the crease of his palm and wrote: “What do I do now?”

The blind Watcher laughed. “Have we got a job for you! Oh, Christian, have we got a job for you!”

APPLAUSE.

In all the world there were only two dozen Watchers. They were secretive men who supervised a system that needed little supervision because it actually made nearly everybody happy. It was a good system, but like even the most perfect of machines here and there it broke down. Here and there someone acted madly and dammed himself, and to protect everyone and the person himself, the Watcher had to notice the madness and go fix it.

For many years the best of the Watchers was a man with no fingers, a man with no voice. He would come silently, wearing a uniform that named him with the only name he needed—Authority. And he would find the kinddest, easiest, yet most thorough way of solving the problem and curing the madness and preserving the system that made the world. For the first time in history a very good place to live. For practically every one.

For there were still a few people—one or two each year—who were caught in a circle of their own devising who could neither adjust to the system nor bear to harm it, people who kept breaking the law despite their knowledge that it would destroy them.

Eventually, when the gentle maimings and deprivations did not cure their madness and set them back into the system, they were given uniforms, and they, too, went out Watchin’.

The keys of power were placed in the hands of those who had most cause to hate the system they had to preserve. Were they sorrowful?

I am. Christian answered in the moments when he dared to ask himself that question

In sorrow he did his duty. In sorrow he grew old. And finally the other Watchers, who revered the silent man (for they knew he had once sung magnificent songs), told him he was free. You’ve served your time, said the Watcher with no legs, and he smiled.

Christian raised an eyebrow as if to say “And?”

“Sawdust.”

Christian wandered. He took off his uniform, but lacking neither money nor time he found few doors closed to him. He wandered where in former lives he had once lived. A road in the mountains. A city where he had once known the loading entrance of every restaurant and had placed his hands on every grocery store. And at last a place in the woods where a house was falling apart in the weather because it had not been used in forty years.

Christian was old. The thunder roared, and it only made him realize that it was about to rain. All the old songs. All the old songs he mourned inside himself, more because he couldn’t remember them than because he thought his life had been particularly sad.

As he sat in a coffee shop in a nearby town to stay out of the rain, he heard four teenagers who played the guitar very badly singing a song that he knew. It was a song he had invented while the asphalt poured on a hot summer day. The teenagers were not musicians and certainly were not Watchers. But they sang the song from their hearts, and even though the words were happy, the song made everyone who heard it cry.

Christian wrote on the pad he always carried, and showed his question to the boys. “Where did that song come from?”

“It’s a Sugar song, the leader of the group answered. “It’s a song by Sugar.”

Christian raised an eyebrow making a shrugging motion.

“Sugar was a guy who worked on a road crew and made up songs. He’s dead now, though,” the boy answered.

Christian smiled. Then he wrote (and the boys waited impatiently for this speechless old man to go away). “Aren’t you happy? Why sing sad songs?”

The boys were at a loss for an answer.

The leader spoke up, though, and said, “Sugar was happy. I’ve got a good job, a girl I like, an aunt, I couldn’t ask for more. I got my guitar, I got my songs. And my friends.”

And another boy said. “These songs aren’t sad, Mister Sue, they make people cry, but they aren’t sad.”

Yeah,” said another. “It’s just that they were written by a man who knows.”

Christian scribbled on his paper. “Known what?”

“He just knows. Just knows that’s all.”

And then the teenagers turned back to their clumsy guitars and their young, untrained voices, and Christian walked to the door to leave because the rain had stopped and because he knew when to leave the stage. He turned and bowed just a little toward the singers. They didn’t notice him, but their voices were all the applause he needed. He left the autumn and went outside where the leaves were just turning color and would soon with a slight readable sound, break free and blow to the earth. For a moment he thought he heard himself singing. But it was just the last of the wind coasting madly through the wires over the street. It was a frenzied song, and Christian thought he had recognized his voice.
“Four points to you, Fenwick.”
MAGNIFICATIONS

Mysteries of the miniscule seen through the eye of a scanning electron microscope. Science fact looking like science fiction
BY SCOT MORRIS,

A tree ant becomes a futuristic alien, marijuana-resin sacs with hashish become Disneyland mushrooms, typing paper looks like a nightmare road map. This is the minuscule world of David Scharf, whose photographs have been described as "absolutely wonderful." Scharf's peephole is the

PHOTOGRAPHS BY DAVID SCHARF
scanning electron microscope (SEM). An electron beam replaces visible light (hence there is no color involved) and scans every contour to produce a 3-D image entirely in focus and incredibly lifelike. In part that's because Scharf's subjects are alive. Previously most SEM photography was of subjects that were dead, dead, and coated with gold alloy. But Scharf has perfected ways of shooting living subjects temporarily immobilized in a vacuum. "I want my pictures to be an accurate representation of life," he says. "I take great care to keep my specimens unjured. Some are returned to my garden alive."
I'm extremely careful to keep my specimens uninjured; some are returned to my garden alive.

How does he get an insect to hold still while scanning him for seventy seconds per portrait? The truth is, they don't all hold still. They tend to freeze in their tracks when the air is removed from the chamber, but many photos have been ruined by unpredictable movement. The mere heartbeat of a small animal can cause enough vibration of a limb to make photographing impossible.

Though Scharf's pictures contain impressive information, they are intended primarily as visual studies. Composition, balance, detail, and beauty are what he sought for. His photos are scientific records second, works of art first.

Clockwise beginning below: Hairs and resin nodules of marijuana leaf, glaucous pastel, and velvet floats on strawberry surface with protruding stigmas and styles. Multiple disc flowers in center of African daisy.
There was a minor incident at the polling station in St Tropez that year. Nothing serious, merely another case of an irate American, good for a laugh at the disco that evening after the votes had been counted, but a nuisance nevertheless to those authorities who had to deal with it along with all the other problems of Election Day.

"Worse no! Monsieur Goodman, Alexandre, yelled at the register, sitting behind the long table on which rested the voting list, the piles of unused ballots, and the ballot box itself.

"Monsieur Goodman, Alexandre numero 2871," cried the second official, making a note in a register and handing a ballot to the red-faced, semi-dazed gentleman who stood before him dressed in bedraggled white linen.

"Listen you, don’t you understand? Mr. Goodman with some difficulty (which seemed to the dear Mr. Aga’s yacht was always too top heavy). I wanna ballot in English, ya hear?"

"Comment, Monsieur?"

"I said I want the hell with it; je vouloir en anglais, comprenez?"

"Mais, Monsieur, on n’est pas en Angleterre, on est en France, replied the baffled register with a polite smile. "Non, monsieur, je ne sais, je vous mon voix."

"Here Mr. Goodman waved his ballot vigorously before the noses of the officials... en anglais, pas français, vous comprenez? C’est mon droit!"

An impatient murmur arose from those standing in line behind Mr. Goodman as the two officials conferred hastily.

"C’est oui ou non? Son accent?" "Si je comprends bien... si vous qu’on lui donne un bulletin de vote traduit en américain?"

"Mais foire!"

"Mais non, c’est lui qui regarde! Attends, on va voir..." turning to Mr. Goodman. He said in that fluent Oxford-accented English that so many Frenchmen possess and yet are so loath to use. You are indeed a French citizen, sir?"

"Course I am," replied Mr. Goodman stoutly. "Ten years now?"

"And you wish to cast a ballot paper en americain?

"Oui, dur, now you comprenez?"

"The mayor two agents de police and a gendarme had been attracted by the noise.

"Rassuré impossible, pointed out the mayor who prided himself on his grasp of Cartesian logic. "Vous êtes en France, n’est-ce pas? Par délégation, quoi, on vote en français, vous voyez ce que je veux dire?"

"Mais non!" cried Mr. Goodman passionately, "in New York they got Spanish ballot, in California they got Spanish ballot, espanol, says? It’s their right, savez espanol, you want my rights this is all American!"

"Il est fou!" exclaimed the mayor to the others. "Venez essayer de la balot aux!" shouted the gendarme less tolerant of folly.

"Vra! replied Mr. Goodman, folding his arms with dignity.

"Il est fou," agreed the gendarme. A whole was blown brown kibes surged into the room, the houses rose and fell, and presently Mr. Goodman’s inert form was carried to the rear of a small step, which rested away in a cloud of dust. He awoke some time later in the mansion of Louis of Nice, tightly swathed in a wet sheet from which three years later his lawyer would succeed in getting him released for a probationary weekend.

ICEBACK INVASION

BY HAYFORD PEIRCE

"Give me your tired, your poor... Russians?"

PAINTING BY EVELYN TAYLOR
The two border-patrol agents of the Immigration and Naturalization Service stared at each other glumly.

"Going to lose that arm, Padillo!"

Now only we wops know how to really use knives. The doc says it take a couple months therapy to get it working again and it'll always be a little stiff, but what the hell. That's what the hell. A nice desk job sounds pretty good to me right about now," said O'Hara, who lay immobilized in the hospital bed, connected to a collection of tubes, drains and monitoring devices. "So what happened to those mothering wetbacks that jumped us? After that shotgun blasted Padillo scowled outlandishly. "Did you say wetback? You dumb muck?"

"O'Hara grinned weakly. "Excuse me commissioner. Illegal alien is what I meant to say.

"Illegal alien?"

"Pardon me all hell to your honor Undocumented worker."

"Okay. Okay. We got it. Probationary citizen. Undocumented probationary citizen. Or have they come up with a new one while I been in a coma?"

"Nope. undocumented probationary citizens is what carved me up and gunned you down. Don't hurt as much that way does it O'Hara?"

"Okay. I laugh pal only when I laugh."

Well, hold on to your sides then. This is really going to break you up. The six guys what did the carving have been released in custody of their new citizen-sponsors, the United Brotherhood of Sanitation Workers of Los Angeles. That complaint, sworn against us mentions little things like assault battery. Illegal use of orchestral music and unjustified stop and search, and there's about a dozen other charges pending before the court. The district director is trying to get them quashed, but he doesn't know how good the chances are. The UB swings a lotta weight and there's a lotta garbage cans up in LA needing to be emptied."

"So it's our asses that swing high?"

"Sure is. O'Hara. It sure is.

"It is the end," announced President Martinez with gloomy foreboding, of the Republic as we know it."

"Oh yeah?" said Secretary of State Richard XYZ, a study in ebullient skepticism. "Our reparations to Black Africa is being paid on time, ain't they?"

"Humph!" snorted Attorney General Ahmed El-Ali. "Under my very administration, all political prisoners detained because of race, color creed or revolutionary belief have been released."

Growing excited, Labor Secretary Antonelli languidly, without having to refer the question to my er, family, I feel certain that no other problems are about to arise."

"Ugh," concurred Interior Secretary Chief Running Clubfoot first and last a presidential supporter. "White man taken land belong Indian, n'est-ce pas?" and referred to his customary lethargy.

"Gentlemen please. I implore the President.

Gentlemen? Men?" cried Secretary of Enforcement of Women's Constitutionally Guaranteed Equality Eliza Hologalbus, founder and national chairwoman of the minority but powerful Lee's Begin Party Gentlepersons.


"Dat still leave her wit two more dan you ta fuckin transvestites explained Jeremy Rocky Knucks. Kawolski director of legal sequestration and rehabilitation. So far I shut ya mouth an listen to what da man has to say huh?"

"Beast muttered Mr. IaPine turning for sympathy to, and grooping for the leg of Commerce Secretary Codfish Sallotson Winthrop—tall dim unpursed the token.

6. This is the most egalitarian army ever created. It consists of 51 percent females, 47 percent males, 1 percent transsexuals, 1 percent transvestites, 4 percent lesbians, 6 percent gays, 7 percent criminals.

WASP of President Martinez's Cabinet.

The end of the Republic, repeated Welfare Payments Secretary Morgan Phipps DuPont. "As we know it, of course. In what way?"

"The army snapped President Martinez glaring at Defense Secretary Mildred Hagglman."

But surely, intrestated Budget Director Cyrus Openhand, next year's defense budget is some $590 billion."

"Exactly!" replied the President, and do you realize that with a budget of nearly a trillion dollars a year, the entire armed forces personnel—Army, Navy, Air Force, Marines, National Guard, and what have you—is currently 348,000 effective? Total!

"This in a country of 300 million!"

"On the other hand," pointed out Ms. Hologalbus. "It is an exceptionally well-equipped army."

"Extremely important," concurred Richard XYZ."

"Overtaking consideration even suggested Ahmed El-Ali.

"Figures, Ms. Secretary Hagglman?"

"Certainly," she replied proudly. "It is the most egalitarian armed force ever cre..."
from here to the funny farm and—"

"An' hahl" crowed Maxie. "I knew ya'd forget!

"Forget? Forget what?

"The funny farm."

"The funny farm?"

"Of course the funny farm."

Maxie. Listen to me. What are you saying? Do you take me for some kind of a NUT?"

"Ssshnn."

certify 367 votes from the Sixteenth Ward. Sub-Division E. Poling Station Four. Seventeen votes for Silke. Three hundred fifty votes for Rubenstein. The winner in the Twenty seventh District is—"

"You ya dummy."

Pailing Station Four is the funny farm?"

Woodchopper State Hospital for the Mentally Retarded, said Maxie smugly. "That's it."

Charlie inhaled slowly and profoundly his eyes glazed. Suddenly he exhaled with a whoosh. He broke into a maniacal grin. "Maxie, he cried staggering Maxie with a gleeful thump between the shoulder blades. "Now I get it. Now I get it. You mean like you had the fixin' and like the doctors and the nurses and the orderlies and the gardeners and the guards and all of the others that take care of the nuts—"

mentally retarded. Charlie—"

—"and like they're the ones that voted for the Right. Maxie isn't that right, Maxie?"

Wrong Charlie. They all vote in their own precincts, where they live just like everyone else. I mean like the mentally retarded nuts in the funny farm is who has just reelected you the distinguished circuit judge for the glorious Twenty seventh—"

The distinguished Judge could only sputter.

"Ya sound like a motorboat," said Maxie sourly. "If chessee, they been doing it down in LA since 76 or 78, somepin like that ten fifteen years now."

"They have?"

"Sure they have. They got the hospital staffs to run voter-education plans and the League of Women Voters comes in and conducts workshops and they got judges and shrinks to certify that this one and that one suchlike moderately or mildly retarded patient is now deemed able to vote. Ya see what I mean an appropriate opinion. A didactic finger jabbed the Judge's breastbone painfully. An' that's all it takes."

"And this is legal? Not like getting out the grease-yard vote?"

"Of course it's legal. Ain't they got their own constitutional rights just like you and me and all the rest of the distinguished voters of this great district?"

The Judge fell into deep and somber thought. At least he uttered uncertainly.

"Yah I suppose now that I think of it. they no dumber than anyone else that is votin' these days." Charlie's tone of voice did not carry absolute conviction. Another long moment's anguished thought and he was able to articulate that profound disquiet which had been nibbling like a fox at his bosom for some minutes now. "But Maxie, doesn't that mean like these retarded guys couldn't they. you know have voted for the other guy?"

"For chessee. Charlie" snarled Maxie, who else would be dumb enough to vote for a schmuck like you? New straighten ya tie here comes the TV camera."

"Enough! shouted the party secretary balefully. You will support me on this measure or—"

"You will have us shot. Dimitri Andrayevich?" smirked the director of state security. "No comrade. I think I speak on behalf of the entire Politburo when I say that your heroic labors in aid of the glorious peoples of the Soviet Union have earned you that so richly rewarding retirement from the cares of the anti-imperialist struggle in the quiet calm of your beloved dacha on the distant side of the Urals Mountains."

The minister of consumer planning was suave, eager to expunge memories of the trifling matter of 54 million left shoes produced throughout the Soviet Union, excluding any right shoes whatsoever."

Somewhat later after the former party secretary had been conveyed discreetly from the room and was snugly ensconced on route to his cozy one roomed birchwood cabin deep in the trackless evergreen forests to the east of Lake Baykal, the Foreign minister cleared his throat authoritatively.

Actually comrade a certain er, former person's project might well be construed to contain certain elements of interest. Let us be blunt, he snapped sharply. The Soviet Union has not been so poorly off in relation to the rest of the world since the years before the Great Patriotic War."

Consul. The European Common Market is now the single most powerful economic force in the world. Our Warsaw Pact allies are being drawn inexorably into its orbit. Our eastern flank is threatened militarily by the revisionist traitors and capitalistists of the Sino-Nipponese conspiracy. Our policy in black Africa is a shambling good riddance after bad is poured into a bottomless cesspool. The Arabs have squandered their oil and are bankrupt: the Moslem mercenaries have declared holy war against the Communist filideli. a million of our agents and comrades lie slaughtered in a dozen countries! Vasily Pavlovich pounded the table."

And finally, the United States surrounds us with submarines, with cruise missiles, with laser armed satellites. Its dollar weakers, its economy groans, its morals decay. Its will to survive atrophies. Its army is nearly nonexistent. It is clearly in the last days of degeneracy. But he thumped the table anew. 'Still it survives. Clearly it is as comparatively dangerous to the Soviet Union as it was twenty years ago. Therefore I submit that the tactics of fifty years of struggle have been to no avail and that we implement—"

That goal beloqued Resolution Six, cried the minister of agriculture incredulously.

"An' said the minister of consumer planning suavely, eager to expunge memories of the trifling matter recently discussed of some 54 million left shoes produced throughout the Soviet Union to the exclusion of any right shoes whatsoever, but ask yourself this, dear Ivan Mikhailovich. By adopting and implementing Resolution Six, what have we actually to lose?"

And of equal importance concluded the director of state security decisively, even if anything does go wrong what short of nuclear war can they do to us?"

Fifteen years ago, said O'Hara still attached to his plumbing, "I got called to testify in Orinda the one that pulled the plug on the border patrol and let every greater south of the border into the country and onto the payroll as easy as kiss my Irish ass."

"You were? In Orinda? marveled Padillo who settled back to listen to the story for the dozenth time.

Sure was Doin' a sweep through the garment factory section Pulled in these six guys couldn't speak a word of English No ID so off they go. Next thing we know the sweatshop employer and all the rest of the clothing manufacturers the ACLU, the League of Mexican Voters—and get this the unions cause they're losing membership all over the place and the union bosses figure they won't have no one to boss around much longer—all of these characters decide to make this a test case. So there I am in court listening to their million-dollar hysterics defending these six scared Moines what don't even understand what's going on."

"Laid it on pretty thick I hear prompting Padillo."

O'Hara snorted. With a trowel pal What right does he have for what right does this uniformed and brutal Gestapo seize and humiliate these poor innocent honest hard working migrants? Possibly, it isn't proven, they crossed the border unknowingly certainly not in any intentionally illegal fashion. Does this deny them the right to work the right to live peacefully among their families the right to be free from attack by jackbooted authority? O'Hara's lips
pursed bitterly at the memory.

And then? "And then our guy he says. But Your Honor all these fine INS boys is doing is ruining the law of the land. What says that illegal immigrants is just that a legal?" And viz. by definition therefore aren't supposed to come into this country and work and bring their children and wives and establish residences and go to schools and a million other things and all these overworked upstanding no-law officers is doing is asking these guys who are plainly illegal if they have any ID to identify themselves. Not a passport with an entry visa, mind you, and not even a green card. Your Honor and maybe not even something in English, but just plain anything for chasin' decks.

Hey! Easy pull easy! You'll pull all your plumbing out.

"Yeah so after a bit more of this the judge who knows what axle his bread is buttered on comes to his decision—namely that since by the appearance of things the defendants were doing nothing illegal or suspicious or immoral or fattening nobody on God's green earth except maybe outside this court's jurisdiction has any right whatsoever to ask them for any identification whatsoever merely because they happen to look like Mexicans and not like this dumb Irishman whois sitting here since it isn't illegal for me to look at the glory of these glorious state of California or even in these here glorious United States to look like Mexicans since there is a little light background music, maestro, and the case is hereby dismissed." Rah!

The first elements of the invasion force crossed the Bering Strait in mid-afternoon of August 17 in three dilapidated unmarked ground-effect machines. Leaving behind the choppy gray waters that form the fifty-four mile gap between the eastern point of the Union of Soviet Socialist Republics and Cape Prince of Wales, the western tip of the continental United States, the six men and women in each craft heaved a sigh of relief as the ear-splitting whine of the turbines changed pitch and the GEMs moved sluggishly up the spine-tossed shingle and into the heartland of the Seward Peninsula.

Bypassing the tiny settlements of Wales and Lost River a few miles to the south, the three specially equipped long range Arctic GEMs were off on the seven hundred mile haul to the capital of the North Slope oil fields. Prudhoe Bay One would disappear forever with all hands aboard into the depths of a snow crevasse, but the other two would successfully navigate the myriad hazards of overland travel within the Arctic Circle to reach their goal.

"And that was Onida, huh?" "Yup, and that was O Hara himself in the full flower of his youth up there on the witness stand what got that son-of-a-bitching million-dollar shyster so mad he could hardly decide whether to poop or blind

The Judge strikes the whole thing off the record. He added sadly, "my one chance for fame,"

"See here, I am up on the stand and this lawyer is going on at me pretty good, go-stalking here and jackboothin' there and all that and finally he says. So let me ask you, Officer just what it is when you see these here innocent brown faces that makes you think. Officer that you have the right Officer to make these outrageous and unconstitutional demands that's what the Court would like to know. Officer."

And he draws himself up and cocks an ear at me and his snout at the judge, who's eating this up and gets ready for his next speech. Since obviously this isn't a question wants any answering by some dumb INS officer, and a mic to boot.

So just as he gets his yap open again ready to start shooting another line, "I hold up my hand and says, "Just a minute here, and this Beverly Hills shyster is so surprised since no one in thirty years has ever asked him to do that, he actually does hold it in. And everyone in the courtroom is looking at me now. I mean really looking even the Mexes, like they're just seeing me for the first time."

And I reach behind me and pull out my wallet and I start to leaf through it all those credit card holders and photo holders you know and after a while I pull out those two pieces of paper and I sort of squint at them like I never seen them before and everyone in the courtroom is craning forward so that they can see what the hell it is I'm waving around, and I says real puzzled like, "Well Counselor I says, 'I'm just a poor country boy and not much education and I'm just a plain old US citizen nothing special or fancy like these gentlemen over here, and I wave a hand in the direction of the Mexes and right here I've got these two pieces of paper and the first one, which is called—lemme see, yes, it's written right up on top here—Selective Service System Notice of Classification. It says right here on the back. You are required to have this notice in addition to your registration certificate on your person at all times. And here on this other piece of paper (you might have guessed) Counselor this one says Selective Service System Registration Certificate. It says, 'The law requires you to have this certificate in your personal possession at all times for identification and to notify your local board of any change of address."

"Now by this time the shyster is jumpin' up and jumpin' down and hollerin' and aintin' and ramnin' and the Judge is pounding his gavel and I'm ignoring the law-born bastards like I can't hear any of this hoochah at all and I'm saying. And it seems to me, Counselor that if a natice-born US citizen who got all his parents native-born US citizens, and all his grand-parents native-born US citizens, and this here US citizen is peaceful and law-abiding and pays his taxes and up in the army when they tell him to and goes off to get his
ass shot off in some striking hole like Viet-

nam and maybe gets shipped home in a

box and this here guy is required by law by

law. Counselor. I shout, to carry this ID

around by law and if he don't the federal

marshals can come and take this guy and

throw his ass into a federal jail. Counselor

then said to me that the United States

Immigration and Naturalization Service

has a right to ask for a little ID from a bunch of

guys who can't even speak English and

are about two hundred yards from the Mex-

ican border and there's a great big hole

under the fence and—

"By now the judge has broken his gavel

he's banging so hard and he's yelling

Bailliff! Bailliff! Bailliff!" and the lawyer is

just sort of pop-eyed and muttering.

Objection: objection, objection, and about half

the courtroom has burst into applause, and the

other half is looking around for rocks to

throw at me and and and and I guess that was it

Jeez. So then what happened?

So then the judge chewed my ass and

threatened to send me to jail for contempt

but didn't and the supervisor chewed my

ass and the district director chewed my

ass and the commissioner he flew out from

Washington and he chewed my ass and

that's why I'm forty-six years old and been

in the same field grade for fifteen years now

and am lying in a hospital with a bloody full

of buckshot instead of sitting behind some

desk and calling in the reporters to tell them

things like We must stop picking on undocu-

mented workers and start working harder

to help them get settled in this coun-

try.

So that's what happened Padillo. Noth-

ing much at all.

Send them back? exclaimed the fore-

man. Listen Bailey you try to send them

back and there'll be a mutiny

But they're Russians you idiot! cried

the production manager. North Slope Di-

vision of Colotopus Oil Organization

But they're Russian broods you dreed-

up old dodoo and they also happen to be

Russian where type broods and the boys

have got them set up in a couple of trailers

down in the living quarters and there's a

day waiting list already

In the trailers? gasped the production

manager.

Well where else? It's twenty-nine de-

grees and snowing or hadn't you noticed?

Now look Bailey let's be reasonable shall we? Just because there hasn't been any

women up here in the fifteen years you little

old ladies been running things doesn't

mean there'd never be broods does it?

But they could be spies said Bailey

dubiously

Spies? All you have to do is—er shake

hands with one of them to know they ain't no

spies. Hell man, you never saw such a

bunch of broods who know more about

supply and demand and cash and cafry

and all the rest of the capitalist system.

MacKenzie leaned forward and winked

knowingly. For chrissakes Mr Bailey they

even take Visa and Master Charge. Now tell

me what have we got to hide from a couple of
cute little ol' capitalists like that huh?

Well what about those trailers where

they're staying? We can't have any guys

living there who might be susceptible to

change of—

Forget it! How many guys do you think

are breaking their contracts and scram-

bling out of this half-hole every week?

There's at least twenty vacant trailers at any
given time.

Humph! I feel certain that this gross

irregularity should be reported to the

proper—


The government huh? All this talk about

how the government should leave the oil

companies alone and now just because an oil

company wants to hire a couple of Diversi-

fied Entertainment Engineers we gotta

ask permission from Uncle Stphehd. That's

the spirit that made John D. Rocke-

efeller rich is it?

Okay okay! But what about these six-

men? That's another kettle of boshets Or

are there enough roughnecks of an

refined appetites to propose—

Come on be serious will ya? Four of

these guys are roughnecks themselves

one's a cold-weather engineer and the

other's a petroleum geologist And they all

speak English a little funny sure but still

English.

You're suggesting

I'll tell you one thing Boss you won't

have to pay them no union wages or union

benefits They'll work anywhere for any-

thing just so long as it ain't Siberia where

they been working.

But you're a union—

So screw the union said MacKenzie

expansively. We've gotten a bonus based

on production and we are. And we're so un-

dermanned up here I'll go the rest of my

hitch without getting any of that bonus

money for which is

Yes I take your point. Running his

hands through his thinning hair Bailey

gazed through the triple glazed window at

the flurries of snowflakes whirling outside

and made his decision So how can it hurt

things? And if you think it'll help

morale and production

You just watch that oil start to pump Mr

Bailey.

"Humph" Bailey leaned forward. Off the

record MacKenzie You don't think there's

something just a little funny about the way

these characters just happen to turn up here?

A trillion miles from nowhere?

So where else would they go join an

Eskimo village to help them churn whale

Butter—

Humph Bailey stood up. All right

MacKenzie all right. As the foreman

began to bundle himself up he added

Did you say three day waiting list?

Hey Padillo still got your arm attached I

see. Next time you come by these tubes I

be out and I'll be outta bed. So what's

new?

What's new? Jesus I'll tell you what's

new. You ain't gonna believe it. I mean like

you just not gonna believe it.

For chrissake we're at war. No? Well

what is it?

Like we already got like forty million in-

law Mexicans and Latin Americans and

Hispanics in this country at least right?

Hey Padillo! I work for the INS re-

member? I said. What a new.

And I'm telling you O'Hara I'm telling

you the reason we only got forty million

illegal aliens or undocumented workers or

unaccompanied citizens whatever they are

instead of maybe one hundred million is

that the other sixty million has been made

citizens by executive order some seven

eight years ago. Am I right?

Well does a bear poop in the woods for

chrissakes?

And it doesn't really make much differ-

cence whether the other forty million are citi-

zens or not since they can live here and

work here and not get kicked out of here

Right echoed O'Hara weakly.

And since that last Supreme Court ruling

they can now also vote here even though

they're not citizens the burden of absolute

proof of nonnationality is the burden of the

one of the registering official rather than posi-

tive proof of nationality being the responsi-

bility of the voter Remember that O'Hara?

Why do you think I stopped voting? Why

do you think we got two Mexican senators

and twenty-seven Mexican congressmen

from this state alone six of which can't

speak English but that don't matter no

more neither since the Congressional

Record is printed up in two languages so

they tell me so that President Martinez

and Chief Justice Guerro don't have to

get out their dictionaries to find out what

the bureaucrats are up to over on The Hill

Yeah I remember all right Padillo. But like

I said ya dumb wop what's new?

Yes if you'll shut up for a minute I'd tell ya

It's not icebacks we're chasing now but

icebacks Icepacks? echoed O'Hara blankly.

Icebacks dummy Illegal Russian

icebacks.

Did you say—? O'Hara stopped as

Padillo rooked back and began to shake

with laughter. Finally he wiped his eyes

laughed forward and tapped O'Hara on the

shoulder.

What I'm looking forward to said

Padillo is seeing just how these hundreds

of millions of Hispanic-Americans is gonna

deal with all these new Russian

Americans.

But where for chrissakes? It don't make

sense.

In Alaska of course where else The

Bering Sea it's just like the Ro Grande

ain't it only a little wider and a little colder.

They're wading across on ground-effect

machines and snowmobiles and dogsleds

and on snowshoes and skis and they even
drove a couple of army-truck loads across now it's winter?"

"But but but—"
An if they get caught, they say two things. One, they're fleeing the oppression of communist tyranny, and two in any case, they're just returning to their ancestral lands where their old grandparents made time with the papposes before the wicked czar gave it away illegally to the imperialists.

"But—"
And get this. O'Hara—every one of these clowns is—big, brawny, just dying to go to work for the oil companies and the logging companies and the mining companies, and the whole broads are young and beautiful and descended from White Russian princesses and either they're trying to screw every red-blooded Alaskan male to death or they're trying to find work as housemaids for room and board and a dollar a week.

But that's an invasion, for chrissake!

"Of course it's an invasion but if nobody cares then it ain't an invasion no more, is it?"

O'Hara shook his head numbly: "Well, how many are there?"

Pedrito shrugged: "Maybe a thousand, maybe twenty thousand. How can you tell? You noticed many border patrols up in Alaska to keep Canadian Eskimos from sneaking across the border?"

So what are the politicians doing about it?"

Pedrito grinned broadly: "Well, now Agent O'Hara, he said, punctuating his reply with taps on the other's shoulder. "That kinda depends on the politician don't it?"

"It's election time already?" wailed Judge Charlie. The Fighting Eskimo Rubenstein. "Jeez, it seems like only yesterday we were counting up the retread vote and—"

We're gonna have to be doing more than just counting the tire vote, said Maxie. "That's a gimmick that only works once. Those guys have gotten smart—they could vote for anyone."

Gof. So what are the chances old Maxie?

Lousy Charlie, just plain lousy. It's like I tol' ya a couple years ago. A lot of people still don't like ya.

The Judge lowered his ample chin against his potbelly. The air was thick with thought, but was interrupted by a tap on the chamber door and the court recorder calling "Two o'clock Judge, they're waiting on you.

"Sure sure you be right there. Judge Rubenstein climbed ponderously to his feet. Think on it Maxie, think on it.

Jeez Charlie, complained Maxie, "we got important stuff to talk about. You gotta go out there and try some raywalking ticket or something?"

Yeah, I know what you mean Maxie. But there's lots of reporters and like that out there. That Russian iceback case?

"Iceback case?"

"Sure. The facts are asking for a court order allowing them to round up those Russians that are working all over the place. That's what they're asking for at any rate but I think they settle for just the right to ID them.

Well, I should hope not! exclaimed Maxie. "You let them bastards round up those Uncle Russkie maids we got working at home and the old lady'll kill ya! And so will I, though not for the same reason he added with a leer.

Well gee, Maxie. I know they're awfully useful and all that but there's an awful lot of them around now you know like maybe a hundred, two hundred thousand and—"

"Two hundred thousand?" echoed Maxie in wonderment.

—and they say there's an awful lot of those big Russians carrying guns, you know, not like hunting rifles—"

"Charlie boy" said Maxie, eyes peering rapturously into the future. "Isn't one of the duties of judges naturalizing immigrants? Yes? Tell me Judge Rubenstein how would you like to become a United States senator in one easy election?"

Look Commissioner I don't care whether you think I been drinking or not. I'm telling ya there's fifty thousand Russkies staging a sit-in down in yeah, you guessed it. Commissioner Russian Hill. So what are you gonna do?

Well, where do ya think they're gonna sit except in the street? Sure the traffic's jammed up from the Civic Center to the Golden Gate."

"Wow they're peaceful all right, singin' and chantin' and waving banners. Hold on lemme look. Yeah they're all about how California and San Francisco use them to belong to the Russkies and Fair Play for Russo-Americans and Give Us Back Russian Hill. Hold it a minute on it himself the Mayor I'm talking to now is! Holida, Mr. Mayor, they're chantin' something—"Yeah listen I'll repeat it. Hey hey vote by our way Vote a bill. Our Hill Just beware Mr. Mayor"
"Look, we already got some fifty sixty million so-called undocumented probationary citizens, most of 'em Mexicans, voting in the federal elections, right?"

Right Maxie.

"And you got yourself a natural constituency of maybe a million Russkie Americans back home, and maybe another million in California and the Northwest, right? They oughta vote for ya, you're the fighting judge—what showed 'em the way to citizenship aren't ya?"

Sure Maxie.

So the next step and it's only logical. Charlie, is to get the vote extended to all them other undocumented probabitary Russkie-American citizens who ain't got the opportunity to visit that glorious country of theirs--and what has to vote by absentee ballot back there in the old Motherland! Like maybe three hundred million of 'em!

But Maxie—

All they do haveta do is mail in an absentee ballot, like millions of other overseas Americans, right? So all you gotta do Charlie is introduce a bill that is working perfectly. Chortled the director of state Security. "I told you my plan would work!"

My plan Vladimir Vasiliyevich growled, the foreign minister.

"Please, comrades, interceded the minister of agriculture, what if you please is the next step? I am so looking forward to voting in the next presidential election!"

Ah hah! crowed Vladimir Vasiliyevich Ostrovsky. 'Already the order has gone out already the fraternal-aid contingent stands ready all two million of them already the doom of the capitalist-imperialist wormmen is pending already—"

So all right already, muttered the minister of hydroelectric power who had attended an extremely amusing seminar in Brooklyn the year before, but not so loudly that the director might overhear him.

"Comrades! The moment we have been waiting for has arrived! The orders have come from Moscow! The workers' general oil-field strike will begin tomorrow at dawn! The pipeline will be seized at noon, the housemaids and clerical workers shall revolt in the afternoon, and by evening Alaska will be ours! Five million fellow citizens on the West Coast will rise in sympathy and immobilize half the country! Attacked by the running-dog gestapo lackeys of fascist capitalism they shall appeal for fraternal aid to their Brethren-in-arms across the waters, and within hours millions of peacekeeping personnel of the glorious and fraternal Red Army shall—He went on for some time.

"Jeez, whispered Mikhail Nikolayevich to his wife Natasha Petrovna. Whaddya think this'll do to the interest rate on the mortgage?"

And that new washing machine I—

"My new snowmobile," interjected Pietro Sergeyevich glumly.

"In just three days the World Senator Dressed Daniel Danielovich. My bonus trip to Hawaii heated, Katya Varvarana."

Just when we'd found a school for the kids with none of those disgraceful Eskimos cluttering up its! complained Alexey Ivanovich.

I think we had better think this over whispered Mikhail Nikolayevich.

"Very carefully grated his wife between clenched teeth. 'Oh shut up you blithering fathead!' she yelled at the speaker KGB Colonel Yevgeny Fyodorovitch Zhukovsky who instantly fell silent from sheer astonishment.

"Oh dear, oh dear, oh dear, bleated President Martinez pitifully.

"Capitlist tool" rejoined Defense Secretary Hagglenre.

"Ig hissed Mrs Helenabab_click. Knock it off ya fuxin broads ad

The Bering Sea is just like the Rio Grande, only a little wider and a little colder. They're waving across it on ground-effect machines and snowmobiles, skies and trucks."

monished Mr Kowalski. "What's da problem now, Señor Jelly-Belly?"

The problem is all these wretched Russians ready to revolt all over the Northwest and West Coast. And once they've paralyze the country they'll simply invite in da Red Army and we will all be put up against a wall! President Martinez broke into sobs.

Speak froyaself, Jelly-Belly snarled Mr Kowalski. "No Russkoff is sticking Mrs Kowalski's little boy up against no wall. Da fist is ting ya do grab a thick finger deep into the quivering breast of Defense Secretary Hagglenre, is ta send in da army against these sinners or revolvers or whatever dey are, and den—"

"What army?" asked President Martinez.

"Oh yeah dear, I forgot, Mr Kowalski nodded solemnly. What army?

—the issue is clear—read Chief Justice Esteban Guerrero. "With one dissenting vote he paused to glare briefly and unpardonably at Mr Justice Rubenstein, recently appointed by President Martinez to preempt those strongly rumored presiden-
tial aspirations of The Fighting Eskimo from The Great Northwest, with one dissenting vote I say this court holds that all so-called naturalizations of all so-called Russko-American so-called citizens performed at any time in the past three years have been now and will continue to be clearly illegal unwarranted unjust discriminatory lacking in due process, and flagrantly unconstitutional. All so-called naturalizations therefore are by order of this court declared null and void and any so-called Russko-American so-called citizens will revert to their previous status of legality and being is that of being illegal aliens, illegal in this country. There are numerous precedents for this judgment among them, comrades. It just came over the radio! We've been deprived of our citizenship!"

My house!

My washing machine!

My bonus trip to Hawaii!

My bat on the Red Sox!

My snowmobile!

My insurance policy!

Oh Andrei Pietroveich what are we to do? sobbed Anna Petrovna.

At dawn tomorrow we will march fraternally—declaimed Colonel Zhukovsky. "There is only one thing to do—replied Pietroveich somberly. "Correction! Two. First we shut up that madman. Next "

Mr President! Mr President! cried an aide as he burst into the emergency session of the National Security Council. "Oh please stop crying sir. Please!"

"What now?" groaned that unhappy man. "Texas has seceded from Mexico?"

"No sir. The flash just came in from the Pentagon—"

"Oh no. All over the West Coast, sir! Millions and millions of Russians. Sir!"

"The invasion it's all over. No sir. It hasn't started yet. Maybe it never will! It's our Russians. They're all joining the army!"

"They're what? I seem to have misunderstood you."

"The army, sir. They're flooding every Army, Navy Air Force, and Marine recruiting station west of the Rockies! The best estimate is three million men and women already sworn in, and another three million waiting their turn."

President Martinez looked pensively at the director of the CIA. "But why? They're supposed to be invading the country not defending it, they don't need to—"

"But sir, don't you remember? If you're a foreign-type alien and you join the armed forces, at the end of your enlistment you become a United States citizen."


Beats me sir replied the aide. "But I think I heard someone mention something about a bonus trip to Hawaii."

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VISIONS OF THE COSMOS

An exclusive gallery of Soviet space art offers revealing glimpses of Russian fact and fantasy

By F. C. Durant III

Cosmonauts Romanenko and Grechko carried a special cargo with them into celestial orbit. Abroad Soyuz XXVIII were two paintings by Russia's foremost space artist, Andrei Sokolov. The paintings were gouache on nonfolding cardboard, measured 47 centimeters by 36 centimeters, and weighed 130 grams each. They were transferred to the orbiting space laboratory Salyut, there to become the first orbiting art exhibition in history.

The cosmonauts began painting sessions and the paintings were transferred to Salyut.

Paintings by Andrei Sokolov
Sokolov's paintings later returned to earth aboard Soyuz XXX in July 1978. Thrilled that his paintings had been sent aloft, the artist presented one of them to Polish cosmonaut Miroslaw Hermaszewski, command pilot of Soyuz XXX. Entitled "Cosmic Morning," it is a fanciful representation of Salyut VI with two Soyuz craft docked at both ends, lit by the morning sun. Sokolov is currently reworking the others.

Over the Aral Sea, making corrections in color tones and geographical features from notes provided by the crew, Sokolov has dedicated his professional life to artistic concepts of the cosmos. His art now numbers more than 150 works. These paintings vary; some are rough impressions, others are precise and meticulous. He illustrates contemporary space activities of the USSR and US, as well as future encounters with planets of far-off stellar systems. Sokolov is big physically, over six feet, a burly and pow-

My greatest challenge in life is to visualize and depict future cosmic voyages.
Cosmic exploration," opines Andrei Sokolov, "staggered the human imagination.

erful former motorcycle racer whose boldness is reflected in his art. Sokolov was born in Leningrad fifty years ago and grew up in Moscow. His father was a construction engineer prominent in building the Moscow metro in the 1930s. Trained as an architect, Sokolov was captivated by Ray Bradbury's Fahrenheit 451 more than 20 years ago. Visualizing scenes from the book, he created a number of paintings, his first in this genre. The artist has presented one of these to Bradbury.

Since 1965, Sokolov has collaborated with cosmonaut Alexei Leonov. An amateur artist, Leonov sketched views of space while in orbit and upon return rendered them in watercolor and oils. Works of Sokolov and Leonov have been published in four art books in the Soviet Union; the most recent is Man in the Universe (1975). Moreover, collections of postcards and some 20 Soviet postage stamps carry their art. Through his close relationship with Leonov and other cosmonauts, Sokolov is
able to keep abreast of advances in space technology. In 1975, the Soviet space artist married Nina F Lapinowa today, they live and work in an attractive studio apartment in downtown Moscow.

Several years ago, the Soviet Artists Union sponsored a touring exhibit of US space art throughout Russia. In exchange, a Soviet space art show was displayed at the Smithsonian Institution's National Air and Space Museum in 1976. Included were 14 works by Sokolov and Leonov. Under the auspices of the Smithsonian, the show toured in the US for 18 months. Both artists have donated works to the National Air and Space Museum.

Much of Sokolov's art has never been published in the US. Counterclockwise from above: Apollo Soyuz Rendezvous in Orbit; Launch of Soyuz XVI: Entering the Atmosphere of Mars; early vintage communications satellite Molniya XIV.

Sokolov describes the immensity of the cosmos as "awesomely unknowable."
It's not easy to keep exactly one-eighth inch of beard on your face. For a writer, though, it's good protection. With a suit and tie, you look like a gentleman who's decided to grow a beard. With rumpled Salvation Army clothes, you look like a down-and-out rummy. It depends on the class of people you want to listen to, study.

I was in the rummy outfit when I met Bill Caddis and heard his incredible story. At least I thought Bill was on the same roam I was; he talked too well to be in the drug business. He was too real, though.

There's this wonderful shabby bar in downtown Tampa. No name. Just a bunch of beer bottles in the window. The one for Pearl has a busted laser that flutters stroboscopically. You don't want to sit too near the window. It's a good bar for private conversations because it's right under the tweener that sweeps out over the bay, and there's a constant flow of traffic, all day and all night. There's a fine, gritty layer of plaster dust everywhere, and not too much light. The bartender is missing an eye and ten front teeth and smiles frequently. The house is cheap; they make most of their money upstairs and like to have lots of customers in the bar for conversation.

I sat down at the bar, and the bartender polished glasses while one of the whores, a pretty boy-girl, sat in for the kill. When I said no one pleaded mechanically, saying she was saving for a real pair of tits and The Operation. I hesitated—singing for me that News Wire Senorita sometimes, and they...
like sexy baths but turned her down more finally Bad News doesn't pay that well

When she left the bartender came over and ordered a Meyers with a beer chaser a suitably hard core combination. I'd had two Flaming Jacks before I came though so I could drink a dozen or so without much ill effect. Until morning.

Little early in the day for that isn't it?" The man next to me chuckled hoarsely. 

"Not to criticize, he was nursing a double bourbon or scotch neat.

"Dusty. I said. The man was dressed a little more neatly than I, in faded work clothes. He looked too old to be a laborer shock of white hair with a yellow cast. But he did have the deep tan and permanent squint of one who's spent decades in the Florida sun. I tossed back the jigger of rum and sipped the beer. Come here often?

"Pretty often. he said. When my check comes in, I put a few bucks on a number. Otherwise I shrugged. "Cheap whiskey and pretty woman. To look at. How many of them do you think are women?"

"Just looking, who cares?" He squinted even more examining me. Could I see your palms?

"On boy thought a fortune-teller might be a story if he actually believes in it. I held out my hands.

He glanced at them and stared at my face. "Yeah, I could tell by the eyes." he said softly. "You're no alcoholic. You're not as old as you look. either Cop?"

"No. Used to be a teacher." Which was true. Every now and then I go on these binges.

He nodded slowly. "Used to be a teacher too. Until 83. Then I worked the sponge boats twenty years. When he picked up his glass, his hand had the regular slow shake of a confirmed alky. "It was good work."

I reached in my pocket and turned on the tape recorder. "What was it made you stop teaching? Booze?"

"No. Who drank in the eighties? I didn't but I wasn't old enough. "It's an interesting sort of pancake. You want to hear a story?"

"I signaled the bartender for two drinks.

"Now you don't have to buy me anything. You won't believe the story anyway."

"Try me."

"You a social worker? Undercover social worker? He smiled wryly.

"Is there such a thing?"

"Should be. I know—you're a writer."

"When I get work. Yeah. How could you tell. Sherlock?"

"You got two pens in your pocket, and you want to hear a story?" He smiled. Steal a story maybe. But you'll never get it published. It's too fantastic.

But true.

"It's true. all right. Thank you kindly. He touched his new drink and seemed to see whether it was real then drained off the old one in one gulp and sighed.

My name's Bill Caddis. Doctor William Caddis, it used to be. Medical doctor?"

"I detect a note of reproach. As if no medical ever. Well no I was an academic newly tenured at Florida State History department. Modern American history."

"Hard to get a job then as it is now? Just about. I was a real whiz. But you got hired in 83. That's right. And it's not easy to fire a tenured professor."

"What, boffing the little girls?" That was the only time he laughed that day. "A kind of wheeze. Undergraduates were made for boffing. No was dismissed on grounds of mental instability with my wife's help. her then-wife, they almost had me institutionalized.

"Don't they teach you anything about relativity. If you get up from the bar, go to the john, and return in a couple of minutes, the bar's moved thousands of miles. But it's still here. You're on the same track, that's all."

Strong stuff.

"Strong. He stared into his drink and swirled it around. I never know how to start this. I've told dozens of people, and they think I'm crazy. Before I get halfway into it. You'll think I'm crazy too."

"Just about last night. Like you say. I'm a writer. I can believe in any impossible things before my first drink in the morning."

"All right. I'm not here. A loony. I thought. there goes the price of a double. Another planet. I said, sarcastically."

"See? You want me to say something about UFOs and how I'm banging the secret of eternal peace to mankind. I raised the glass to me. Thanks for the drink."

"I caught his arm before he could slug the drink down. Wait. I'm sorry. Go on."

"Am I wrong?"

"You're right but go on. You don't act crazy."

"He set the drink down. Layman's error. Some of the most reasonable people you meet are scientist. Almond Joy."

"If you're not from here- where are you from?"

"Mann. He smiled and took a sip. "I'm a time-traveller. I'm from a future..."

I just nodded.

That usually takes some explaining. There's no future. There's a myriad of futures radiating from every instant. If I were to drop this glass on the floor and it broke we would shift into a future where this bar owned one less glass.

And the futures where the glass wasn't broken."

"They would. And we would be in them. We are now."

"Doesn't it get sort of crowded up there? Billions of new futures every second?"

"You can't crowd infinity."

"I was trying to think of an angle. a golf-ball feature. How does this time travel work?"

"How the hell should I know? I'm just a tourist. It has something to do with chronons. Temporal uncertainty principle. Conservation of coincidence. I'm no engineer."

"Are there lots of these tourists?"

"Probably not here and now. You get quite a crowd clustered around historically important events. You can't see them. of course."

"I can see you."


"They didn't try to come back and rescue you?"

"How could they? There are lots of futures but only one past. Once I materialized here. I wasn't in my own past anymore. See?"

"So you can kill your own grandfather. I said."

"Why would I want to do that? He's a nice old bird."

"No. I mean, there's no paradox involved? If you killed him before you were born, you wouldn't cease to exist?"

"Of course not. I have to be there to kill him. He sipped. "For that matter, I could go back and kill myself, as a boy if I could afford it. Travel gets more expensive the closer you get to the present. Like compressing an infinitely tough spring."

"Hold it. I had him. I'll buy another round. If you can talk your way out of this one. The earth is moving all the time, spinning around, going around the sun, the sun's moving through space. How the hell do you aim this time machine?"

"He blared at me. "Don't they teach you anything about relativity? Look if you get up from the bar, go to the john, and come back in a couple of minutes, the bar's moved thousands of miles. But it's still here. You're on the same track that's all."

"But I'm talking about time and you're talking about space!"

"There a difference? He drained his glass and slid it toward me with one finger."

"I decided I'd stay long enough to find out what his con was. Maybe do a one pager for a crime magazine. I ordered him another double. You folks from the future can sure hold your liquor."

"Couple of centuries of medicine. he said. "I'm ninety years old."

"Looked a little heavy. I was going to have to push him for the gag. Seems to me you could be
I was a history professor specializing in the history of technology. I saved up my money to go back and see the first flight to the Moon.

That was in '70.

No. 69. It was during the launch when the accident happened. Nobody noticed me materializing. I didn't even notice until I tried to walk through someone afterwards.

Fortunately that was a time when everybody dressed as they damn well pleased, so my clothes didn't look especially outrageous. I bummed my way down to Homestead and picked up some work sorting tomatoes; that kind of thing. Saved up enough to get take IDs made up eventually went back to school and wound up teaching again. Married along the way.

The one who tried to put you in the peanut jar.

That's right. Here's what happened. If there was one sure thing to invest in it was space. My wife didn't agree, but there was no way I could tell her why I was so sure.

I went ahead and invested heavily in space industries—really heavily buying on the margin, wheeling, dealing—but my wife thought it was all going into a conservative portfolio of municipals I even snitched some stationery from our accountant and wrote up annual reports to show her.

I think I see what's coming. Not a bad story.

Yeah. The Soviet-American Orbi-Non-Proliferation Treaty. The goddamned Proxmire Bill.

Well, killer satellites. That's the kicker. That's really the kicker.

In my future past, it was the killer satellites that ended the possibility of nuclear war forever. They finally scrapped the missiles and began shooting across tables.

Well, you can't think we're in any danger of nuclear war now. Not realistically.

Yeah. Liked our way better. Anyway the bottom dropped out. I had to tell my wife that we were broke and in debt. I had to tell her everything. I thought I knew her. I thought she would believe. The rest is pretty obvious.

Sponge boats.

"Right." He took a long drink and stared moodily into the cloudy mirror behind the bar.

"That's it? No scam?

"That's it. Write it up. You'll never sell it."

I checked my watch. Could just make the 135 to Atlanta get in a half day at the typewriter. Well, I gotta run. Thanks for the story, Bill.

I stood up and put my hand on his shoulder. "Take it easy on the sauce, okay? You're no spring chicken anymore."

"Sure." He never looked at me.

On the way to the subway terminal it occurred to me that I shouldn't try to sell the thing as a human-interest feature. Just write it up as fiction, I thought. I could hawk it to Planet Storaes or one of those rags.

The ticket machine gave me an argument about changing a hundred ruble note and I had to go find a conductor. Then there were repairs going on, and it took us twenty minutes to get to Atlanta. I had to sprint to make my Seattle connection.

Space settlements. Time travel. Nobody would swallow that kind of bull in 1924.
H e was wearing a prefaced pinstriped suit, beautifully tailored, the dresser one in the nostalgic 1900s, but really too youthful for his thirty-odd years. Set square on his head was a vintage (circa 1950) English motoring cap with the peak leveled on a line with his brow, making the light of his eyes in his 

He was on a slab, he might be called distinguished, even handsome, but alive and active! That would depend on how much 

demented dedication one could stomach. He was shouldering his way through the crowded aisles of

THE SUBLIME CIRCUS
5 PHANTASMAL PIPER'S SO
I'M ALL ALIENS!

He was carrying a minuscule camera that looked like a chrome-and-ebony pepper mill and he was filming the living, 
crawling, sparking, glistening monstrosities exhibited in the large showcases and small wrists, with a muttered running 

commentary. His voice was pleasant, his remarks were not.

Ah, yes, the Bullatix basilisk, so the sign assures us. Black and yellow body of a serpent. Looks like a Galapagos head 

attached. Work of that Texas taxiderm who's nibbling with surgical needle and thread. Peacock crest on head. Good theater to 

brinford its eyes. Conveys the conviction that its glance will kill him. Gnieth to gag the mouth, too. According to myth the 

basilisk's breath also kills.

And the Hydrosa Hydra. Like new Nine heads, as per revised tradition. Looks like a converted gnu. The Mexican again.

That availability has access to every damn snake and lizard in Central America. She's done a nice row of one-eyes to drunck—got to 

admit it—but her stitching shows to my eye:

Camelus dactylus. Three dog heads. Look like oversized Chihuahua/Wolfish/bad. Rattlesnake tail Ring of rattles around 

the waist! Authentic but clumsy. That Texas woman ought to know

you can't craft snake scales onto your hide. They look like crude, but at least all three heads are barking.

"Well well, well! Here's the madam who claims she's my wife, the Berlin butcher with his zoo castoffs. His latest spectacular is the Regal Griffin. Teeters! Go him justice! It's classic. Eagle head and wings, but it's molting. Lion bod implanted with feathers. And he's used ostrich claws for the feet! I would have generated authentic dragon's feet."

Now Marjan monoceros horse bod, elephant legs, stag tail! Yes, convincing but why shift howling as it should according 

to legend? Most maricervoir Koalal Koster. These rows of 

feather. Look like implanted afflaks. Lion bod Scorpion tail. Wonder how they produced that red-eyed effect. The Aasir 

Stone! Dull! Dull! Dullville. Just an ostrich with camel feet, and stumps all over them, too. No creative imagination!

"Ah, but I call that poster over the Stilk's superb brilliant theater. My compliments to the management. It's got to be recorded to 

posterity the PUBLIC is respectfully requested not to give the 

correct answer to the enigma posed by the Sphinx.

"Because if you do so the correct answer is Oedipus found out 

she'll destroy herself out of disgust. A sore loser I ought to 

answer the middle just to see how they stage it, but no. Theatre 

suits my shock, my business is strictly positive genetics.

"The Berlin butcher again. Cesar ohmene Lion head. Goat 

bod. Looks like an anodicted tail. How the hell did they get so to those flames? Some sort of catalytic gimmick in the 

throat, I suppose. It's only a cold corposant fist. Quite harmless but very dramatic—and those fire extinguishers around the 

showcase are a lovely touch. Damn good theater. Again, my 

compliments to the management.

"Ah! Beefcake on the east. Zozma centaur. Good-looking 

Greek jock to that Sheidelberg pony. Blood must have been 

problem. They probably drained both and substituted a neutral 

surrogate. The Griepe looks happy enough, in fact, damn smug. 

Anyone wondering why has only to see how the pony's hung.

GALATEA GALANTE

He created the Perfect Woman,

with one little flaw designed into her

BY ALFRED BESTER

PAINTING BY H.R. GIGER
What have we here? Antares unicorn—
complete with grafted narwhal tusk but not
with the virgin who captured it. Virgin girls
being the only types that can subdue un-
corns. Legend says I thought narwhals were
extinct. They may have bought the tusk
from a walking-stick maker. I know virgins
are not extinct. I make em every month,
purity guaranteed or your money back.

And a Spica airen. Lovely girl. Beautiful
She—But damn my eyes she's no man-
ufactured freak. That's Sandra, my Siren! I
can recognize my gen先把 anywhere. What
the hell is Sandy doing in this damn dis-
gusting circus? Naked in a showcase! This
is an outrage!*

He charged the showcase in his rage. He
was given to flashes of fury that punctuated
his habitual exasperated calm. (His deep
conviction was that it was a damned in-
transient world because it wasn't run the
way which was the right way.)

He beat and clawed at the supple walls,
which gave but did not break. He cast
around wildly for anything destructive, then
daried to the camera exhibit. grabbed a
fire extinguisher and dashed back to the
Siren. Three demented blows cracked the
plastic, and three more shattered an es-
cape hatch. His fury outwore the freaks
and a fascinated crowd gathered.

He reached in and seized the smiling
Siren. "Sandy, get the hell out. What were
you doing there in the first place?"

"Where's your husband?"

"For God's sake!" He pulled off his cap,
revealing pale, streaky hair. "Here cover
yourself with this. No no girl downstairs.
Use an arm for upstairs. and hide your rear
elevation against my back."

No... I am not prudish. I simply will not
have my beautiful creation on public dis-
play. D'you think I— He turned fiercely
on three security guards closing in on him
and branded the heavy brass cylinder. "One
more step, and I let you have it with this.
In the eyes. Ever had frozen eyeballs?"

They halted. "Now look, mister you got
no—"

"I am not called mister. My degree is
Dominie which means master professor I
am addressed as Dominie Dominie Man-
wright and I want to see the owner at once.
Immediately. Here and now. Sototi Im-
mediatamente. Mr Saturn or Mr Phreak or-whatever!"

Tell him that Dominie Regis Manwright
wants him here now. He'll know my name, or
he'd better by God! Now be off with you.
Split Out. Manwright glared around at the
enthralled spectators. "You turkeys get lost.
All of you. Go eyeball the other show. The
Siren show is kaput!"

As the crowd shuffled back from Man-
wright a fury an amused gentleman in
highly unlikely twentieth-century evening
dress stepped forward. I see you under-
stand Siren sir. Most impressive. He slung
the opera cape off his shoulders and of-
fered it to Sandra. "You must be cold,
madam. May I?"

"Thank you, Manwright growled. "Put it
on, Sandy. Cover yourself. And thank the
man."

"I don't give a damn whether you're cold
or not. Cover yourself. I won't have you
parading that beautiful body I created.
And give me back my cap."

"Women!" Manwright grumbled. "This
is the last time I ever generate one. You slave
over you. You use all your expertise to
create beauty and implant sense and
sensibility and they all turn out the same.
Women! A race apart! And where the
hell's 50 Phantastik Phreaks 50?"

At your service. Dominie. the gentle-
man smiled. "What? You? The management?"

"Indeed yes."

"In that ridiculous white tie and tails?"

"So sorry, Dominie. The costume is tradi-
tional for the role. And by day I'm required
to wear hunting dress. It is grotesque, but
the public expects it of the ringmaster."

"Well, what's your name? I'd like to
know the name of the man I skinned alive
"Corque"

"Cork? As in England?"

"But with a Q U E"

"Corque? Cor-kew-ee? Manwright's
eyes kindled. "Would you by any chance
be related to Charles Russell Corque, Syr-
tus professor of ETM biology? I'll hold that
in your favor."

"Thank you. Dominie. I am Charles Rus-
sell Corque, professor of extraterrestrial
and mutation biology at Syrtyus University."

"What?"

"Yes."

"In that preposterous costume?"

"Alas, yes."

"Here? On Terra?"

"In person."

"What a crazy coincidence. D'you know I
was going to make that damned tedious
trip to Mars just to rap with you."

"And I brought my circus to Terra hoping
to meet and consult with you."

"How long have you been here?"

"Two days."

"Then why haven't you called me?"

"Setting up a circus show takes time.
A
domine. I haven't had a moment to spare.
This monstrosity is really yours?"

"It is."

"You? The celebrated Corque? The
greatest researcher into alien life forms
that science has ever known? Reveler by all
your colleagues. including myself, and
swindling the turkeys with a phony freak
show? Incredible. Corque! Unbelievable."

"But understandable. Manwright. Have
you any idea of the cost of ETM research?
And the reluctance of the grants commit-
tees to allocate an adequate amount of
funds? No. I suppose not. You're in private
practice and can charge gigantic fees to
support your research. But I'm forced to
moonlight and operate this circus to raise
the money I need."

"Nonsense. Corque. You could have pat-
tented one of your brilliant discoveries—
that fantastic Jupiter III methaphyte for
instance. Gourmets call it The Ganymede
Truffle. 'D you know what an ounse sells
for?"

I know and there are discovery rights
and royalties. Enormous. But you don't
know university contracts. My dear
Dominie. By contract the royalties go to
Syrtyus where—Professor Corque's smile
soured—where they are spent on such
studies as Remedial Table Tennis. De-
monia Orientation, and The Light Verse of
Leopold von Sacher-Masoch."

Manwright shook his head in exaspera-
tion. "Those damned faculty clowns! I've
turned down a dozen university offers and
no wonder! It's an outrage that you should
be forced to humiliate yourself and— Li-
sten, Corque. I've been dying to get the
details on how you discovered that
Ganymede methaphyte When will you
have some time? I thought— Where are
you staying on Terra?"

"This Borealis."

"What? That 'flea bag'?"

"I have to economize for my research.
Well, you can economize by moving in
with me. It won't cost you a cent. I've got
plenty of room and I'll put you up for the
duration with pleasure. I've generated a
housekeeper who'll take good care of
you—and rather startled you think Now do
say yes. Corque. We've got a hell of a lot of
discussing to do and I've got a lot to learn
from you."

"I think it will be the other way around.
My dear Dominie."

"Don't argue. Just pack up and got the hell
out of the Borealis and—"

"What?"

"Sandy?"

"Who?"

"Oh, yes. I see the rat link."

"What now, Manwright?"

"Her husband. I'll trouble you to use re-
straint on me. or he'll become her late hus-
bond."

An epicure have in view tall. slender
elegant, in flesh-colored SkinAll—"
chest arms and legs artfully padded to macho dimensions as was the ornamented codpiece Manwright juggled the extinguisher angrily as though groping for the firing pin of a grenade. He was so intent on the encounter that Corque was able to slip the cylinder out of his hands as the epicene approached. surveyed them and at last spoke.

"Ah, Manwright."

"Jessamy!" Manwright turned the name into a denunciation.

"Sandra."

And our impresario.

"Good evening Mr Jessamy."

"Manwright. I have a bone to pick with you."

"You? Pick? A bone? With me? Why you damned pimp putting your own wife, my magnificent creation into a damned freak show!" He turned angrily on Professor Corque. "And you bought her elf!"

"Not guilty, Domine. I can't supervise everything. The Freak Foreman made the purchase."

"He did, did he?" Manwright returned to Jessamy. "And how much did you get for her?"

"That little? Why you peddled procurer? Why? God knows you don't need the money."

"Dr Manwright—"

"Don't you Doctor me. It's Domine—"

"Domine—"

"Sneak."

"You sold me a lemon."

"What?"

"You heard me. You sold me a lemon."

"How dare you!"

"I admit I'm a jillionaire."

"Admit it? You broadcast it."

"But nevertheless I resent a rip-off."

"Rip! I'll kill the man. Don't restrain me. I'll kill! Look you damned minty macho, you came to me and contracted for the perfect wife. A Siren, you said. The kind of a man would have to lash himself to the mast to resist a la Ulysses. Well? Didn't you?"

"Yes, I did."

"Yes you did. And did I or did I not generate a bionoid miracle of beauty enchantment and mythological authenticity, guaranteed or your money back?"

"Yes you did.

And one week after delivery I discovered my Pearl of Perfection sold to the distinguished Charles Russell Corque's obscene freak show and displayed naked in a bizarre showcase. My beautiful face and neck! My beautiful back and buttocks! My beautiful breasts! My beautiful mons veneris! My—"

"That's what she wanted."

"Did you Sandy?"

"Yes."

"Shame on you. I know you're vain—that was a glitch in my programming—but you don't have to flaunt it. You're a damned exhibitionist. Back to Jessamy. But that doesn't excuse your selling her. Why, did you do it, damn it? Why."

"She was tearing my sheets."

"What?"

"Your beautiful enchanting Pearl of Perfection was tearing my monogrammed silk sheets, woven at incredible cost by brain-damaged nuns. She was tearing them with her mythologically authentic feet. Look at them."

"There was no need to look. It was undeniable that the beautiful enchanting Siren was feathered from the knees down and had delicate pheasant feet."

"So? Manwright demanded impatiently."

"She was also scratching my ankles."

"Darn you! Manwright burst out. "You asked for a Siren. You paid for a Siren. You received a Siren."

"With bird feet?"

"Of course with bird feet. Sirens are part bird. Haven't you read your Bulfinch? Aristotle? Sir Thomas Browne? Matter of fact you're lucky Sandy didn't turn out bird from the waist down. Ha!"

"Very funny, Jessamy muttered. But it wasn't luck. Manwright went on."

"It was genius. My bionoid genius for creative genetics and my deep understanding of the sexual appetites."

"Don't be impudent girl. I have sexual appetites too."

"But when I guarantee a virgin!—No matter. Take her home. Jessamy. Don't argue or I'll kill you. If I can find that damned brass thing I thought I had. Take Sandra home. I'll refund Professor Corque in full."

"To support his brilliant research Sandy trim your talons for God's sake! Sense and sensibility girl. Corque, go pack up and move in with me. Here's my card with the address. What the devil are you doing with that sally-looking fire extinguisher?"

"And that's the full sheree. Charles. I'm sorry I haven't any work in progress to show you but you can see I'm no toiler or seamstress, cutting up mature animals. human or otherwise, and piecing parts to get her like you see with those show-biz monsters in your circus. No I macrogenere ate am pure and whole out of the basic DNA broth. Mine are all test tube babies Florence-flask babies as a matter of fact which is where I start em. Bionoids need womb space like any other animal."

"Fascinating, my dear Reg. quite overwhelming. But what can I fathom is your RNA process?"

"Ah! The RNA messenger service. en?"

"Exactly. Now we all know that DNA is the life reservoir."

"All? We all know? Ha! Not bloody likely. Sometimes I'll show you the abuse I get from the Scripture freaks."

"And we know that RNA is the messenger service delivering commands to the developing tissues."

"Right on Charles. That's where the control lies."

"But how do you control the controls?"

How do you direct the RNA to deliver specific commands from DNA to embryo? And how do you select the commands?"

"Penthouse."

"What?"

"Come up to the penthouse. I'll show you."

"Manwright led Corque out of the enormous crimson leather леборato which was softly glowing with ruby-colored glassware and liquids (My babies must be insulated from light and noise and up to the main floor of the house. It was decorated in the Domine's demented style a hodgepodge of Regency classic Greek African and Renaissance. There was even a marble pool inhabited by indescent manc fish which gazed up at the two men eagerly."

"Hoping we'll fall in. "Manwright laughed."

A cross between piranha and golden carp."

One of my follies."

Thanks to the second floor twenty-five by a hundred. Manwright's library and study four walls shelved and crammed with tapes publications and software a rolling ladder leaning against each wall a gigantic carpenter's workbench center used as a desk and piled with clutter.

Third floor divided between dining room (front) kitchen and pantry (center) and servants quarters (rear overlooking garden)."

Fourth floor enjoying maximum sky and air bedrooms. There were four each with its own dressing room and bath all rather severe and monastic. Manwright regarded sleep as a damned necessary which had to be endured but which should never be turned into a luxury."

We all get enough sleep during our nine months in the womb he had growled to Corque "and we'll get more than we'll ever need after we die. But I'm working on regenerative immortality and on. Trouble is tissues just don't want to play ball."

He led the professor up a narrow stair to the penthouse."

It was a clear plastic dome firmly anchored against wind and weather in the center stood a glimmering Rube Goldberg Heath Robinson Da Vinci mechanical construct. If it resembled anything it would be a giant collapsing robot waiting for a handyman to put it together again Corque stared at the gallimaufry and then at Manwright.

"Neutronscope. The Domine explained."

"My extrapolation of the electron microscope."

"What? Neutrons. The data decay process."

"Manwright nodded. "Combined with a cyclotron I get particular particle selection that way and acceleration up to ion MeV Selection's the crux. Charles. Each genetic molecule in the RNA coil has a specific response to a specific particle bombardment. That way I've been able to identify and isolate somewhere in the neighborhood of ten thousand messenger commands."

"75
"But but— My dear Reg, this is positively fantastic!

Manwright nodded again. "Uh-huh. Took me ten years.

But I had no idea that— Why haven't you published?"

What? Manwright snorted in disgust. "Publish? And have every damned quack and campus cretin crowning around with the most sacred and miraculous phenomena ever generated on our universe? Pah! No way!

You're into it, Reg. Manwright drew himself up with hauteur. "Sir, do not clown!"

But Reg—

But ma no buts! Professor By heaven, if Christ in whom I've never believed ever returned to Terra and this house I'd keep it a secret! You know damn well the hell that would break loose if I published. It'd be Golgotha all over again.

While Corque was wondering whether Manwright meant his biodroid techniques Christ's epiphanies or both there was a sound of a large object slowly falling upstairs. Manwright's scowl was transformed into a grin. My housekeeper he chuckled. "You didn't get the chance to see him when you moved in last night. A treasure.

An imbecile face attached to a pinhead poked through the panthouse door. It was followed by a skewed hunchback body with gigantic hands and feet. The mouth which seemed to wander at will around the face opened and spoke in a hoarse voice.

"Mahth-ter."

"Yes Igor?"

"Should I thief a brain today mahth-ter?"

"Thank you, Igor. Not today."

"Then breakfast fh th threven mahth-ter."

"Thank you, Igor. This is our distingushed guest, the celebrated Professor Charles Corque. You will make him comfortable and obey him in everything."

"Yes mahth-ter. At your service, the celebrated Professor Charles Corque. Should I thief a brain today?"

"Not today, thank you. Igor bobbed his head turned disappeared and there was a sound of a large object rapidly falling downstairs. Corque's face was convulsed with suppressed laughter. "What in the world—?"

A reject. Manwright grinned. "Only one in my career. Not the first of two if we count handsome Sandy but I do think Jessamy will keep his Siren. Anyway he continued leading Corque downstairs—this client was absolutely hypnotized by the Frankenstein legend. Came to me and contracted for a faithful servitor like the Baron's apprentice. Returned five months later paid like a giant. But said he'd changed his mind. He was now on a Robinson Crusoe kick and wanted a Friday. I made him his Friday but I was stuck with Igor."

"Could you have dissolved him back into the DNA broth?"

"Good God! Charles! No way! Never I generate life. I don't destroy it. Anyway Igor is an ideal housekeeper. He does have this brain stealing hang-up—that was part of the original model. And I have to lock him in a closet when there's thunder and lightning. But he looks like an absolute genius."

I hadn't known that Baron Frankenstein's henchman was a chef.

"To be quite honest, Charles, he wasn't. That was an error in programming—do glch it now and then—with a happy ending. When Igor's cooking he thinks he's making monsters."

"The card came in on the same tray with the Tomato-Onion Tart (ripe tomatoes sliced onions, parsley basil, Gruyere baked in pastry shell forty minutes at 375°F) and Manwright snatched the embossed foil off the salver.

"What's this, Igor? Anthony Valera, Chairman Vortex Syndicate, 89 Old Str C5 0210-0212-036-216291?"

"In the waiting room, mahth-ter. By God, Charles, a potential client. Now you may have your chance to watch my genius from start to finish! Come on!"

"Oh, have a heart, Reg. Let the chairman wait. Igor's monster looks delicious."

"Thank you, the celebrated Professor Charles Corque."

"No, no. Igor. The thanks go from me to you."

"Pigs both of you. Manwright snorted and dashed for the stairs. Corque rolled his eyes to heaven grabbed a slice of tart wrinkled at Igor and followed cheery ecstatically."

"One would expect the chairman of a syndicate with a seventeen-figure C.B. telephone number to look like Atlas. The Hun Anthony Valera looked and dressed like a suave Spanish grandee. He was black and silver including ribbed peruke. He was very much at home in our office. As Corque entered the room he smiled bowled and murmured.

"What a happy surprise, Professor Corque. Delighted I had the pleasure of hearing you speak at the Triumvirs Charontos convention. Mr. Valera, the venerable old gentleman offered his left palm. Corques right hand was busy with the tart.

"He wants an ideal executive secretary. Manwright refused to waste time on courtesies. And I told him that my biodroid talents are damned expensive."

"To which I was about to respond when you most happily entered. Professor Corque that problem is criminally soluble."

"Then it's to be a company contract?"

"No. Diremme personal. Mr. Valera smiled. It also is criminally soluble."

"Good. I hate doing business with composites. You must know the old saw about cacti. Let's discuss the specs and see whether we understand each other.

"Female. Of course."

"Of course. Physical appearance?"

"You don't take notes?"

"Total recall."


"Mr. Valera?"

"Gentlemanly, particular example of the type in mind?"

"Yes. Bothwell's Birth of Venus."

"Ha! Venus on the Half-shell. Lovely model character?

"What one would expect of a secretary thinking of youthful devotion to my work of course."

"To your work of course. And clever."

"Do you mean clever or intelligent?"

"Aren't they the same?"

"No. Craftiness requires humor Intelligence does not."

Then clever! I'll provide the intelligence. She must be able to learn quickly and remember. She must be able to acquire any skill necessary for my work. She must be perceptive and understand the stresses and conflicts that make a chairman's life one constant battle.

So far you could hire such a girl. Manwright objected. "Why come to me?"

"I haven't finished, Domine. She must have no private life and be willing to drop everything and be instantly available at all times."

"Available for what? Business luncheons dinners last-minute parties client entertainment and so forth. She must provide the star the charm the wit the entertaining conversation."

"Then you want a tailor."

"But only when I want her to talk. Otherwise she's a blank."

"Corque whistled softly. "But you're describing a paradox, my dear sir."

"I would say a miracle, Professor Corque. But Domine Manwright is celebrated for his miraculous creations."

"You married?" Manwright shot.

"Five times."

"Then you're a chaser?"

"Domine."

"And easily landed?"

"Really you're extraordinarily blunt. A chaser? Well, I'll let's say that I'm attracted occasionally."

"Would you want your executive secretary to be responsive—occasionally? Is that to be programmed?"

"Only unilaterally. If I should happen to desire I would want a beautiful response. But she is not to make demands. Nevertheless she will of course be faithful to me. These parameters are preposterous. Corque exclaimed indignantly."

"Not at all, Charles! Not at all. Manwright soothed. Mr. Valera is merely describing what all men desire in a woman an Aspasia the beautiful femme galante who..."
was the adoring mistress and adviser to Pericles of ancient Greece. It's wishful fantasy but my business is turning fantasy into reality and I welcome the challenge. This girl may be my magnum opus. Again he fired a shot at Valera. "And you'll become very bored."

"What?"

"Within six months this adorning, talented, dedicated slave will bore you to tears."

"But why? Why?"

"Because you've left out the crux of a kept woman's hold over a man. Don't protest Valera. We know damn well you're ordering a mistress and I make no moral judgment, but you've forgotten the drop of acid."

"Dommin I do protest. I—"

"Just listen. You're contracting for an enchanting mistress and it's my job to make sure that she remains enchanting always. Now there are many sweet concoctions that require a drop of acid to bring out the full flavor and keep them enjoyable. Your Aspasia will need a drop of acid for the same reason. Otherwise her perpetual perfection will cloy you in a matter of months."

You know Valera said slowly, that's rather astute Dommin. What would you advise? I'm all anticipation!"

"The acid in any woman who can hold a man the unexpected, the quality that makes it impossible to live with them or without them."

"And what would that be in my … my secretary?"

"How the devil can I tell you?" Manwright shouted. "If you knew me, I wouldn't be unexpected and anyway I won't know what I can't guarantee surprise and adventure with a woman. All I can do it's program a deliberate error into the genesis of your perfect Aspasia and the discovery of that kink will be the charming drop of acid. Understood?"

You make it sound like a gamble."

"The irrational is always a gamble."

After a pause Valera said. "Then you're challenging me Dommin?"

"We're both being challenged. You want the ideal mistress created to your specs. I've got to meet them to your complete satisfaction."

And your own Reg? Corque murmured.

"Certainly my own. I'm a professional."

"The job is the boss. Well Valera? Agreed?"

"After another thoughtful pause Valera nodded. Agreed. Dommin."

"Splendid. I'll need your Persona Profile from the syndicate."

"Out of the question Dommin! Persona Profiles are Inviolable Secret. How can I ask Vortex to make an exception?"

"Damn it can't you understand? Manwright was inundated by this intransigence but controlled himself and tried to speak reasonably. "My dear chairman I'm shap- ing and conditioning this Aspasia for your exclusive use. She will be the cynosure of all men so I must make sure that she'll be implanted with an attraction for your qualities and drawn to you alone."

"Surely not all Dommin! I have no delusions of perfection."

"Then perhaps to your defects, and that will be your charming drop of acid. Come back in twenty-one weeks."

"Why twenty-one specifically?"

"She'll be of age. My biodroids average out at a week of genesis for every physical year of the creation's maturity. One week for a dog, twenty-one weeks for an Aspasia. Good day Mr Valera."

After the chairman had left Manwright cooked an eye at Corque and grinned. "This is going to be a magnificent experiment, Charlie. I've never generated a truly contemporary biodroid before. You'll pitch in and help, I hope?"

"I'll be honored Reg. Suddenly Corque returned the grin. 'But there's one abstruse reference I can't understand."

"Fear not. You'll learn to decipher me as we go along. Whatever you understand?"

"The old saw about the camel."

**The usual biodroid accommodations weren't good enough for Manwright's magnum opus. The red infant was on the floor, flat on her belly, propped on a pillow and deep in a book. She looked up and crawled.**

Manwright burst out laughing. "What? Never heard it? Penalty of spending too much time on the outer planets. Question: What is a camel? Answer: A camel is a horse made by a committee. He sobered. "But by God, our gallant girl won't be any camel. She'll be devastating."

Forgive the question Reg. Too devastating for you to resist."

"What? That? No way! Never! I've guaranteed and delivered too many virgin myths delities, naiads, chvads and so forth for me — for Charles. Too tough and hard and impossible to all their lusts. But the breasts are going to be a problem, " he added absently."

"My dear Reg! Please decipher."


"Perhaps your deliberate error will solve it."

Perhaps but only the Good Lord, in whom I've never believed, can know what her mystery kink will turn out to be. Soeha! Let's get to work on our perfect mistress Charles or to use an antique expression that's just become a new vogue word: our perfect Popsy."

The Domwin's program for a devastating Popsy who was to be enchanting trustworthy loyal helpful friendly courteous kind obedient, cheerful, chirpy, soft-spoken, beautiful, busy, eloquent on demand and always available to entertain began as follows:

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Und so weiter für 147 pages. Und good luck to the computer software for creative biogenesis. which couldn't possibly interest anyone.

Anyway there's no point in reading the program. Charles. Numbers can't paint the picture. I'll just describe the sources I've used for the generation of our Popsy. You may not recognize some of the names but I assure you that most of them were very real and famous celebrities in their time.

"What was your lecture to ignore the other day Reg? A chef is better than his mate- rials."

Right on. And I'm using the best Beauty—Botticelli's Venus of course, but with Egyptian breasts. I thought of using Pauline Borghese, but there's a queen in a limestone relief from the Ptolemaic period who's the ideal model. Cappellian rear elevation, Mardenhia frontispiece, delicate and artful. Did you say something Charles?"

"Not Reg."

"I've decided not to use Aspasia for the virtues."

"But you said that was what Valera wanted."

"So I did. But I was wrong. The real Aspasia was a damned premature Women's
Rights activist: Too strong for the chairman’s taste.

And yours?

Any man’s. So I’m using Egea instead.

Egea? I haven’t had an education in the classics. Reg.

Egea, the legendary fountain nymph who was the devoted adviser to King Numa of ancient Rome. She also possessed the gift of prophecy, which might come in handy for Valera. Let’s see. Fashion and chic—a famous couturier named Coco Chanel. Subtle perceptions—the one and only Jane Austen. Voice and theater sense—Sarah Bernhardt. And she’ll add a soupcon of lovely Jew.

“What on earth for?

It’s obvious you haven’t met many on the outer planets or you wouldn’t ask. Remarkable race Jews. Freethinking original, creative, obstinate, impossible to live with or without. That’s how you described the ideal mistress, wasn’t it?

I did.

But if your Popsy is obstinate, how can she respond to Valera’s desires?

Oh, I’m using Lola Montez for that. Apparently she was a tigeress in the sex department. Hmmm. Next? Victoria Woodhull for business acumen. La Pasianora for courage. Hester Bateman—she was the first woman silversmith—for skills. Dorothy Parker for wit. Florence Nightingale for sacrifice. Mata Hari for mystery. What else?

“Conversation.”

“Quite right. Oscar Wilde.”

Oscar Wilde.

Why not? He was a brilliant talker. Held dinner parties spellbound. I’m giving her dancer’s hands, neck and legs. Dolly Madison hostessing—and I’ve omitted something.

Your deliberate mistake.

“Of course. The mystery kink which will catch us all by surprise.” Manwright flipped through the software. “I programmed somewhere around here. No that’s Valera’s Persona Profile. Charles you won’t believe the damned intransigent stubborn know it all. Conducted ego-mania concealed be neat that polished veneer it is going to be hell imprinting our girl with an attraction engraim for such an impossible man. Oh, here’s the unexpected in black and white—

Manwright pointed to:

\[ R = L \times V \times N \]

“Wait a minute. Corque said slowly.

“That equation looks familiar.

Aha.

I think I remember it from one of my boyhood texts.

Oh ho.

The—the most probable distance Corque was dredging up the words from the lamp post after a certain number of irregular turns is equal to the average length of each track that is—

Straight track. Charles.

Right. Each straight track that is walked in the square root of their number Corque looked at Manwright with a mixture of wonder and amusement. Confound you Reg! That is the solution to the famous Drunkard’s Walk problem from the Law of Disorder. And this is the deliberate uncertainty that you are programming? You’re either a madman or a genius.

A little of both. Charles. A little of both. Our Popsy will walk straight lines within my parameters but we’ll never know when or how she’ll hang a right or a left . . . .

Surely she’ll be aiming for Valera?

“Of course. He’s the lamp post. But she’ll do some unexpected staggering on the way.” Manwright chuckled and sang in an odd husky voice. “There’s a lamp on a post. There’s a lamp on a post. And it sets the right aglow. Boy boy girl. Boy boy girl. But best when flakes is snowm .

Regis Manwright’s laboratory notes provide a less-than-dramatic description (to put it politely) of the genesis and embryological development of Galatea. Galatea: the Perfect Popsy.

GERMINAL

Day 1: One hundred million Florence flask
Day 2: Five hundred million Florence flask
Day 3: One thousand million Florence flask
Day 4: Five thousand million Florence flask
Day 5: Decanted.

(E & A charging too damn much for flasks!!!)

(Baby nominal. Charles enchanted with her. Too red for my taste. Pour out of the amnon blowing bubbles and talking. Couldn’t shut her up. Just another fresh kid with a damn big mouth.)

Reg. Gally must have a nurse.

“For heaven’s sake Charles! She’ll be a year old next week.

She must have someone to look after her.

All right. All right. Igor. She can sleep in his room.

No no no. He’s a clear creature, but hardly my idea of a nursemaid.

“I can convince him. He made her He’ll be devoted.”

“Good reg. He isn’t child oriented.

You want someone child oriented?

Hmmm. Ah yes. Got just the right number for you. I generated The Old Woman Who Lived in a Shoe for the Positively Peerless Imitation. Plastic company to use in their genuine plastics sales promotion.

She had so many children she didn’t know what to do with.

The same.” Manwright punched the CB keyboard. “Seabean? This is Regis.” The screen sparkled and cleared. A gypsy crone appeared with begging hand outstretched for alms.

“Who’s everything going Seabean?”

“Scarlet adulterer Regis.”

Why?

“Desirous na gho no a.

What about PPP gone bankrupt? That’s shocking. So you’re out of a job?”

“Dean fern sin.”

Well perhaps I have something for you Seabean. I’ve just generated—

“Cut off Reg.” Corque broke in sharply. Manwright was so startled by Corque’s tone that he obeyed and looked up perplexedly. “Don’t think I’ll do Charles. That old rag? Out of the question.

She isn’t old.” Manwright protested.

She’s under thirty. I made her look like that according to specs. Seventy-year-old Irish gypsy. They call em tinkers in Ireland. Speaks Irish and can handle kid actors who are a pain in the ass. And I delivered by God.

As you always do, but still out of the question. Please try someone else.

“Charles has that damn infant got you enthralled.”

“Her first conquest and she’s just out of the flask! Can you imagine what she’ll do to men in another twenty weeks? Be at each other’s throats. Fighting duels! Ha! I am a genius and I don’t deny it. We need a nurse for Gally Reg.”

Nag nag nag.

Someone warm and comforting after the child has endured a session with you.

“I can think what the man is implying. All right. Cradle snatcher all right. I’ll call Claudia. Manwright punched the CB.

“She’s warm and maternal and protective. Wish she’d been my nanny? Claudia? It’s Regis. Switch on darlin’. The screen sparkled and cleared. The magnificent head and face of a black mountain gorilla appeared.

“I’ll she grunted.

“I’m sorry love. Been too busy to call. You’re looking well. How’s that no-good husband of yours?

And the kids?”

“Splendid. Now don’t forget. You promised to send them to me so I can surly them into understanding our kind of speech. Same like you love and no charge. And speaking of kids. I’ve got a new one. A girl. That’d like you to—

At this point the stunned Corque collected himself enough to press the cutoff stud. Claudia faded.

“Are you mad? He demanded. Manwright was bewildered. “What’s wrong Charles?”

“You suggest that terrifying beast for the child’s nurse.”

“Beast! She’s an angel of mother love. She’ll have the kid climbing all over her hugging and kissing her. It’s interesting.”

he reflected. I can manipulate the cognition centers but I can’t overcome muscular limitations. I gave Claudia college-level comprehension of spoken and written communications but I couldn’t give her human speech. She’s still forced to use Mountain which is hardly a language of ideas. Damn frustrating for both of us.”

And you actually want her to mother Gally?

“Of course. Why not?”

Your Claudia will frighten the daylights out of the infant.

Ridiculous.

She’s hideous.”
Can you say the same for your tongue? Guh! And Manwright withdrew with what he hoped was impressive dignity.

Of course she shot up like a young bamboo plant and filled the house with joy as she entertained them with her escapades. She taught herself to play Manwright's Regency harpsichord which was sadly out of repair. She convinced Igar that it was a monster in the making, and together they refinished and tuned it. The sound of concert A on the harpsichord droned through the house with agonizing penetration. The others were forced to eat out because she gave Igor no time for cooking.

She studied linear shorthand with Galatea and then translated it into finger languages. They had glorious raps silently talking to each other until Manwright banned the constant finger waggling which he denounced as a damned invasion of vision. They simply held hands and talked into each other's palm in their secret code, and Manwright was too proud to ask.

Corque took her to his Saturn Circus, where she mesmerized him into letting her try riding bareback and leaping through burning hoops, and thrusting her auburn head into a lion's mouth.

what they were gossipping about. As if I'd get an answer anyway he growled to Corque.

Darned if I know. She's unexpected enough as it is. Rotten kid!

She stole liquor licence from Igor's sacred pantry and tarred herself phosphorous from Manwright's sacred laboratory and irritated herself. She burst into Corque's dark bedroom at three in the morning howling: "ME METAPHYTE MOTHER FROM GARNWEEDE YOU KILL ALL MY CHILDREN ALIEN INVADER FROM OUTSIDE SPACE NOW I KILL YOU!"

Corque let out a yell and then couldn't stop laughing for the rest of the day. The beautiful shock of the apparition. Reg! Manwright didn't think it was funny.

That damned child is giving me real nightmares he complained. I keep dreaming that I'm lost in the Grand Teton mountains and Red Indians are chasing me.

She sneaked up into the sacred pent house and decorated the robotlike neumatoscope with items stolen from Manwright's wardrobe. The construct assumed a ludicrous resemblance to the Domnie himself.

The innocent child fast talked E & A Chemical delivery—My Daddy forgot to order it. So astounded you know into an extra gallon of ethyl alcohol which she poured into the marl and got the panthera disgustingly drunk. Then she jumped in and was discovered floating with her plastered paws.

Doesn't I know the meaning of fear Reg? Puh! Just the Pasionaria I programmed.

She stole two hundred meters of magnetic tape from the library and fashioned a screwdriver mobile. The gardener was enraged. Manwright was infuriated particularly because all dealer friends offered huge amounts for the creation.

But that's her charming unexpected Reg. Gally's a born artist.

Like he said. That's only the Hunter. I gave her No L X V N yet. And the nightmares are continuing in sequence. Those damned Red Indians have cut me off at the pass.

Claudia took Galatea to her home, where the girl got on famously with Claudia's two sons, and brought them to Manwright's house to demonstrate a new dance which she'd devised called "The Anthro Hustle." It was performed to a song she'd composed entitled "Who Put the Snatch on Gorilla Baby?" which she banged out for fusingly on the harpsichord.

Bring back the tuning fork" Manwright muttered.

Corque was applauding enthusiastically. Music's her surprise kink. Reg Call that music?

Corque took her to his Saturn Circus, where she mesmerized him into letting her try riding bareback and leaping through burning hoops, acting as target for a knife thrower, trapese aeroetics and thrusting her auburn head into a lion's mouth. He couldn't understand how she'd persuaded him to let her take such horrifying risks.

"Perhaps caperly's her mystery quality he suggested. But she did miraculously well. Reg My heart was in my mouth Gally never turned a hair. Pure aplomb. She's a miraculous creation. You've generated a Super Pops for Valera.

"Guh"

"Could her unexpected kink be psychotic?"

The redskins have got me surrounded. Manwright fretted. He seemed strangely disoriented.

What disturbed him most were the daily tutoring sessions with the young lady. Invariably they degenerated into bickering and bitching with the Domnie usually getting the worst of it.

"When our last session ended in another bitch we both steamed for the library door he told Corque. I said Age before beauty my dear. Which you must admit was gracious and started out. That red Popsy snip
said. Pears before wine and swaggered past me like a gladiator who’s wiped an arena.

“She's wonderful!” Corque laughed.

Oh you're insanely biased! She's been twisting you around her fingers since the moment she was paired. And Igor and Claudia and her two boys and the CB repair and the plumber and the electronics and the gardener and the laundry and E & A Chemical and half my circus! All insanely biased!"

“Evidently I'm the only sanity she can't snow You know the simple psychological truth Charles we're always accusing others of our own faults. That saucebox has the impudence to call me inscrutable stubborn know-it-all conceited! Me! Out of her own mouth QED

'Mightn’t it be the other way around Reg?"

Do try to make sense Charles And now that the Grand Teton breusworks are making top-heavy (I think maybe I was a little too generous with my Egyptian programming) there'll be nothing with her vanity. Women take the dammed dumbest pride in the thrust of their bosomalums.

Now Reg you exaggerate Gally knows we'd all adore her even if she were flat-chested.

I know I'm doing a professional job and I know she has too much ego in her cosmos. But next week we start sleighing her to parties openings talk-ins and such to train her for Valera. That ought to take her down a peg. The Red Indians have got me tied to a stake. He added Canapes?

'Twas a Larvally party Ms. Galante.

Thank you Lady Agatha Canapes? Grazie Signorina.

Prego Commandant Canapes? A dank mey! Long leb neltir

'Not far was General Hot canapes dear Professor Corque?"

Thank you adorable hostess Igor?

“Mine And perfection Don't be afraid of the Martian counsel. He won't bite Canapes. Mieux Consul.

Ah! Mais oui! Merci Mademoiselle Galante. Que pensez-vous du lumineux Mr. Domin Manwright?

'C'est un type tres compétent. Ou Romanesque mais formidably compétent."


Mais oui, romanesque Mademoiselle Galante. C'est justement son côté roman esque qui lui cause du mal a se trouver une femme.

These damn do's are a drag Charles. "But isn't she wonderful?"

And they're making my nightmares worse. A sexy Indian squaw lore my clothes off last night.

'Ventasbienza magia-orrore umorismo narrativa, attualita filosofia sociologia, e cetivo punto do Regis Manwright

"Charles this is the last literary talk-in I ever attend."

"Did you see how Gally handled those Italian publishers?"

Yes gives at my expense. She put iron claws on her hands."

"My dear Reg Gally did no such thing."

"I was referring to that sexy squaw.

Então agora sabes dancer?"

Sim Danço falo miseravelmente muchas linguas estudio ciencia e filosofia escrevo uma lamentavel poesia estorome com experiencias idiocas egrimo como un louco jogo so box como up palhaco. Em suma son a celebra birode Galatea Galante de Domin Manwright"

"She was magnificent dancing with that Portuguese prince Reg."

"Portuguese ponce you mean."

Don't be jealous. She's heating the claws in a damned campfire Charles.

"Didn't you ever fight back Sandy?"

"Yes I know he's a bully. But all bullies are cowards at heart. You should have fought him to a standstill, like me. Did he ever make a pass at you?"

Un huh. Me neither. He's an arrogant egomaniac too much in love with himself to love anyone else.

"What Sandy? Me? Give the come on to that dreadful man? Never! Did you?"

"Uh huh. And he didn't even have to lash himself to the mast Iceberg City. Ah Mr. Jerssamy. So sweet of you to give us your box for the concert. I've just been comparing notes with your adorable wife on our common enemy whose name escapes me. He's the gentleman on my right who slept through the Mozart.

"And dreamed that he was torturing me with his burning claws Charles all over my bod."

Man nehme zwei Teile Selbstgefährig keit zweier Teile Selbstsucht, einen Teil Erlie- keit, und einen Teil Eel, mischte kraftig füge etwas Gehemnus hinzu und man erhält Domin Regis Manwright

Especially my private parts

'Domin Manwright's bodroid is still a day in her manner de tratar los neologismos palabras coloquiales giro y modismos cliches y terminos de argot. Senior Yo soy Galatea Galante, la birode."

"Thank you madame. I am not Spanish. I merely admire and respect the old Castilian:"n

"Oh Scouse me, cholly guy. You toller-day donsk?

He burst out laughing. "I see you're very much with the classics madame. Let me thank you. Yes. The proper response in that James Joyce itary is N."

"You talkative scowegian?"

"No, you spigoty anglesea?"

"Nn You phonio saxco?"

"Nnn."

"Clear all so. Tis a joke. Let us swap hats and exchange a few strong verbs weak eath yapzzard."

"Brava madame! Bravissima!"

She tilted her aurorn head and looked at him strangely. "Against my will she said slowly. I'm compelled to invite you to a dinner party tonight."

"More classics madame? The Beatrice and Benedect scene from Much Abo About Nothing?"

"No. It's the Galatea and—I don't know your name."

Valera Anthony Valera.

It's the Galatea and Valera scene. Can you come?

"With delight."

"When this bash is finished I'll give you the address."

"I know it. Galatea."

"My friends call me Gally. How do you know my address? We've never met."

"I contracted with—"I acquainted with Domin Manwright. Gally Tonight? Eight o'clock?"

"Eight tonight."

"Dress party?"

"Optional."

She shook her head dizzily. "I don't know what it's got into me. Valera. The moment I saw you at the clambake in I knew I had to see you again intimately. I'm possessed."

The rest of the household was dining in The Gastrologue and their moods were not compatible."

"Thrown out."

"Corque kept repeating."

"Thrown out with a moment's notice by that ungrateful tyrant."

"Naturally. She wants to be alone with Valera. Charles Instant devoted attraction as per my brilliant programming. I tell you I'm a genius."

She added me to make month-tenth for her to thieve mahi ter."

"Quite right Igor. We must all pitch in and
abed Valera's romance. He was so turned on meeting her at that bash this afternoon that he sent his check by messenger. Payment in full to protect his claim on my Perfect Poppy. No doubt.

Thrown out! Thrown out by that tyrant! And good riddance to her very soon. Charles. The house will be back to normal. But she didn't order a brain manger”

Not to worry. Igor told me what we'll order velverele de veau au beurre noir and it Gastrologues doesn't have any calves brains you can go out and steal some. He beamed and bobbed his pale streaky head.

"Thank you ma'am-tter" Evicted!

The silent Claudia printed: PLANTAINS FROM THE PLANTAINS OF AMARILLO.

At one minute past eight Valera said: "It's fashionable to be a half-hour late, but I—Is it all right to come in?

Oh please! I've been biting my nails for a whole minute. Thank you. To tell the truth. I really have to be on time. I thought it would take us to walk up from Old Slip.

"Old Slip? Isn't that where your office is?

Were you working late poor soul?"

I live there too. Gally A penthouse on top of the tower.

A la Alexander Eiffel.

"Somewhat, but the Syndicate complex is no Tour Eiffel. What a fantastic place this is. I've never done more than peek beyond the waiting room.

"Do you want the full tour?

"I'd like nothing better."

"You've got it. But drink first. What would you like?

What are you serving?

My dear Valera—

Tony. Thank you. My dear Tony I share this house with two and a half men and a manson gondola. We have everything in stock.

Stoichnaya! Please, Halit."

Igor our housekeeper Galatea explained as she brought a tray with a bucket of ice, a bottle and short glasses. She opened the vodka deftly and began rolling the bottle in the ice. A boudoir replica of Baron Frankenstein's accomplice.

"Oh yes. I've met him. The lispig hunchback.

A dear dear soul, but only half with it."

And a gonial. That's Claudia, my beloved nanny. She's beautiful. This vodka really isn't chilled enough yet. But let's start anyway. She filled the glasses. Russian style eh? Knock it back. Tony Death to the fascist imperialist invaders from outer space.

And their Conestoga star wagons. They knocked their shots back. Gally, what miracle are you wearing?

"Là sir!" She did a quick kick-turn. "Like it?"

I'm dazzled. If I tell you promise not to turn me in? I promise.

"I copied it from a Magda. Who or what is a Magda? Oh, thank you.

I'm afraid I filled it too high. But boys like big sandwiches and big drinks. She's the vogue designer of the year. Down with counterfeiting."

"May they be heard only in Siberia. Why must I keep it a secret about your copy?"

"Good Lord! They hang, draw and quarter you if you pinch a designer original."

"I fell in love with it at one of her openings and memorized it."

"And made it yourself? From memory. You're exaggerating."

"You're exaggerating. Don't you remember complicated stock manipulations?"

"Well yes.

"So with me it's the same damn thing. Oops. That's the tag of a dirty joke. Apologies to the chairman."

"The chairman needs all the dirty jokes he can get for client entertainment. What's this one?"

"Maybe someday if you coax me nicely.

"Where do you get them? Surely not from Dominie Manwright."

From Claudia's naughty boys. Another shot to the damnation of Blue Laws, and then the guided tour.

Valera was bewildered and delighted by the madness of Manwright's house and enchanted by the high style with which Galatea flowed through it with equally mad comments. An old song lyric haunted him.

Hey diddle-dee, I've found the girl for me.

With raunchy style.

And virgin glee.

She's just the girl for me.

Never mind the polite compliments. Tony said,-pulling him down on a couch beside her and refilling his glass. "I'll give you the acid test. Of all things in this house which would you be most likely to steal?"

"You?

"I didn't say kidnap. Come on, man, steal something."

"I think I spilled my drink."

"It's my fault. I juggled your arm. Don't mop. So?

You're so sudden. Gally. Well, don't laugh. The scarecrow mobile in the garden."

"Oh. I love you for that. I made it when I was a little kid months ago." She gave him a smacking kiss on the cheek and jumped up. "Like some music?"

She turned on the hifi and a soft murmur drifted through the house.

Valera glanced at his guests. Your must be frightfully chic.

"Oh.

"You said eight. That was an hour ago. Where's everybody?"

"As a matter of fact, they came early. I'm the only one who was early."

"That's right. You mean I'm..."

"That's right.

But you said a dinner party, Galley. It's ready any time you are.

The party is? Just us?

I can call some more people if you're bored with me."

"You know that is not what I meant. No. What did you mean?"

"I— He stopped himself.

Go ahead. She bullied. "Say it. I dare you."

He capitulated. For perhaps the first time. in his slave life he was overpowering. In a low voice he said. "I was remembering a tune from twenty years ago. Hey diddle-dee-dee. I've found the girl for me. With raunchy style. And virgin glee. She's just the girl for me."

She flushed and began to tremble. Then she took refuge in the hostess role. Dinner. She said briskly. "Beef Stroganoff. Potatoes with mushrooms, salad, lemon pie and coffee. Mouton Rothschild. No not upstairs. Tony. I've made special arrangements for you. Help me with the table."

Together in a sort of domestic intimacy they arranged a gaming table alongside the marble pool with two painted Venetian chairs. She had already set the table with Spode china and Danish silver. It needed some careful balancing. Before she began serving she drew the cork from the Bordeaux bottle and poured a few drops into Valera's goblet.

Try it, Tony. She said. I've never been able to decide whether the concept of letting a wine breathe is fact or show off. I appeal to your sophistication. Give me your opinion.

He tasted and rolled his eyes to heaven. Superb! You're magnificent with your compliments. Galley. Sit down and try it yourself. I insist. And he filled her glass.

"Wait!" she laughed. The food show first. I showed electronics into bootlegging ultra into the pool. That's why I wanted our table here. Wait till you see the Performance. Pianos 20. She ran to a wall extant. The living room lights and flipped a switch. The pool glowed like lava and the exotic fish became a ballet of darting embers. Galatea returned to the table opposite Valera. and raised her goblet to him. He smiled back into her face.

Hey diddle-dee— he began and then froze. He started. He then started to his feet so violently that he overturned the table. Tony! She was appalled.

"You goddamn bitch!" he shouted. His face was black. Where's the CB?"

"Tony. Where's the goddamn CB? Tell me before I break your goddamn neck."

"That table. She pointed B but I don't understand. What's—"

"You'll understand soon enough. I punched buttons. By God you and this whole damn lying house will understand. Rip me? Play me for a patsy? His rage was
"It's one goddam thing after another."
a terrifying echo of Manwright at his worst. "Hallo Larson? Valera. Don't waste time with visual Crash mission: Call full Security and comb the city for a son of a bitch named Regis Manwright. Yes, that's the pig. I give you a half hour to find him and—"

"But I know where he is, Galatea tal-lered." 

"Hold it Larson. You do? Where?"

"The Gastrologue."

"The bastard's in The Gastrologue Club Larson. Go get him and bring him to his house, which is where I am now. And if you want to get rough with him I'll pay all legals and add a bonus. I'm going to teach that lying pimp and his bitch a lesson they'll remember for the rest of their lives!"

The four were herded into the main floor of Manwright's house at the point of a naked laser which Larson thought advisable in view of the threat of Claudia's mass. They saw a grotesque Valera and Galatea silhouetted before the glowing pool in the dark room. Valera was holding the weeping girl by her hair for all the world like a chattel in a slave market.

In this ominous guise Manwright displayed an aspect of his character which none had ever seen: a tone of quiet command that took obedience for granted, as if by divine right, and won it through its assurance.

"Mr. Larson, you may pocket that laser now. It was never needed. Valera will let Galatea go he said softly. No dear, don't move. Stay alongside him. You belong to him unless he's changed his mind. Have you Valera?"

"You're goddamn right I have the chairman stormed. I want no part of this cheap secondhand trash Larson keep that gun handy and get on the CB. I want my check stopped."

Don't bother: Mr. Larson. The check has not been deposited and will be returned. Why Valera? Doesn't Galatea meet your exalted standards?

Of course she does. Conque burst out. She's brilliant! She's beautiful! She's perfect! She—"

"I'm handling this Charles. I repeat: Why Valera?"

"I don't buy whores at your prices."

"You think Galatea's a whore?"

"Yes."

"You contracted for the perfect mistress who would be faithful and loving and devoted to you."

Galatea let out a moan. "I'm sorry my love. you never knew I'd planned to tell you. but only after I was sure you were genuinely attracted to him. I never had any intention of forcing him on you."

"You wicked men!" she cried. "You're all hateful!"

And now Valera. you think of a mistress as a whore? Why this sudden eruption of archea morality?"

"It's a question of morality. damn you. It's a question of secondhand goods. I want no part of a shopworn woman "Must I stay here with him? Does he own me? Am I bought and paid for?"

"No. love. Come to us."

She dashed away from Valera's side and then hesitated. Claudia held out her arms, but Galatea surprised everybody by going to Manwright who took her gently. 

All right Valera. he said. Go now and take your army with you. Your check will be returned first thing in the morning.

"Not until I know who it was. Not until who was what?"

"The goddamn lover-boy who knocked her up."

"What?"

"She's pregnant. you goddamn pimp."

The bitch had been sleeping around, and I want to know the stink who knocked her up. He's got plenty coming."

After a long pause Manwright asked: Are you under a psychiatrist's care? Don't be ridiculous. No more ridiculous than your slandered Galatea pregnant? My lovely, tasteful young lady sleeping around with studs? You're obviously quite mad. Go."

"Mad am I? Ridiculous! You can't see that she's pregnant? Turn her around and look at her face in this ultralight. Look at her!"

"I'll go through the motions only to get rid of you."

Manwright smiled at Galatea as he turned the girl around. Just a gesture. love. You'll have your dignity back in a moment and I swear you'll never lose it again—"

"His words were cut off as if by a guil-lotine. In the ultralight from the glowing pool there was no mistaking the dark pregnancy band across Galatea's face, similar to the banded mask of a raccoon. He took a slow deep breath and answered the confusion in her eyes by placing a hand over her mouth."

"Go Galatea. This is now a familiy affair."

"I demand an answer. I won't leave until I know who it was. Your half wit bunchback Igor probably I can picture them in bed the slobbering idiot and the—"

Manwright's interruption was an explosion. He hurled Galatea into Claudia's arms drove a knife into Larson's groin tore the laser away from the convulsed man whirled Valera across the neck with the barrel and held the staggering chairman over the edge of the pool."

The piranhas are starving. he murmured. "Do you go in or get out?"

After the syndicate had left not without dire promises. Manwright turned up the house lights and extinguished the pool ultralight and with that the pregnancy stigma banding Galatea's face in a strange way they were all relieved. Now to play the district attorney, he said. But I must know how it happened."

"How what happened? Galatea demanded."

"Sweetheart, you are pregnant."

"No. no!"

"I know it can't be anyone in this house. Claudia has she been at all promiscuous outside?"

"No."

"How can you ask such questions? Has Galatea been alone with a man in a possibly intimate situation? You're hateful!"

"No."

"Reg. we all know that We've chap-tered Gally every moment outside you me. Claudia."

"Not every moment Charles. It could have happened with this innocent in five minutes."

"But nothing ever happened with a man! Nothing! Ever!"

"Dear love. you are pregnant. I can't be."

"You're undeniably Charles?"

"Gally I adore you. no matter what but Reg is right. The pregnancy band is undeni-able."

"But I'm a virgin Claudia."

"HE MNSMV STOPT."

"Her what have stopped?"

Conque sighed. Her menses? Reg Ah so."

"I'm a virgin you wicked delectable man. A virgin!"

Manwright took her frantic face in his hands. 'Sweetheart no recriminations no punishments. no Coventry but I must know where I snapped up how it happened. Who were you with? where and when?"

"I've never been with anyone anywhere or anytime."

"Never?"

"Never except in my dreams."

"Dreams? Manwright smiled. 'All girls have them. That's not what I mean. clear."

"Maybe. I should mean what. Claudia?"

"LATHALU HA DRM."

"Let her tell me her dreams? Why."

"JST LSN."

"All right. I'll listen Tell me about your dreams. love."

"No. they're private property."

"Claudia wants me to hear them. She's the only one I've ever told. I'm ashamed of them."

"Claudia fingerwagged. 'Tell him Gally. You don't know how important they are."

"No."

"Galatea Galante. are you going to disobey your nanny? I am ordering you to tell your dreams. please."

"Please nanny. No They're erotic. "I mean dear. That's why they're impor-tant. You must tell."

"At length Galatea whispered. "Put out the lights. please."

The fascinated Conque obliged. In the darkness she began. They're erotic. They're disgusting. I'm so ashamed. They're always the same - and I'm always ashamed - but I can't stop."

"There's a man a pale man. a moonlight man and If I want him I want him to handle me and ravish me into ecstasy b but he doesn't want me. so he runs. and I chase him. And I catch him. Th-
some sort of friends who help me catch him and tie him up. And then they go away and leave me alone with the moonlight man, and I go to him what I wanted him to do to me.

They could hear her trembling and rushing in her chair.

Very carefully Manwright asked, "Who is this moonlight man, Galatea?"

"I don't know."

"But you're drawn to him."

"Oh yes. I always want him."

"Just him alone, or are there other moonlight men?"

"Only him. He's all I ever want."

"But you don't know who he is. In the dreams do you know who you are?"

"Me just me."

"As you are in real life?"

"Yes, except that I'm dressed differently."

"Different how?"

"Beads and buckskin with fringe."

"They all heard Manwright gasp."

"Perhaps like a Red Indian."

"I never thought of that. Yes, I'm an Indian."

"An Indian squaw up in the mountains, and I make love to the paleface every night."

"Oh, my God! The words were squeezed out of Manwright. "They're no dreams."

"Suddenly he roared, "Light! Give me light! Charles! I got Light!"

"The brilliant lights revealed him standing and shaking, moonlight pale in shock."

"Oh, my God! My God!" He was almost incoherent. "Dear God, what have I created?"

"Matherter?"

"Reg?"

"Don't you understand? I know Claudia suspected, that's why she made Galatea tell me her dreams.

"But they're only dirty dreams, Galatea wailed. "What could possibly be the harm?"

"Damn you and damn me! They were not dreams. They were really in disguise. That's the harm. That's how your dreams lock in with my nightmares, which were really too Christ! I've generated a monster!"

"Now calm yourself, Reg, and do try to make sense.

"I can! There's no sense in it. There's nothing but that lunatic drop of acid I promised Valera."

"The mystery surprise in her?"

"You kept wondering what it was Charles."

"Well now you know if you can interpret the evidence."

"What evidence?"

Manwright forced himself into a sort of thunderous control. "I dreamed I was pursued and caught by Red Indians, tied up, and ravished by a sexy squaw. I told you yes?"

"Yes. Interminably."

"Galatea dreams she's a Red Indian squaw pursuing the capturing and ravishing a paleface she desires. You heard her?"

"I heard her."

"Did she know about my dreams?"

"No."

"Did I know about hers?"

"No."

"Coincidence?"

"Possibly."

"Would you care to bet on that possibility?"

"No."

"And you have it all. Those dreams were sleep versions or distortions of what was really happening, which neither of us could face awake. Galatea's been coming into my bed every night, and we've been making love.

"Impossible."

"Is she pregnant?"

"Yes."

"And I'm Valera's lover-boy, the stud responsible. My God! My God!

"Reg, this is outradiant! Claudia has Gally ever left her bed nights?"

"No."

"There!"

His words were cut off, as if by a guillotine.

"In the ultralight from the glowing pool there was no mistaking the dark pregnancy band across Galatea's face. He took a slow breath."

"Damn it! I'm not talking about a conventional human woman."

"I'm talking about an otherworld creature whose psyche is as physically real as her body, can materialize out of it to accomplish its desires and amalgamate again."

"An emotional double as real as the flesh. You've persisted about the delirious unexpected in my programming."

"Well here's the R = L × V/N. Galatea's a succubus."

"A what?"

"A succubus. A sexy female demon. Perfectly human by day. Completely conformist. But with the spectral power to come, like a carnal cloud, to men in their sleep, nights and seduce them.

"No! Galatea's an angel! I'm not that, I can't be."

"And she doesn't even know it. She's an unconscious demon."

"The laugh's on me Charles. Manwright said ruefully. "By God, when I do get her I'm a beauty!"

"I knocked myself out programming the Perfect Popsie with an engraving for Valera and she turns everything by switching her passion to me."

"No surprise. You're very much alike."

"I'm in no mood for jokes. And then Galatea turns out to be a succubus who doesn't even know it and has her will of me in her sleep every night."

"No! They were dreams. Dreams."

"Weren't they?"

"Manwright was having difficulty controlling his impatience with her damned obtuseness. How else did you get yourself pregnant, eh, an impotent female?"

"So you dare to argue with me, you impotent red saucebox! You know, he reflected, there should have been a smudge of Margaret Sanger in the programming."

"Never occurred to me."

"He was back to his familiar impossible self and everybody relaxed.

"What now, Reg?"

"Oh, I'll marry the snip, of course. Can't let a dangerous creature like Galatea out of the house."

"Out of your life, you mean."

"Never! Galatea's got the wits and the legal right to be her own stake every night when I'm awake."

"Corque laughed. "I see you do and I'm very happy for you both. But you know you'll have to court her."

"What! Cour? That impertinent red brat!"

"My dear Reg, can you grasp that she isn't a child anymore? She's a grown young woman with character and pride."

"Yes, she's had you in thrall since the moment she was poured."

"Manwright growled. "Then he sighed and accepted defeat. "But suppose you're right. My dear Igor!"

"Here matherter."

"Please set up that table again. Fresh service, candles, flowers and see if you can salvage the monsters you created for the dinner."

"White gloves."

"No breath, matherter."

"Not this evening. I see the Moult Rothschild's been smashed. Another bolt, please. And than my compliments to Miss Galatea Galant."

"She will have the forgiveness to dine with a demon and a most contite sultan."

"Present her with a corsage from me - something or this. This will be a fun reclamation."

"Charles he mused."

"Parley say rosemary and thyme."

"Elevate Man and Demon. Our boys will be devils, say sorry and the girls witches."

"But aren't they all?"
ALIEN LANDSCAPES

Science-fiction classics, as envisioned by talented visual artists, show four worlds of imagination

THE TIME MACHINE

"The Time Traveler led the way down the long, draughty corridor to his laboratory. We beheld a larger edition of the little mechanism we had seen vanish before our eyes. Cut by the horizon by the huge hull of the sun, red and motionless. The sky overhead was no longer blue. I cannot convey the sense of abominable desolation that hung over the world." — H.G. Wells
Paul looked down and saw sand spewing out of the metal and plastic beneath them… like a tan and blue beetle.

"Flecks of dust shadowed the sand around the crawler now. The big machine began to tip. A gigantic sand whirlpool began forming. Then they saw it. A wide hole emerged from the sand. Sunlight flashed from glistening white spokes within it. The hole’s diameter was at least twice the length of the crawler. Gods, what a monster!" muttered a man beside Paul. The men crowded around him, staring fearfully. — Frank Herbert
MISSION OF GRAVITY

"The world [Mesklyn] is rather surprising in several ways. Its equatorial diameter is forty-eight thousand miles. From pole to pole... it measures nineteen thousand... It rotates on its axis, making the day some seventeen and three quarter minutes long. At the equator I would weigh about four hundred eighty pounds... at the poles I'd be carrying something like six tons... A large part of the southern hemisphere will receive no sunlight for fully three quarters of the year and should in consequence develop frozen methane at the expense of the oceans... Tremendous storms rage across the equator carrying methane vapor... while the southern regions warm up... for creatures with liquid methane in their tissues." —Hal Clement

"The Earthman began to realize just what the winds of Mesklyn could do even in this gravity..."
From an embankment of the railroad, Chris sat silently watching the city of Scranton, preparing to take off.

There was no longer any reason why a vehicle to cross space needed to be small and compact. The most massive and awkward object could be lifted and hurled off the earth and carried almost any distance once antigravity was an engineering reality. Whole cities could be moved. —James Blish

CITIES IN FLIGHT

"There was no longer any reason why a vehicle to cross space needed to be small and compact. The most massive and awkward object could be lifted and hurled off the earth and carried almost any distance once antigravity was an engineering reality. Whole cities could be moved." —James Blish
The astronaut trainees had to be taken down a peg—or so their officers thought.

KINSMAN

BY BEN BOVA

Chet Kinsman is a young Air Force lieutenant, training to be an astronaut. His first mission in orbit, aboard a space shuttle, teams him with Lieutenant Frank Colt, black, brilliant, quick-tempered. Since Kinsman and Colt have scored highest among the astronaut trainees so far, the older officers in charge of the shuttle have decided to take them down a peg. Colt sees this as discrimination against him. And Kinsman realizes that his own chances to be an Air Force astronaut are inextricably linked with Colt’s.

From the enthralling novel Kinsman, published by Dial Press.

When he finally slid out of his bunk, Kinsman felt too keyed up to be tired. Colt seemed tensed like a coiled spring, too, as they pulled on their pressure suits.

So the Golddust Twins finally get their chance to go EVA. Smitty kidded them as he helped Kinsman with the zippers and seals of his suit. "I thought they were gonna keep us after school," Colt said. "for being naughty yesterday."

"Pierce'll find a way to take you guys down a notch," Jill said. "He's got that kind of mind."

"Democracy in action," Kinsman said. "Reduce everybody to the same low level."

"Hey!" Art Douglas snapped, from across the compartment, where he was helping Colt into his suit. "Your scores weren't that much higher than ours, you know."

"Tell you what," Colt said. "A couple of you guys black your..."
faces and see how you get treated." They laughed, but there was a nervous undertone to it.

Kinsman raised his helmet over his head and slid it down into place. "Still fits okay," he said through the open visor. "Guess my head hasn't swollen too much.

Captain Howard slid down the ladder railing, already suited up, but with his helmet visor open. The pouches under his eyes looked darker than usual; his face had a gray prison pallor.

"You both checked out?"

Mr. Personality thought Kinsman. Howard wasn't satisfied with the trainees' check of their suits. He went over them personally. Finally, with a sour nod, he waved Colt to the airlock. The lock cycled, and then Howard himself went through closing the metal hatch behind him.

Kinsman slid his visor down and sealed it. Turned to wave a halfhearted "so long" to the others then climbed into the airlock. The heavy hatch swung shut, and he could hear faintly the clatter of the pump sucking the air out of the phone booth-sized chamber. The red light went on. Signaling vacuum. He opened the other hatch and stepped out into the payload bay.

Colt and Howard seemed to be deep in conversation; back beside the only remaining satellite in the bay, Kinsman shuffled toward them, keeping the lightly magnetized soles of his boots in contact with the steel strips set into the deck plates.

Colt tapped Howard on the shoulder and pointed to Kinsman. "Like sombra divers in an underwater movie," Kinsman said to himself. Howard turned the knob on his left wrist, and held up four fingers.

"Kinsman touched the button marked Four on his own wrist logo.

Howard's voice immediately came through his earphones. "We're using channel four for suit-to-suit chatter. Ship's frequency is three, don't use it unless you have to talk to the flight deck."

"Yes, sir," said Kinsman.

"Okay. Let's get to work."

Under Howard's direction, Colt and Kinsman peeled away the protective aluminum cover from the third and final satellite in the bay. It was a large fat drum, tall as a man and so wide that Kinsman knew he and Colt could not grip it with their outstretched arms. The outer surface of the satellite was covered with dead black solar cells.

"Kinsman, you come up top here with me to unfold the antennas," Howard ordered.

Colt got back to the main bulkhead and opened the doors.

Floating up to the top of the satellite with the captain beside him, Kinsman asked, "What kind of a satellite is this? Communications?"

In a polar orbit?"

"Oh, no. I guess not. We've changed orbital planes so often that I didn't realize..."

"But with that one, Howard". Howard pointed to the largest antenna in the center of the drumhead.

Kinsman hung head-down over the satellite and read the assembly instruction printed on it by the light of his helmet lamp. The antenna support arms swung up easily and locked into place. Then he opened the parasol-folded parabolic dish that was the antenna itself.

"Now the waveguide."

"Howard commanded laconically.

"It's not an observation satellite."

Kinsman said as he worked. "No ports for cameras or sensors.

"Keep your mind on your work."

But what the hell is it for? Kinsman blurted.

With an exasperated sigh Howard said, "Strategic Command didn't bother to tell me, kid. So I don't know. Except that it's top secret and none of our damned business."

"Oh, ... a terror."

"A what?"

Scuttlebutt that we heard back at the academy, Kinsman explained. Satellites that gather electronic intelligence from other satellites. This bird's going into a high orbit right?"

Howard hesitated before answering "Yes," he replied.

Nodding inside his helmet, Kinsman went on. "She'll hang up there and listen on a wide band of frequencies mostly the freaks the Soviets use. Maybe some Chinese and European bands, too. She just sits in orbit and passively collects all their chatter, recording it. Then when she passes over a command station in the States they send up an order and she spits out everything she's recorded over the course of a day or a week. All data-compressed so they can get the whole wad of poop in a few seconds."

"Really?"

"Howard's voice was as flat and cold as an ice tray.

"Yes, sir. The Russians have knocked a few of ours down or so they told us at the academy."

"Howard's response was unintelligible. "Sir?" Kinsman asked.

"I said" he snapped. "I never went to the academy. I came up the hard way. So I don't have as much inside information as you bright boys."

"Touchy!"

"Colt, when the hell are you going to get them doors open?"

"I'm ready anytime, sir," Colt's voice came through the earphones. "Been waiting for your order."

"Well, open em up damn it and get back here."

Soundlessly, the big clamshell doors began to swing open. Kinsman started to return his attention to the satellite, but as the doors swung farther and farther back, he saw more and more stars staring at him. Hard, unwinking points of light, not like
ewels set in black velvet, as he had expected, not like anything he had ever seen before in his life.

"Glory to God in the highest," Kinsman heard himself whisper the words as he rose work forgotten, drifting up toward the infinitely beautiful stars.

Get your ass back here, Kinsman! Howard shouted. It was like ice picks jabbing at his eardrums.

"But I never thought," Kinsman found himself drifting halfway down the payload bay, high enough so that his head and shoulders were out in the open. He grabbed a hinge of the open door to steady himself.

Colt was beside him. "Fantastic!"

Kinsman realized his mouth was hanging open. But he didn't care. Inside the helmet, in the utter privacy of his impervious personal suit, he started at the universe, seeing it for the first time. It was endless, shining, hypnotically beautiful.

All right, all right!" Howard's voice was softer now. Sometimes I forgot how it hits some people the first time. You've had five minutes to see the show. Then we've got to get back to work or we'll miss the orbit-injection time. Here — Kinsman left a hand on his shoulder — don't go drifting loose. Use these for tethers.

He felt a line being hooked into one of the loops at the waist of his suit. Looking around, he saw Howard do the same thing for Colt.

"Go out and take a good look," Howard said. "Five minutes. Then we've got to count down the satellite.

Kinsman floated free outside the confines of the ship and let the full light of Earth shine on his face. It was dazzling, overpowering; an all-engulfing expanse of curving blue decked with brilliant white clouds. Hardly any land to be seen, just unbelievably blue seas and the pure white of the clouds.

It was huge, filling the sky, spreading as far as he could see. serene blue and sparkling white, warm, alive glowing a beckoning, beautiful world, the ancient mother of mankind. The earth looked untroubled from this distance. No divisions marred her face, not the slightest trace of the frantic works of her children, soiled the eternal beauty of the planet. It took a wrenching effort of will for Kinsman to turn his face away from her.

By turning his body, Kinsman could see the sun shining so fiercely that even his heavily tinted photochromic visor wasn't enough protection. He squeezed his tearing eyes shut and spun away angry yellow spotsches flecking his vision.

"Can't see the moon," he heard Colt say. "Must be on the other side of the earth, he answered.


"Christ, it's beautiful. When I consider thee heavens, the work of thy fingers, the moon and the stars, which thou hast ordained."

"All right, all right," Howard's voice broke through to them. "Time to get back to work. You'll get plenty of chances to see more, soon enough. Come on. Hurry it up.

Reluctantly Kinsman turned away from the stars and back to the dark interior of the payload bay. Colt turned behind him. Working with Captain Howard, they set the satellite on the shuttle's payload deployment arm, a long metal boom that swung the squat drumlike mechanism up and completely outside the emptied cargo bay.

"Good work," Howard said. He touched his keyboard and reported back to the flight deck.

"Now we wait," he said to Colt and Kinsman. "You guys were so good, we finished eight minutes ahead of schedule. Kinsman felt himself smiling at the captain. Not that they could see each other's faces through the tinted visors. But something had softened Howard. He's just as wiped out by all this grandeur as we are.

As the boom swung back inside the payload bay and folded itself into place along the deck, Captain Howard said, "Now for the final chore. It's a big one, we've been saving it for you boys.

Only he won't let his emotions show.

They switched their suit radars to the flight deck's frequency and listened to the final orbital maneuvering that placed the shuttle in the right spot for launching the satellite. Twice the control jets at the rear of the ship near the root of the big tail fin, flared — such quick puffs of light that they were gone before they had truly registered on Kinsman's eyes. When the moment came to release the satellite, it was utterly unsuspectable.

three two one said Major Jake's heavy voice.

There was no sound, just a brief puff of escaping gas as the tiny thruster built into the bottom end of the satellite pushed the drum away from the boom arm. The satellite quickly dwindled into the distance and disappeared among the stars.

As the boom swung back inside the payload bay and folded itself into place along the deck, Captain Howard said, "Now for the final chore. It's a big one. We've been saving it for you boys.

Kinsman tried to glance over at Colt, but when he turned his head all he saw was the inside lining of his helmet.

You were too excited to notice. Howard was explaining. 'But we haven't detached the booster fuel tank that we rode up on its still strapped to the orbiter's belly.' Can't forget with that thing hanging on us. Colt said.

Right. We have no intention of doing that. We're heading now for rendezvous point where the last six missions have separated their booster tanks and left them in orbit. One of these days, when the Air Force gets enough astronauts and enough money we're going to convert all those empty tanks into a permanent full-sized space station.

I'll be damned, Kinsman said grinning to himself.

"Your mission. Howard went on, 'is to separate our tank and attach it to the assembly that's already there.

Simple enough. Colt said. We did something like that at the neutral-buoyancy tank in Alabama."

It sounds easy, Howard said. But I won't be there to help you. You're going to be on your own with this one.

Okay, Kinsman said. "We can handle it without any trouble.

Howard said nothing for a long moment. Kinsman saw him floating before him, his dark visor looking like the death, empty eye of some deformed cyclops.

All right, the captain said at last. But listen to me. If something happens out there, don't panic. Do you hear me? Don't panic.

"We won't," Colt said.

What's he worried about? Kinsman wondered briefly.

But he put the thought aside as Howard began testing them on their proficiency with their suit-maneuvering units. They jetted themselves back and forth along the length of the empty payload bay, did pirouettes, planted their feet at precise spots that the captain called out to them — all on puffs of cold gas from the pistol-like thruster units.

There'll be no umbilicals or tethers on this task. Howard warned them. Too much tankage hanging around to foul up your lines. You'll be operating independently. On your own. Do you understand?

Sure.

"No funny stuff and no sightseeing. You won't have time for stargazing. Now fill your propellant and air tanks. I'm going inside to check with the flight deck."

Yes sir.

He's pretty edgy. Kinsman said on their suit-to-suit frequency after Howard had disappeared through the airlock. Just puttin us on man.

"I don't know. He said this is the most difficult task of the whole mission."

That's why they saved it for us, huh?

"Maybe. He could sense Colt shaking his head. Frowning. Don't let 'em get to you. He had other jobs like inspecting that Russian satellite. That was tougher than what we're gonna be doing.
"That was a one-man task," Kinsman said. "He didn't need a couple of rookies getting in his way. And the Reds probably have all sorts of alarm and detection systems on their birds.

"Yeah, maybe.

"He's a strange little guy."

"You'd think he'd have made major by now," Colt said.

Or light colonel. He's as old as Murdock. Maybe older.

"Yeah, but he's got no wings. Flunked out of flight training when he was a kid."

"Really? That's what Art was telling me. He's nothing more than a glorified tech specialist. No academy. Lucky he made captain. He was almost passed over.

"No wonder he looks pissed off most of the time."

Most of the time?

Kinsman said, "I got the feeling he enjoyed watching us go bananas over the stars."

"Hey, yeah. I forgot all about that."

Kinsman turned and rose slightly off the deck plates so that he could look out at the sky again. How quickly the miraculous becomes ordinary.

"Sure is some sight," Colt said from beside him.

"Makes me want to just drift out of here and never come back," said Kinsman. Just go on and on forever.

"You'd need a damned big air tank. Not a bad way to die if you've got to go Drifting alone. Silent, going to sleep among the stars.

That's okay for you maybe, but I intend to be shot by a jealous husband when I'm in my nineties," Colt said. "That's how I wanna go—bare-assed and humming."

"What's black?"

"The husband or the wife? Both of 'em. Honkies, man. Screwin' white talks is the best part of life.

Kinsman could hear his partner's happy chuckling.

Frank he asked, "Have you ever thought that by the time you're ninety there might not be any race problems anymore?"

"Colt's laughter deepened. "Sure. Just like we won't have any wars, and all God's chillun got shoes. That's just how it'll be."

All right, there it is. Captain Howard told them.

The three men were hovering just above the open clamshell doors of the payload bay, looking out at what seemed to Kinsman to be a giant stack of beer bottles. Except that they're aluminum, not glass.

Six empty propellant tanks, each of them nearly twice the size of the orbiter itself, were arranged in two neat rows. From this distance they could not see the connecting rods that held the assembly together.

You've got three hours." Howard told them. The booster tank linkages that held it to the orbiter are built to come apart and reattach to the other tanks.

"Yeah, yeah, we know," Colt said impatiently.

Kinsman was thinking, This shouldn't take more than an hour. Why give us three? Working in zero g on a task like this ain't easy. Howard said as if in answer to Kinsman's unspoken question. It's different from the water tank. You'll be floating free—no resistance at all. Every move you make will make you keep on moving until you make a countermove to cancel the motion.

"We learned all that in training," Colt insisted. And how we shouldn't overheat ourselves inside the suits.

"Yeah, sure you did. Pardon me. I should've remembered you guys know everything already. Howard's voice was acid again. All right, you're on your own. Just don't panic if anything goes wrong."

Almost an hour later, as they were attaching the empty propellant tank to the six others. Colt asked, "How many times we practice this stunt in training?"

"This particular business?"

"Huh, just taking pieces apart and reassembling them.

Kinsman locked up from the bolt-
thought, "from this?"

"I've heard of this before," Kinsman answered. "We did so much of this monkey work I thought they were training us to open a garage.

"Yeah. That's what I was thinking. Then why was Howard so shaky about us doing this? You haven't any troubles?"

Kinsman shrugged inside his suit, and the motion made him drift slightly away from the strut he was working on. He reached out and grabbed it to steady himself.

"I've spun myself around a couple times, he admitted. "It gets a little confusing, with no up or down. Takes some getting used to."

Colt's answer was a soft grunt.

"The suit heats up, too," Kinsman went on. "I've had to stop and leak it cool down a couple times.

"Yeah. Me, too. But no trouble."

"Maybe Howard's worried about us, being so far from the ship without letters."

"Maybe."

"But Colt didn't sound convinced."

"How's your end going?"

"I'm almost finished here."

"I oughta be done in another ten minutes. Three hours! This damned job's a piece of cake if ever Holy shit!"

Kinsman's whole body jerked at the urgency in Colt's voice. "What? What is it?"

"Look at the shuttle."

Turning so rapidly that he bounced his shoulder into the tank, Kinsman peered out toward the spacecraft some seventy-five meters away from them.

"They've closed the payload bay doors."

"Why the hell would they do that?"

"Colt jetted down the length of the tank stopping himself as nearly as an ice skater with a countering puff of cold gas from the thruster gun. Kinsman reached out and touched his arm."

"What the hell are they doing? he asked bewildered.

"Colt said, Whatever it is, I don't like it."

Suddenly a cloud of white gas jetted from the shuttle's nose. The spacecraft dipped down and away from them. Another soundless gape from the reaction jets back at the tail and the shuttle skewed side ways.

"What the hell don't they do?"

"The shuttle was sliding away from them scuttling crazily farther from the propellant tanks where they were stranded."

"They got trouble! Something's wrong."

Kinsman punched the stub on his wristport keyboard for the flight deck's radio frequency."

Kinsman to flight deck What's wrong? Why are you maneuvering?"

No answer. The shuttle was dwindling away from them rapidly now.

"Jesus Christ! Colt yelled. "They're gonna leave us here!"

"Captain Howard!" Kinsman said into his helmet mike. "He's trying to keep the tremble out of his voice. Major Podolski, Major Pierce is over here. Is this Kinsman? Colt and I are still outside the spacecraft! Answer please!"

"Nothing but the crackling hum of the radio's carrier wave."

"Those sons of bitches are standing up!"

Kinsman watched the shuttle gettin smaller and smaller. It seemed to be hurtling madly away from them. Although the rational part of his mind told him that the spacecraft was only drifting it hadn't fired its main engines at all. But the difference in relative velocities between the tankage as sembly and the shuttle was enough to make the two fly apart from each other.

Colt was moving Kinsman saw that he was aiming his thruster gun.

"Grabbing Colt's arm to stop him, Kinsman snapped: "No!"

Then he realized that his suit radio was still tuned to the flight deck's frequency.

"How many times have they called us hotshots, the Goldust Twins? We're the top two men on the list. They just want to rub our noses in the dirt a little...just like the upperclassmen used to do at the academy."

"We're safe enough. We've got four hours worth of air. As long as we don't panic we'll be okay. That's what Howard was trying to tell us."

"But why do they want something like this?" Colt's voice sounded calmer as if he wanted to believe Kinsman as if he needed to believe.

"Your paranoia's depressed you just when you need it most. Kinsman thought. He answered, "How many times have they called us hotshots, the Goldust Twins? We're the top two men on the list. They just want to rub our noses in the dirt a little...just like the upperclassmen used to do at the academy."

"You think so?"

"It's either that or we're dead."

Kinsman glanced at the digital watch set into his wristport keyboard. They allowed three hours for their task. They'd be back before that time is up. Less than two hours.

And if they're not?"

"Then we can panic."

"Lot's good."

"Won't do much good for us now either. If we're strangled here until they come back for us."

"Bastards! Colt muttered. Now he was convinced.

"With a sudden grin, Kinsman said, "Yeah but maybe we can turn the tables on them."

"How?"

"Follow me, my man."

Without using his thruster gun, Kinsman clambered up the side of the propellant tank and then drifted slowly into the nest created by the six other tanks.

Like a pair of skin divers floating in the midst of a pod of whales, Colt and Kinsman hung in emptiness, surrounded by the big curved hollow tanks.

"Now when they come back, they won't be able to see us on radar."

"And the tanks ought to block our suit to suit chatter. So they won't hear us."

"They'll think we panicked and jumped away."

"Right."

"Maybe that's what they want."

"But maybe they were just trying to get us to do what they d'have to do back at Vandenberg if they lost the two of us. Four officers careers down the drain."

"Colt piggled. Almost worth dying for."

"We'll let them know we're here."

"Kinsman said, "after they've worked up enough of a sweat. I'm not dying for anyone's joke, not even my own."

"They waited while the immense panorama of the earth flowed beneath them and the sick stars watched silently."

"I thought she split because we were down in Houston and Huntsville and she couldn't make it."

"Colt was saying, "She was with us, you know, and the pressure was on her a lot more than me."

"I didn't think Houston was that prejudiced. And Huntsville struck me as being pretty cosmopolitan."

99
He nodded.

I was going to let you stay here if you wanted to quit the Air Force.

He started to answer but his mouth was suddenly dry. He thought of the Academy: the cold, gray mountains and ranks of uniformed marching mechanically across the frozen parade ground. The starkly functional classrooms, the remorselessly efficient architecture devoid of all individual expression.

And he thought of his father cold implacable. Was it pride and anger that moved him or was it fear?

Then he turned back, looked past the woman across the table from him and saw the sky once again. A pale ghost of a moon was grinning lopsidedly at him.

I can't stay with you, he said quietly finally.

That was probably the biggest mistake of your life, he said to himself.

Frank Colt's sharp-edged voice brought him back to reality to the world he had chosen for himself.

I don't just wanna be good. Colt was saying. I got to be the best. I got to show these honkies that a black man is better than they are.

You're not going to win any friends that way.

Don't give me shit. I'm gonna be a general someday. Then you'll see how many friends I got.

Kinsman shook his head, chuckling. A general? Jeez, you sure got some long-range plans in your head.

Damn right! My brother he's all hot and fired up to be a revolutionary Gorn around the world looking for wars to fight against capitalists and injustice. Wanted me to join the underground here in the States and fight for justice against the Man.

Why doesn't he stay in the States?

Kinsman asked.

The FBI damn near grabbed him a year or so back. Last time he came home.

What for?

Hit a bank... to raise money for the People's Liberation Army.

He's one of those?

Not anymore. There ain't no PLA any

more. Most of 'em are dead, the rest scattered. I watched my brother play cops and robbers. Couldn't look at them as much as look at them. So I decided I ain't gonna fight the Man. I'm gonna be the Man.

"If you can't beat em ."

"Looks like I'm joining em. yeah. Colt said with real passion building in his voice.

But if you just work your way up the ladder to get to the top. Then I'll start giving the orders. And there are others like me too. We're gonna have a black president one of these days, you know.

And you'll be his chief of staff.

Could be."

"Where does that leave us?"

A small, sharp beeping sound startled in Kinsman's earphones. Emergency signal! Automatically both he and Colt switched to the shuttle's flight-deck frequency.

Kinsman! Colt! Can you hear me? This is Major Jakes. Do you read me?

The major's voice sounded distant, distorted by ragged static and very concerned.

Kinsman held up a hand to keep Colt silent. Then, switching to their suit-to-suit frequency he whispered. "They can't see us in here among the tanks. And they haven't picked up our suit-to-suit talk. The tanks are blocking it."

"We're getting their freak scattered off the tanks?" It was a rhetorical question.

Kinsman! Colt! Do you read me? This is Major Jakes.

Their two helmets were close enough for Kinsman to see the grin glittering on Colt's dark face.

Let 'em eat shit for a couple minutes hun.

Right.

The shuttle pulled into view and seemed to hover about a hundred meters away from the tanks. Switching back to the flight deck's frequency the two lieutenants heard Pierce, goddammit! If these two kids have been lost I'll put you up for a murder charge.

Now you're in on it too. Harry."

Howard's voice cut in. "I'm suited up. Going out the airlock."

"Should we get one of the trainees out to help search for them?" Pierce's voice.

"You've got two of them missing now. Jakes snarled. Isn't that enough? How about you getting your ass outside to help?"

me? But I'm..."

I think it would be a good idea, said a new voice with such weighty authority that Kinsman knew it had to be the mission commander Major Podolski. Among the three majors he was the longest in Air Force service and therefore as senior as God."

"Yeah, sir. Pierce answered quickly."

And you too, Jakes. You were all in on this. And it hasn't turned out very funny."

Colt and Kinsman holding on to one of the struts that connected the empty tanks could barely suppress their laughter as they watched the shuttle's cargo doors swing slowly open and three space-suited
Eli
space cities
by harry harrison

science fiction has presented bigger, better and more exciting cities than any others ever seen on the face of the earth. only recently have writers begun to see cities as places of oppression for mankind, after all, there have been more rural hells than urban ones in our history. memory is fleeting, so we should keep reminding ourselves that right up to the end of the twentieth century all the real action—artistic, social, financial—took place in the cities. the creative people left their bucolic backgrounds and made their way to london or new york or the major city of their choice. emily dickinson wrote that she never saw a train, going anywhere, that she did not want to board. this is meaningless to a happily ensconced city dweller but elicits a depth of response from someone of intellectual ambitions who is buried in booniesville.

so, writers who loved cities designed bigger and better ones for the future. wells in the sleeper awakens had the sleeper wake up in a city full of gadgets and transportation and communication wonders. most of the book-length utopias have been called utopias. then, when the pulp began churning along, cities grew in complexity and design. just as with the spaceship, it universal.
supercity came into existence: a concept shared by writers and illustrators. A writer could set a story in this city without going into too much background or detail. The reader accepted eagerly and read on. But city growth has its limits—reached in Asimov's Foundation series, with the planet-wide city of Trantor (transformed to Helior and examined in some depth in Harrison's Bill the Galactic Hero). There is a natural limit to this kind of growth: once you have the supercity built, you can either keep it running or destroy it. Or move it to a new dimension. Factories, power-generating satellites, spaceship stations, war satellites—all of them have to be built in space. But with the exception of James Blish's Cities in Flight, there are no gravity machines called spindizzies put into position around Manhattan Island—and left in the center! of New York City into space, a dazzling concept indeed. —New York followed by other cities that leave the tired economies of Earth for the excitement of the stars. For many years, the biggest city in space was in Clifford Simak's Limiting Factor, where the spacemen discover an artificial metal world that is so big that when they explore it they can make no sense of it at all. However, this world and all
the others are small-time when compared with the concept of physicist Freeman Dyson. He speculated that if all of the planets of the solar system were ground up and melted down, there would be enough material available to form a thin sphere about the sun—a giant shell that could be inhabited on its inner surface. This design was first used by Bob Shaw in Orbitville, which, though written earlier, was not published until 1975. Here the Earth explorers zip into the sphere and must spend years getting back to the entrance they originally came through. Dyson's design was also used by Larry Niven in Ringworld (1970), though he limited himself to a single band in space rather than to a sphere. For every inhabited alien city we find in SF there must be a dozen ruined ones. Exploring them is fun—as well as being dangerous—and rarely so well done as by Brian Piper in Omnilingual, where our scientists learn to translate the records of a vanished alien race. Sounds impossible—until the author explains logically just how it can be accomplished. On a much larger scale is Arthur C. Clarke's wandering planet in Rendezvous with Rama, where an entire abandoned world-city comes whistling through our solar system. Now inner-city violence seems to have put an end to the day of the
really "super" city. Authors are now returning to nature, the village, and the isolated house in the hills. The great cities are either dismembered or allowed to fall into ruins, warnings to the youth of the future of their ancestors' ways.

SF is basically a literature of entertainment. The limitations are only those of the author if you think big you write big. The open-minded philosophy of SF is a reflection of the best thinking in social and scientific man.
He walked barefoot along the beach. Above the city several of the brighter stars held for a few final moments against the wall of light from the east. He lingered a while, then hurried in the direction from which the sun would come. He watched for a long while until it had vanished from sight. Eventually it would begin slipping before then he had turned and was headed back to the city, the apartment, the girl.

Somewhere beyond the skyline a vehicle shot, burning its way into the heavens. He took the remainder of the night with it as faded. Walking on the wave the country as well as the sky and earth. It was a pleasant world and this a pleasant city—apart from as well as it was a world and this a city that had been three months now. He fingered the scar on his brow. He had let it pass him by to linger. There was another pending his consideration.

As he walked up Kami's street he saw that her apartment was still dark. Oddly, she would not even have missed him again. He pushed past the big front door and sat at the table opposite the stove. There were two off. She had used the stove. He fingered the scar on his brow. She had let it pass him by to linger. There was another pending his consideration.

He was in the kitchen preparing breakfast when he heard her sighing.

HALFJACK

Half-man, half-machine,
he roamed among the stars, seeking fulfillment

BY ROGER ZELAZNY

Painting by Michel Henricot
He turned and walked out of the room. Left the apartment, used the stairway, and departed from the building. Some passerby saw him more than a casual. Look cyborg pilots not being all that common in this sector. This did not bother him. His step lightened. He stopped in a payday and called the shipping company to tell them that he would haul the load they had in orbit. The sooner it was connected with his vessel, the better he said.

Loading the controller told him it would begin shortly. And he could ship up the same afternoon from the local field. Jack said that he would tie there and then break the connection. He gave the world half a smile as he put the seen to his face and swung on through the city westward.

Blue and pink world below him. Black sky above. The sun a snapshot snowfall all about the building. Shuttle pilot goodbye and keyed his aton. Entering the Morgana. He signed and set about stocking his gear. His cargo was already in place and the ground computers had transferred course information to the ship's brain. Hung his clothing in a locker and placed his body glove and hardcase in compartments.

He hurried forward then and settled into the controls which adjusted itself about him. A long dark unit sliding down from overhead and dropped into position at his right. It moved slowly making contact with various points on half his body.

—Good to have you back. How was your vacation Jack?

—Oh Fine. Resume. Meet any nice girls?

—A few.

—And here you are again. Did you miss things?

—You know it. How does this look today?

—Easy for us. I've already reviewed the course programs.

—Let's run over the systems.

—Check Care for some coffee?

—That'd be nice.

A small unit descended on his left stopping within easy reach of his mental hand. He opened its door. A bulb of dark liquid rested in a rack.

—Tired your arrival. Had it ready.

—Just the way I like it. Too much for the Thanks.

Several hours later when they left orbit he had already switched off a number of his left side systems. He was merged even more closely with the vessel absorbing data at a frantic rate. Their expanded perceptions took in the near ship vicinity and moved out to encompass the extrasolar panorama with greater than human clarity and precision. They reacted almost instantaneously to decisions great and small. It was good to be back together again.

Jack

—I'd say.

Morgana held him tightly. Their velocity built.
Charles has one of the first pacemakers ever built.
Simon Kress lived alone in a sprawling manor house among dry, rocky hills fifty kilometers from the city. So when he was called away unexpectedly on business, he had no neighbors he could conveniently impose on to take his pets. The catbird hawk was no problem; it roosted in the unused attic and customarily fed itself anyway. The sham-}

The article continues with a description of Simon Kress's life and the creatures he kept as pets, including the catbird hawk, which was described as capable of living alone and feeding itself. The passage discusses how Kress was called away unexpectedly on business and left his pets behind, which created a sense of uncertainty and tension. The text also alludes to a larger narrative context involving gambling and a city known as Asgard, suggesting a rich, detailed world in which the characters operate. The story is set against the backdrop of a place called Strange Waters, which is described as having nothing more exotic than piranha, glowsharks, and spirohounds, indicating a world where technology and nature intersect in unexpected ways. Throughout the passage, there are hints at deep character motivations, the consequences of choices, and the impact of unexpected events on the lives of the characters involved.
he wanted something new, something that would stand out.  
Near dusk he found himself walking down Rainbow Boulevard, looking for places he had not patronized before.  
So close to the starport, the street was lined by importers' marts. The big corporate emporiums had impressive long windows in which rare and costly alien artifacts were posed on felt cushions against dark drapes that made the interiors of the stores a mystery.  
Between them were the junk shops—narrow, nasty little places whose display areas were cramped with all manner of offworld bric-a-brac. Kress tried both kinds of shops with equal dissatisfaction.  
Then he came across a store that was different.  
It was very near the port. Kress had never been there before.  
The shop occupied a small, single-story building of modern design, set between a euphoria bar and a temple brothel of the Secret Sisterhood.  
Down this far Rainbow Boulevard grew tacky. The shop itself was unusual.  
Attracting the windows were full of mist—now a pale red, now the gray of true fog, now sparkling and golden. The mist swirled and eddied and glistened faintly from within.  
Kress glimpsed objects in the window—machines. pieces of art. Other things he could not recognize—but he could not get a good look at any of them. The mist flowed sensuously around them, displaying a bit of first one thing and then another then cloaking all. It was intriguing.  
As he watched, the mist began to form letters. One word at a time. Kress stood and read:  
"WO AND SHADE IMPORTERS. ARTIFACTS, ART LIFERFORMS AND MORE.  
The little shops. Through the fog Kress saw something moving. That was enough for him. That and the LIFERFORMS in their advertisement. He swept his walking cloak over his shoulder and entered the store.  
Inside, Kress felt disoriented. The interior seemed vast, much larger than he would have guessed from the relatively modest frontage. It was dimly lighted. The ceiling was a starscape, complete with spiral nebulae. Very dark and realistic in very nice.  
All the shop's show faintly to better display the merchandise within. The aisles were carpeted with ground fog. It came almost to his knees in places and swirled about his feet as he walked.  
Can I help you?  
She almost seemed to have risen from the fog. Tall and gaunt and pale she wore a practical gray jumpsuit and a strange little cap that rested well back on her head.  
Are you Wo or Shade? Kress asked.  
Oh, only sales help?  
Jala Wo ready to serve you she repeated. Shade does not see customers. We have no sales help.  
You have quite a large establishment.  
Kress said, Odd that I have never heard of you before.  
We have only just opened this shop on Baldur. The woman said. 'We have franchises on a number of other worlds. However. What can I sell you? Art. perhaps? You have the look of a collector. We have some fine Nof Talush crystal carvings.  
No, Kress said. I own all the crystal carvings I desire. I came to see about a pet.  
A lifeworld?  
Yes.  
Alien?  
Of course.  
We have a mimic in stock. From Celza's World. A clever little simian. Not only will it learn to speak but eventually it will mimic your voice, inflections, Mistes, even facial expressions.  
Cute, said Kress. And common. I have no use for either. Wo. I want something exotic.  
Unusual. And not cute. I detest cute animals. At the moment I own a namolier. Imported from Cothol. It's no mean expense.  
From time to time I feed him a litter of un-
wanted kittens. That is what I think of cute kittens. Do I make myself understood?
Wool: smiled enigmatically. Have you ever owned an animal that worshiped you? She asked.
Kress grinned. Oh, now and again. But I don't require worship. Wool just entertained me.
You misunderstand me. Wool said, still wearing her strange smile. I meant worship literally.
What are you talking about?
I think I have just the thing for you. Wool said. Follow me.
She led him to the radiant counters and down a long, top-sharded aisle beneath false starlight. They passed through a wall of mist into another section of the store. Then stopped in front of a large plastic tank. An aquarium. Kress thought.
Wool beckoned. He stepped closer and saw that he was wrong. It was a terrarium. Within it was a miniature desert about two meters square. Pale sand tincted scarlet by wan red light. Rocks, salt, and quartz and granite in each corner of the tank stood a castle.
Kress blinked and peered and corrected himself. Actually, there were only three castles standing. The fourth leaned, a crumbled broken ruin. The three others were crude but intact carved of stone and sand. Over their battlements and through their rounded porticos tiny creatures climbed and scrambled. Kress pressed his face against the plastic. Insects? he asked.
No. Wool replied. A much more complex and wonderful system. More intelligent, as well. Smarter than your shambler by a considerable margin. They are called sandlings.
Insects. Kress said, drawing back from the tank. I don't care how complex they are. He frowned. And don't try to build them with this tank of intelligence. These things are too small to have anything but the most rudimentary brains. They share the hiveminds. Wool said. Castle-minds, in this case. There are only three organisms in the tank. Actually, the fourth died. You see how her castle has fallen.
Kress looked back at the tank. Hiveminds, he thought. Intrigued. He frowned again. Still, it's only an oversized ant farm. I'd hoped for something better.
The tank then kept it there for a few days. The face of god's grace? I fed them. I am always close. They have a rudimentary cosmic sense. Proximity tells them where the other organisms are. They sense me and worship me. They do it by using my face to decorate their buildings. All the castles have them. They are hiveminds.
On the castle, the face of the world, Woal was serene and peaceful. Very well, Kress marvelled at the wonderful creature. How do they do it?
They have fingers of a sort, three small flexible tentacles. And they cooperate well both in building and in battle. Remember all the mobility of one color share a single mind.
Tell me more, Kress requested.
Wool smiled. The maw lives in the castle. Wool, Wool is the name for her, I'm not sure. There is a thing called the mother and stomach both. Female, large as your fist. Immobile. Actually, sandling is a bit of a misnomer. The mobiles are peasants and warriors. The real ruler is a queen. But that analogy is faulty as well. Considered as a whole, each cast has a single hermaphroditic creature. What do they eat?
"The mobiles eat pap, predigested food obtained inside the castle. They got it from the maw after she has worked on it for several days. Their stomachs can hold something else. If the maw dies, they starve, as well. The maw. The maw eats anything. You'll have no special expense there. Table scraps will do excellently.
Live food? Kress asked.
Wool shrugged. Each maw eats mobiles from the other castles, as well. I am intrigued, he admitted. If only they weren't so small.
You're can be larger. These sandlings are small because their tank is small. They seem to limit their growth to fit available space. If I moved them to a larger tank they'd start growing again.
Hmmm. My piranha tank is twice this size and vacant. It could be cleaned out, filled with sand.
Wool and Shade would take care of the installation. It would be our pleasure.
Of course, Kress said. It would be our pleasure.
Certainly. Wool said. They began to haggle about the price.

Three days later, Welis Wolis arrived at Simon Kress's estate with dormant sandings and a work crew to take charge of the installation. Kress's assistants were aliens unalike any Kress was familiar with—square broad nearly with four arms and bulging multicolored eyes. Their skin was thick and leathery and twisted into horns and spines and protrusions at odd places upon their bodies. They were very strong and good workers. They ordered them about in a musical tongue that Kress had never heard before.
In a day it was done. They moved his piranha tank to the center of his spacious living room. He arranged couches on either side of it for better viewing. Scrubbed it clean and filled it with the wonderful world of way up with sand and rock. Then they installed a special lighting system to provide the dim red illumination the sandlings preferred to project holographic images into the tank. On top they mounted a sturdy plastic cover with a feeder mechanism built in. This way you can feed your sandlings without removing the top of the tank. Kress explained. You would not want to take any chances on the mobile escaping.
The cover also included climate control devices to condense just the right amount of moisture from the air. You want it dry, but not too dry. Wool said.
Finally one of the four armed workers climbed into the tank and dug deep pits in the bottom. One of his companions handed the dormant maw over to him, removing them one by one from their fostered cryogenic storage cases.
They were nothing to look at. Kress decided. They resembled nothing so much as oiled, half-spoiled chunks of raw meat. Each with a mouth. The alien buried them one in each corner of the tank. Then the work party
sealed it all up and took their leave.

The heat will bring the maws out of dormancy. Wo said. In less than a week mobiles will begin to hatch and burrow up to the surface. Be certain to give them plenty of food. They will need all their strength until they are well established. I would estimate that you will have castles rising in about three weeks.

And my face? When will they carve my face?

Turn on the hologram after about a month, she advised him, and be patient. If you have any questions, please call Wo and Shade are at your service. She bowed and left.

Kress wandered back to the tank and in a joy stick. The desert was still and empty. He drummed his fingers impatiently against the plastic and frowned.

On the fourth day Kress thought he glimpsed motion beneath the sand—subtle subterranean wriggings.

On the fifth day he saw his first mobile, alone white.

On the sixth day he counted a dozen of them: whites and reds and blacks. The oranges were terry. He cycled through a bowl of half-decayed table scraps. The mobiles sensed it at once. Rushed in and began to drag pieces back to their respective corners. Each color group was highly organized. They did not fight. Kress was a bit disappointed, but he decided to give them time.

The oranges made their appearance on the eighth day. By then the other sandkings had begun carrying small stones and erecting crude fortifications. They still did not war. At the moment they were only half the size of those he had seen at Wo and Shade's b. Kress thought they were growing very rapidly.

The castles began to rise midway through the second week. Organized battalions of mobiles dragged heavy chunks of sandstone and granite back to their corners. Where other mobiles were pushing sand into place with mandibles and tentacles, Kress had purchased a pair of magnifying goggles so that he could watch them work wherever they might go in the tank. He wandered around and around, he tal plastic walls. Observing it was fascinating.

The castles were a bit plain than Kress would have liked, but he had an idea about that. The next day he cycled through some obsidian and flakes of colored glass. Along with the top. Within hours they had been incorporated into the castle walls.

The black castle was the first completed followed by the white and red fortresses. The oranges were last as usual. Kress took his meals into the living room and ate seated on the couch so he could watch. He expected the first war to break out any hour now.

He was disappointed. Days passed, the castles grew taller and more grand. And Kress secretly left the tank except to attend to his sanitary needs and to answer all business calls. But the sandkings did not war. He was getting upset.

Finally he stopped feeding them.

Two days after the table scraps had ceased to fall from their desert sky, four black mobiles surrounded an orange and dragged it back to their maw. They started it first in the mandibles and antennae and limbs, and carried it through the shadowed man-gate of their miniature castles. It never emerged. Within an hour more than forty orange mobiles marched across the sand and attacked the blacks' corner. They were outnumbered by the blacks that came rushing up from the depths. When the fighting was over, the attackers had been slaughtered. The dead and dying were taken down to feed the back maw.

Kress delighted congratulated himself on his genius.

When he put food into the tank the following day, a three-cornered battle broke out over its possession. The whites were the big winners.

After that war followed war.

Almost a month to the day after Jala Wo had delivered the sandkings, Kress turned on the holographic projector and his face materialized in the tank. It turned slowly, around and around, so that his gaze fell on four castles equally. Kress thought it rather a good likeness. It had his same grim, wide mouth, full cheeks. His blue eyes sparkled. His gray hair was carefully arranged in a fashionable side-sweep, his eyebrows were thin and exaggerated.

Soon enough the sandkings set to work. Kress fed them lavishly and his maw beamed down at them from their sky. Temporarily the war stopped. An activity was directed toward worship.

His face emerged on the castle walls.

At first all four castles looked alike to him, but as the work continued and Kress studied the reproductions, he began to detect subtle differences in technique and execution. The reds were the most creative using tiny flakes of slate to portray the eyes in his hair. The white idol seemed young and mischievous to him, while the face seemed

The attacking sandkings washed over the spider. Mandibles snapped shut on legs and abdomen, and clung. One of them found an eye, ripped it loose. Kress smiled and pointed.
Kress's other guests were full of questions.

"Where did the sandings come from?" they wanted to know. "From Wo and Shade. Importers. They heard with a polite gesture toward Jala Wo, who had remained quiet and apart throughout most of the evening.

"Why did they decorate their cities with this likeness? Because I am the source of all good things. Surely you know that? This isn't brought on a round of chuckles.

"Will they fight again? Of course, but not tonight. Don't worry. There will be other parties."

Jad Rakiss, who was an amateur entomologist, began talking about other social insects and the wars they fought. "These sandings are amusing, but nothing really. You ought to read about Terran soldier ants for instance.

Sandings are not insects. Jala Wo said sharply but Jad was off and running and no one said her the slightest attention. Kress smiled at her and shrugged.

Malacia Blane suggested they have a betting pool the next time they got together to watch a war and everyone was taken with the idea. An animated discussion about rules and odds ensued. It lasted for almost an hour. Finally, the guests began to take their leave.

Jala Wo was the last to depart. So Kress said to her when they were alone, "I appear my sandings are a hit."

"They are doing well. Wo said. Already! They are larger than my own."

"Yes, Kress said—except for the oranges."

I had noticed that. Wo replied. They seem few in number and their castle is shabby.

Well someone must lose Kress said.

The oranges were able to emerge and get established. They have suffered for it.

Pardon. Wo said, "but might I ask you if you are feeding your sandings sufficiently?"

Kress shrugged. "They die from time to time. It makes them fiercer."

She frowned. There is no need to starve them. Let them war in their own time for their own reasons. It is their nature and you will witness conflicts that are delightfully subtle and complex. The constant war brought on by hunger is artless and degrading.

Kress replied. Wo's frown with interest. You are my house. Wo and here I am the judge of what is degrading. I had the sandings as you advised and they did not fight.

"You must have patience, Wo said. I am their master and their god after all. Why should I wait on their impulse? They did not war often enough to suit me. I have corrected the situation."

"I see," said Wo. "I will discuss the matter with Siaoe."

It is none of your concern, or mine, Kress snapped.

I must bid you goodnight then. Wo said with resignation. But at she slipped into her coat, to leave she fixed him with a final disapproving stare. Look to your faces. Simon Kress she warned him. Look to your faces. And she departed.

Puzzled, he wandered back to the tank and stared at the castles. His faces were still there as ever. Except—
he snatched up his magnifying goggles and slipped them on. He studied the faces for long moments. Even then his glance was full of the faces that was hard to make out. But I seemed to him that the expression on the faces had changed slightly that his smile was somehow twisted so that it seemed a touch malicious. But it was a very subtle change—if it was a change at all. Kress finally put down his suggestion and he resolved not to invite Jala Wo to any more of his gatherings.

Over the next few months Kress and about a dozen of his favorites got together weekly for what he liked to call his war games. Now that his initial fascination with the sandings was past, Kress spent less time around his tank and more on his business affairs and his social life. But still the wild feeling of being the first party had not left him. He often dreamed of sandings, which divined vividly until Kress began to wonder whether their maw was dead. But the others did well enough.

Sometimes at night when he could not sleep, Kress would take a bottle of wine into the living room, where the red glow of his miniature desert world lit the only light. He would drink and watch for hours. Once there was usually a light going off somewhere. When there was not he could easily start one by dropping some small morsel of food into the tank.

Kress's companions began betting on the weekly battles, as Malacia Blane had suggested. Kress won a goodly amount by betting on the whites, which had become the most powerful and most numerous colony in the tank and which had the grandest castle. One week he sided the corner of the tank top aside and he dropped the food close to the white castle instead of on the central battleground. Where he usually let food fall. So the others had to tack the whites in the strongest battery of all. They tried. The whites were on the defense. Kress won a hundred dollars. Later. Jala Rakiss.

Rakis in fact lost heavily on the sandings almost every week. He pretended to a vast knowledge of them and he was exclaiming that he had studied them all first party but he had no luck when came to placing his bets. Kress suspected that his Rakiss claims were empty boasting. He had tried to study the sandings at close range—moment of die curiosity tying in to the brassy to find out what world his pet originally came from. But the library had no listing for sandings. He wanted to get in touch with Wo and ask her about it.
had other concerns and the matter kept slipping his mind.

Finally, after a month in which his losses totaled more than a thousand standers, Rakke arrived at the war games. He was carrying a small plastic case under his arm. Inside was a spiderlike thing covered with fine golden hair.

A sand spider. Rakke announced.

From Cathay I got it this afternoon from Etherene the Pselllaqer. Usually they remove the poison sacs. But this one is intact. Are you game, Simon? I want my money back. I'll bet a thousand standers a sand spider against sandkings.

Kress studied the spider in its plastic prison. His sandkings had grown—they were twice as large as Wos, as predicted—but they were still dwarfed by this thing. It was venomous, and they were not. Still, there were an awful lot of them. Besides, the endless sandkings was lately had begun to grow tiresome. The novelty of the match intrigued him.

"Done. Kress said. Jad, you are a fool. The sandkings will just keep coming until this ugly creature of yours is dead.

"You are the fool, Simon. Rakke replied, smiling. The Cathayans sand spider customarily feeds on burrowers that hide in nooks and crevasses. And—well watch—it will go straight into those castles and eat the maws.

Kress scowled amid general laughter. He hadn't counted on that. Get on with it.

he said irritably. Then he went to refresh his drink.

The spider was too large to be cycled conveniently through the food chamber. Two other guests helped Rakke slide the tank over slightly to one side, and Malada Bane handed his case up to him. He shook the spider out. It landed lightly on a miniature dune in front of the red castle and stood confused for a moment. mouth working, legs twitching menacingly.

"Come on. Rakke urged. They all gathered around the tank. Kress found his magnifiers and slipped them on. If he was going to lose a thousand standers at least he wanted a good view of the action. The sandkings had been the invader. All over the red castle activity had ceased. The small solder mobiles were frozen watching.

The spider began to move toward the dark promise of the gate. From the tower above, Simon Kress's countenance stared down impassively.

At once there was a flurry of activity. The nearest red mobiles formed themselves into triangles and streamed over the dunes. The maws,Recall came scuttling over the dunes, Recall led to fight.

Battle was joined. The attacking sandkings washed over the spider. Mandibles snapped shut on legs and abdomen. And a few. Rakkis wiped the golden legs. The spider's back. They bit and tore. One of them found an eye and ripped it loose with tiny yellow tendrils. Kress smiled and pointed.

But they were small, and they had no venom, and the spider did not stop. Its legs flicked sandkings off to either side. Its dripping jaws found others and left them broken and stuttering. A ready dozen of the reds dying. The sand spider came on and on. It shred straight through the triple line of guardians before the castle. The lines closed around it, covered it, waging desperate battle. A team of sandkings had bitten off one of the spider's legs. Defenders leaped from atop the towers to and on the twitching, heaving mass.

Lost beneath the sandkings the spider somehow lurched down into the darkness and vanished.

Rakke drew out a long breath. He looked pale. Wonderful, someone else said. Malada Bane chuckled deep in her throat. Look said. I am a Noredrian, as well as thinking Kress by the arm.

"They had been so intent on the struggle in the corner that none of them had noticed the activity elsewhere in the tank. But now the case was still, and the sands were empty save for dead red mobiles and now they saw.

Three armies were drawn up before the red castle. They stood quite still in pretense of formation. That was the habit of the valiant. Rakke had trained them. The red mobiles were ready to send the sandkings down to the darkness under the castle.

But Rakke did not move. "Teams of mobiles were sealing up the gates with sand and stone. If the spider somehow survived this encounter it would find no entrance at the other castles. I should have brought four spiders. Dak, Rakke said.

Rakke did not reply. He waited. There was motion in the shadows.

At once red mobiles began pouring out of the gate. They took their positions on the castle and began repaving the damage that the spider had wrought. The other armies dissolved and began to retreat to their respective corners.

Jad Kress said. I think you are a bit confused about who is eating whom.

The following week Rakke brought four slim silver snakes. The sandkings dispatched them without much trouble.

Next he tried a large black bird. It was more than thirty white mobiles, and its thrashing and blundering virtually destroyed that castle. But ultimately its wings gave out, and the sandkings attacked in force wherever it landed.

After that it was a case of insects armored beetles not too unlike the sandkings themselves. But stupid, stupid. An allied
force of oranges and blacks broke their formation divided them and butchered them.

Kress began giving Kress promissory notes.

It was around that time that Kress met Cath m Lane again one evening when he was dining in Asgard at his favorite restaurant. He stopped at her table briefly and told her about the war games inviting her to join them. She flushed then regained control of herself and grew icy. Someone has to put a stop to you Simon I guess it's going to be me she said.

Kress shrugged and enjoyed a lovely meal and thought no more about her threat. Until a week later when a small stout woman arrived at his door and showed him a police wristband. We've had complaints she said. Do you keep a tank full of dangerous insects Kress?

Not insects he said furiously Come Ill show you.

When he had seen the sandkings she shook her head This will never do. What do you know about these creatures anyway Do you know what would happen if they were cleared by the Ecological Board? Do you have a license for these things We have a report that they reproduce and are possibly dangerous. We also have a report that they are semisentient. Where did you get these creatures any way?

From Wo and Shade Kress replied. Never heard of them the woman said probably smuggled them in knowing our ecologists would never approve them. No Kress this won't do. I'm going to confiscate this tank and have it destroyed. And you're going to have to expect a few fines as well.

Kress offered her a hundred standards to forget all about him and his sandkings.

She asked. Now I have so added blood all the charges against you.

Not until he raised the figure to two thousand standards was she willing to know she said. There are forms to be altered records to be wiped. And getting a forged license from the ecologists will be time consuming. Not to mention dealing with the complainant. What if she calls again?

Leave her to me Kress said. Leave her to me.

He thought about it for a while. That night he made some calls.

First he got to Etherane the Pescailor I want to buy a dog he said. A puppy.

The round-faced merchant gawked at him a puppy That is not like you Simon Why don't you come in I have a lovely choice.

I want a very specific kind of puppy Kress said. Take notes I'll describe to you what it must look like.

Afterwards he punched for Lli Noragian id I said I want you out here tonight with your hole equipment I have a notion to record a sandking battle. A present for one of my friends.

The night after they made the recording Kress stayed up late. He absorbed a controversial new drama in his sensorium fixed himself a small snack smoked a couple of joy sticks and broke out a bottle of wine. Feeling very happy with himself he wandered into the living room glass in hand.

The lights were out. The red glow of the terrain made the shadows look flushed and leavenish. Kress walked over to survey his domain curious as to how the blacks were doing in the repair on their castle. The puppy had left it in ruins.

The restoration went well. But as Kress inspected the work he noticed the sandking hadn't returned. He chanced to glance closely at the face on the sand-cast wall it startled him.

He drew back blinked took a healthy gulp of wine and looked again.

The face on the wall was still his. But it was all wrong all twisted. His cheeks were

**He smiled and lowered his firing hand. "Cath was always hard to swallow," he said, delighted at his wit. "Especially for one your size. Here let me give you some help. What are gods for, after all?**

bloated and piggin his smile was a crooked leer he looked impossibly malevolent.

Uneasy he moved around the tank to inspect the other castles. They were each a bit different but ultimately all the same.

The oranges had left out most of the fine detail but the result still seemed monstrous crude a brutal mouth and mindless eyes.

The red gave him a satanic twiching sort of smile. His mouth did odd unhappy things at its corners.

The whites his favorites had carved a cruel idiot god.

Kress flung his wine across the room in rage you dare he said under his breath. Now you wont eat for a week you damned His voice was shrill I'll teach you.

He had an idea. He strode out of the room then returned a moment later with an antique iron throwing sword in his hand. It was a meter long and the point was still sharp. Kress smiled climbed up and moved the tank cover aside just enough to give him working room exposing one corner of the desert. He leaned down and jabbed the sword at the white castle below him. He waved it back and forth smashing towers and ramparts and walls. Sand and stone collapsed burying the screaming moributes. A flick of his wrist obliterated the features of the insolent insulting caricature that the sandkings had made of his face.

Then he posed the point of the sword above the dark mouth that opened down into the maw's chamber. He thrust with all his strength meeting with resistance. He heard a soft squishing sound. All the mobiles trembled and collapsed. Satisfied Kress pulled back.

He watched for a moment wondering whether he had killed the maw. The point of the throwing sword was wet and slimy. But finally the white sandkings began to move again—fearfully slowly—but they moved.

He was preparing to slide the cover back into place and move on to a second castle when he felt something crawling on his hand.

He screamed dropping the sword and brushed the sandking from his flesh. It fell to the carpet and he grabbed it beneath his heel crushing it thoroughly long after it was dead. It had crunched when he stopped on it. After that trembling he hurriedly sealed the tank up again. He rushed off to shower and inspected himself carefully. He boiled his clothing.

Later after drinking several glasses of wine he returned to the living room. He was a bit ashamed of the way he had been terrorized by the sandking. But he was not about to open the tank again. From then on the cover would stay sealed permanently. Still he had to punish the others.

He decided to lubricate his mental processes with another glass of wine. As he finished it an inspiration came to him. He went to the tank and made a few adjustments to the humidity controls.

By the time he fell asleep the couch with the wine glass still in hand the sandcastles were melting in the rain.

Kress woke to angry pounding on his door.

He sat up groggy his head throbbing. Wine hangovers were always the worst he thought. He lurched to the entry chamber.

Cath m Lane was outside. You monster she said her face swollen and puffy and streaked with tears I killed all night damn you But no more Simon no more.

Easy he said holding his head I've got a hangover.

She swore and shoved him aside and pushed her way into his house. The shambler came peering round a corner to see what the noise was. She spat at it and stalked into the living room.

Kress trained insensitively after her. Hold on for me said he. where do you can't stop he shouted suddenly horror-struck She was carrying a heavy sledgehammer in her hand. No he said.

She went directly to the sandkings tank. You like the little charmers so much Simon Then you can live with them
"Cath," he shrieked.

Gripping the hammer with both hands, she swung at her head and she could against the side of the tank. The sound of the impact set the tank's head to screaming and he made a loud clanging sound of despair. But his hand was thick with the hammer.

She swung again. This time there was a crack and a network of thin lines appeared in the wall of the tank. Kress threw herself at her as she drew back her hammer to take a third swing. They went down and locked and rolled over. She lost her grip on the hammer and tried to throttle him, but Kress wrenched free and bit her on the arm. Drawing blood. They both staggered to their feet, panting.

You should see yourself. Simon. She said grimly. Blood dripping from your mouth. You look like one of your pets. How do you like the taste?

Get out, she said. He saw the throwing toward where it had fallen during the night before and he snatched it up. Get out he repeated. Waving the sword for emphasis. Don't go near that tank again.

She laughed at him. You wouldn't care, she said. She bent to pick up her hammer. Kress shrieked at her and unclung. Before she quite knew what was happening, the iron blade had gone clear through her abdomen. Cath'm Lane at him, wonderingly and down. The sword Kress left back whispering. I didn't mean it, I only wanted.

She was transfixed. Bleeding nearly dead, but somehow she did not feel afraid. You monster. She managed to say though her mouth was full of blood. And she whimpered, the sword in her hand and swung with her last strength at the tank. The tortured wall shattered, and Cath'm Lane was buried beneath an avalanche of plastic and sand and mud.

Kress made small hysterical noises and screamed up onto the couch.

Sandspores were emerging from the tank on his living floor. They were crawling across Cath's body. A law of them ventured tentatively out across the carpet. More followed.

He watched as a column took shape. a living, writhing square of sandspores. bearing something—something slimy and featureless. A piece of raw meat as big as a man's head. They began to carry it away from the tank. It pulsed.

That was when Kress broke and ran.

Before he found the courage to return home, he ran to his skimmer and flew to the nearest city some fifty kilometers away, a most sick with fear. But, once safely away, he found a small restaurant, downed several mugs of coffee and two half-hangover tabs. ate a full breakfast. and gradually regained his composure.

It had been a dreary morning but dwelling on that would serve nothing. He ordered more coffee and considered his situation with icy rationality.

Cath'm Lane was dead at his hand. Could he report it and plead that it had been an accident? Unlike. He had run through after all, and he had already told that police officer to leave him to his work. He would have to get rid of the evidence and hope that Cath had not told anyone her plans for the day. It was very unlikely she had. She could only have gotten the gift late that night. She said that she had cried all night and she was alone when she arrived. Very well. He had one body and one skimmer to dispose of.

That left the sandspores. They might prove more of a difficulty. No doubt they had all escaped, but now the thought of them around his house in his bed and his clothes, digesting his food. It made him shudder. He shuddered and overcame his revulsion. They really should not be too hard to kill them. He reminded himself. He didn't have to account for every mobile. Just the four maws that was all. He could do it. They were large, as he'd seen. He would find them and kill them. He was their god.

When he shoved her, she locked briefly. She screamed as she tumbled down the stairs. "I'm hurt," she called. and shortly afterward. the screaming started.

He went shopping before he flew back to his home. He bought a set of synthins that would cover him from head to toe. several bags of poison pellets forrockchuck control and a sorry canister containing an illegally strong pesticide. He also bought a magnesium riding device.

When he landed late that afternoon he went about things methodically. First, he hooked Cath's skimmer to his own with the magsnack. Searching it, he had his first piece of luck. The crystal chip with the Norredorian hole of the sandspore light was on the front seat. He had warned about that.

When the skimmer was ready, he stepped into his synthins and went in. side to get Cath's body.

It wasn't there.

He poked through the last-drying sand carefully and there was no doubt of it. the body was gone. Could she have dropped herself away? Unlikely, but Cath searched.

A cursory inspection of his house turned up neither the body nor any sign of the sandspores. He did not have time for a more thorough investigation not with the incurring skimmer outside his front door.

He resolved to try later.

Some seventy kilometers north of Cath's estate was a range of active volcanoes. He flew there. Cath's skimmer in tow. Above the glowing cone of the largest volcano, he released the magsnack and watched the skimmer plummet down and vanish in the lava below.

It was dusk when he returned to his house. This gave him pause. Briefly he considered flying back to the city and spending the night there. He felt the thought aside. There was work to do.He wasn't safe yet.

He scattered the poison pellets around the exterior of his house. No one would think this suspicious. He had always had a rockchuck problem. When this task was completed, he returned to his canister of plastic and ventured back inside the house.

Kress went through the house room by room turning on lights everywhere where he went until he was surrounded by a blaze of artificial illumination. He paused to clean up in the living room, shaving sand and plastic fragments back into the broken tank. The sandspores were all gone. He'd feared the castles were broken and distorted by the watery bombardment. Kress had visited upon them, and what little of them remained was crumbling as t faded.

He frowned and searched further. the canister ofbest spray strapped across his shoulders.

Down in the wine cellar he could see Cath'm Lane's corpse.

It sparkled in the best fog of the steel light ofthe stairs. the hilt twisted as if by a tail. White mobas were swarming all over it, and as Kress watched, the body moved jerkily across the head-packed dirt floor.

He laughed and twisted the illumination up to maximum. In the far corner a squat little earthen castle and a dark hole were visible between two wine racks. Kress could make out a rough outline of his face on the cellar wall.

The body shifted once again. moving a few centimeters toward the castle. Kress had a sudden vision of the white man wanting hungrily. It might be able to get Cath's face in its mouth, but no more. It was too absurd. He laughed again and started down into the cellars. The last of the gang was still alive. The sandspores—hundreds of them marching one—destroyed the body and assumed birth formation. a field of white between him and their own.

Suddenly Kress had another inspiration. He smiled and lowered his firing hand. Cath was always hard to swallow. He said. He smiled delighted at his wit. Especially for one your size. Here. let me give you some help. What are you for after all?

He retreated upstairs returning shorty with a clearer. The sandspores scurried and watched while Kress chopped Cath'm Lane into small, easily digestible pieces. 
need it. The cellar and he saw no sign of the others.
In the morning he finished the cleanup of the living room. When he was through, no trace of the struggle remained except for the broken tanks.
He ate a light lunch and resumed his hunt for the missing sandking. In full daylight it was not too difficult. The blacks had located in his rock garden, where they built a castle from obsidian and quartz. The reds were found at the bottom of his long-decayed swimming pool, which had partially filled with wine-brown sand over the years. He saw mobiles of both colors, ranging from this ground. Many of them were carrying poison pellets back to their maws. Kress felt like auging. He decided his pesticide was unnecessary. No use taking a long flight when he could just let the poisons do its work. Both maws should be dead by evening.
That left only the burnt-orange sandking unaccounted for. Kress circled his estate several times in an ever-widening spiral, but he found no trace of them. The blacks had /sworn/ in his skethis— it was a hot, dry day—he decided it was not important. If they were out there, he was probably eating the poison pellets as the reds and blacks were.
He crunched several sandkings underfoot. With a certain degree of satisfaction as he walked back to the house. Inside he removed his skinthesh, settled down to a delectable meal, and finally began to relax. Everything was under control. Two of the maws would soon be defunct the third was safely locked where it could dispose of itself. He had no doubt that he would find the fourth. As for Cath— every trace of her visit had been obliterated.
His reverie was interrupted when his viewscreen began to blink at him. It was Jad Rakis, calling to brag about some cannibal worms he would bring to the war games tonight.
Kress had forgotten about that but he recovered quickly. Oh Jad, my pardons. I neglected to tell you. I grew bored with all that talk and got onto the sandkings. Ugly, little things. Sorry, but there'll be no party to-night.
Rakis was indignant. But what will I do with my worms?
But them in a basket of fruit and send them to a loved one. Kress said signing off. Quickly he began calling the others. He did not need anyone arriving at his doorstep now, with the sandkings alive and infesting the estate.
As he was calling Idi Noredian, Kress became aware of an annoying oversight. The screen began to flicker, indicating that someone had answered at the other end. Kress flicked off.
Idi arrived on schedule an hour later. She was surprised to find the party had been canceled but perfectly happy to share an evening alone with Kress. He delighted her with his story of Cath's reaction to the hops they had made together. While telling it he managed to ascertain that she had not mentioned the prank to anyone. He nodded satisfied, and refilled her wine glasses. Only a trickle was left. I'll have to get a fresh bottle, he said. Come with me to my wine cellar and help me pick out a good vintage. You've always had a better palate than I.
She went along willingly enough but balked at the top of the stairs when Kress opened the door and gestured for her to precede him. Where are the lights? she asked. And that smell—what is that peculiar smell, Simon?
When he shoved her she looked briefly startled. She screamed as she tumbled down the stairs. Kress closed the door and began to hail it shut with the boards and air hammer he had left for that purpose. As he was finishing she heard Idi groan: I'm hurt. She called Simon what is this? Suddenly she squealed, and shortly after the screaming started.
It did not cease for hours. Kress went to his sensorium and dialled up a raucous comedy to blot it from his mind.
When he was sure she was dead, Kress flew his skimmer north to the volcanoes and discarded it. The magnalock was proving a good investment.
Ood scratching noises were coming from beyond the wine cellar door the next morning when Kress went down to check things out. He listened for several uneasy moments wondering whether Idi might possibly have survived and was scratching to get out. This seemed unlikely. It had to be the sandkings. Kress did not like the implications of this. He decided that he would keep the door sealed at least for a while. He went outside with a shovel to bury the red and black maws in their own castles.
He found them very much alive. The black castle was glittering with volcanic glass, and sandkings were a constant repair and improving. The high tower was up to the waist and still was a ridiculous caricature of its face. He approached the blacks halted in the labor and formed into two threatening phalanxes. Kress glanced behind him and saw others closing off his escape. Startled he dropped his shovel and sprinted out to the trap, crushing several mobiles beneath his boots.
The red castle was creeping up the walls of the swimming pool. The maw was safely nestled in a pit surrounded by sand and concrete and boulders. The red crept all over the bottom of the pool. Kress watched them carry a rockpock and a large lizard into the castle. Horrified, he stepped back from the poolside and felt something crunch. Looking down he saw three mobiles climbing up his leg. He brushed
them off and stamped them to death, but others were approaching rapidly. They were larger than he remembered. Some were almost as big as his thumb.

He ran.

By the time he reached the safety of the house, his heart was racing and he was short of breath. He closed the door behind him and hurried to lock it. His house was supposed to be fireproof. He'd be safe here.

A stiff drink steadied his nerves. So poison doesn't freeze them, he thought. He should have known. Jala Wo had warned him that the maw could eat anything. He would have to use the pesticide. He took another drink for good measure, donning his skinflint, and strapped the canister to his back. He unlocked the door.

Outside, the sandings were waiting.

Two armies confronted him, aligned against the common threat. More than he could have guessed. The damned maws must be breeding like rookrocks. Mobies were everywhere, a creeping sea of them.

Kress brought up the hose and loked the trigger. A gray mist washed over the nearest rank of sandings. He moved his hand from side to side.

Where the mist fell, the sandings twitched violently and died in sudden spasms. Kress smiled. They were no match for him. He sprayed in a wide arc before him and stepped forward confidently over a litter of black and red bodies. The armies fell back. Kress advanced in intent, cutting through them to their maws.

All at once the retreat stopped. A thousand sandings surged toward him.

Kress had been counting the casualties. He stood his ground, sweeping his misty sword before him in great looping strokes. They came at him and died. A few got through, he could not spray everywhere at once. He felt them climbing up his legs then sensed their mandibles biting futilely at the reinforced plastic of his skinflint. He ignored them and kept spraying.

Then he began to feel soft impacts on his head and shoulders.

Kress trembled and spun and looked up above him. The front of his house was alive with sandings. Blacks and reds, hundreds of them. They were launching themselves into the air raining down on him. They fell all around him. One landed on his faceplate, its mandibles scraping at his eyes for a terrible second before he prodded them away.

He swung up his hose and sprayed the air. Sprayed the house. Sprayed until the airborne sandings were all dead or dying. The mist settled back on him, making him cough. But he kept spraying. Only when the front of the house was clear did Kress turn his attention back to the ground.

They were all around him, on him, dozens of them scurrying over his body. Hundreds of others hurrying to join them. He turned the mist on them. The hose went dead, Kress heard a loud hiss, and the deadly fog rose in a great cloud from between his shoulders. Cocking his head, looking him, his eyes burn and blur. He felt for the hose, and his hand came away covered with dying sandings. The hose was severed, they'd eaten it through. He was surrounded by a shroud of pesticide babies. He stumbled and screamed and began to run back to the house, pulling sandings from his body as he went.

Inside, he sealed the door and collapsed on the carpet, rolling back and forth until he was sure he had crushed them all. The canister was empty by then, hissing feebly. Kress stepped off his skinflint and showered. The hot spray scorched him and left his skin reddened and sensitive but it made his flesh stop cringing.

He dressed in his usual cloth with work pants and leathers after shaking them out nervously. Damn, he kept muttering. Damn. His throat was dry. After searching the entry hall thoroughly to make certain it was clear, he allowed himself to sit and pour a drink. Damn he repeated. His hand shook as he poured, stopping liquor on the carpet.

The alcohol settled him but it did not wash away the fear. He had a second drink and went to the window to watch. Sandings were moving across the thick plastic pane. He shuddered and retreated to his communications console. He had to get help. He thought wildly. He would punch through a call to the authorities, and police would come out with flamethrowers and Kress stopped in mid-call and groaned. He couldn't call in the police. He would have to tell them about the whites in his collar and they'd find the body there. Perhaps the maws might have finished Cath in Lane as he and certainly not Idi Nordeen. He hadn't even cut her up. Besides, there would be others. No, the police could be called in only as a last resort.

He sat at the console, frowning. His communications equipment filled a wide wall. From here he could reach anyone on Balaur. He had plenty of money, and his cunning, he had always prided himself on his cunning. He would handle this somehow.

Briefly he considered calling Wo, but he soon dismissed the idea. Wo knew too much, and would ask questions and he did not trust her. No, he needed someone who would do as he asked without questions.

His frown slowly turned into a smile. Kress had contacts. He put through a call to a number he had not used in a long time. A woman's voice took shape on his viewscreen—white-haired, blank of expression, with a long hooked nose. Her voice was brisk and efficient. Simon, she said. How is business?

Business is fine, Lissandra. Kress replied. I have a job for you.

A removal? My price has gone up since last time, Simon. It has been ten years after all.

You will be well paid, Kress said. You...
Lissandra was true to her word. She arrived in a lean black skimmer with three operatives. Kress watched them from the safety of a second-story window. They were all faceless in dark plastic skins. Two of them wore portable flamethrowers, a third carried laser-cannon and explosives. Lissandra carried nothing. Kress recognized her by the way she gave orders.

Their skimmer passed low overhead, first checking out the situation. The sandkings went mad. Scarlet and ebon moles ran everywhere frenetically. Kress could see the castle in the rock garden from his vantage point. It stood tall as a man. Its ramparts were crawling with black defenders, and a steady stream of moles flowed down into its depths.

Lissandra's skimmer came down next to Kress's, and the operatives vaulted out and unlimbered their weapons. They looked inhuman dreadfully.

The black army drew up between them and the castle. The reds—Kress suddenly realized that he could not see the reds. He blinked. Where had they gone?

Lissandra pointed and shouted, and her two flamethrowers spread out and unlimbered on the black sandkings. Their weapons coughed dully and began to roar. Long tongues of blue and scarlet fire licking out before them. Sandkings wereBrokered and shredded and died. The operatives began to play the fire back and forth in an efficient interlocking pattern. They advanced with careful measured steps.

The black army burned and disintegrated, the moles fleeing in a thousand different directions. Some back toward the castle, others toward the enemy. None reached the operations with the flamethrowers. Lissandra's people were very professional.

Then one of them stumbled.

Or seemed to stumble. Kress looked again, and saw that the ground had given way beneath the man. Tunnels, he thought with a terror of fear tunnels, pits, traps. The man was sunk in sand up to his waist and suddenly the ground around him seemed to erupt and he was covered with scarlet sandlings. He dropped the flamethrower and began to claw wildly at his own body. His screams were horrible to hear.

His companion hesitated then swung and fired. A beam of flame swallowed human and sandlings both. The screaming stopped abruptly. Satisfied, the second flamethrower turned back to the castle took another step forward, and resumed as his tool broke through the ground and vanished up to the ankle. He tried to pull it back and retreat, and the sand all around him gave way. He lost his balance and stumbled. His sandkings were everywhere a rolling mass of them covering him as heithed and rolled. His flamethrower was useless and forgotten.

Kress pounded wildly on the window shouting for attention. The castle! Get the castle!

Lissandra standing back by her skimmer heard and gestured. Her third operative sighted with the laser-cannon and fired.

The heavy door was still nailed shut, as he had left it. But it bulged outward slightly as if warped by some tremendous pressure. That made Kress uneasy, as did the silence.

Kress knew the castle had not been abandoned. He knew there were people in there. He knew there were things in there. He had reason to believe there were sandlings in there. He had reason to believe there were moles in there. He had reason to believe there was Lissandra in there. He had reason to believe there were sandkings in there.

The beam throbbed across the grounds and sliced off the top of the castle. He brought the cannon down sharply hacking at the sand and stone parapets. Towers fell. Kress's face disintegrated. The laser hit the ground, searching round and about. The castle crumbled. Now it was only a heap of sand. But the black moles continued to move. The maw was buried too deeply. The beams hadn't touched it.

Lissandra gave another order. Her operatives discarded the laser passed an explosive dart forward. He leaped over the smoking corpse of the first flamethrower and landed on solid ground within Kress's rook garden and heaved. The explosive ball landed square atop the ruins of the black castle. White-hot light seared Kress's eyes and there was a tremendous gust of sand and rock and moles. For a moment dust obscured everything. It was raining sandlings and pieces of sandkings.

Kress saw that the black moles were dead and unmoving. The pool! he shouted through the window. Get the castle in the pool!

Lissandra understood quickly the ground was littered with motionless blacks but the reds were pulling back hurriedly and reforming. Her operative stood uncertain, then reached down and pulled out another explosive ball. He took one step forward but Lissandra called him and he sprinted back in her direction.

It was at this time the pale casters on his shoulder heaved in another spasm. Then the castle was unrecognizable and the sandkings slipped moving.

Lissandra was at the door. He had him. He raised the castle several more times.

Then he used the laser cannon crossfire methodically until it was certain that nothing living could remain intact beneath those small patches of ground.

Finally they came knocking at his door and Kress was grinning maniacally when he let them in. Lovely he said. Lovely.

Lissandra pulled off the mask of her skimmer. This will cost you Simon. Two operatives went not to mention the danger to my own life.

Of course Kress braced. You'll be well paid. Lissandra. Whateve you ask just so you finish the job.

What remains to be done?

You have to clean out my wine cellar. Kress said. There's another castle down there. And I have to ask it without explosives. I don't want my house coming down around me.

Lissandra motioned to her operative. Go outside and get Rak's flamethrower. It should be intact.

He returned armed, ready silent. Kress led them to the wine cellar.

The heavy door was still nailed shut as he had left it. But it bulged outward slightly as if warped by some tremendous pressure. That made Kress uneasy, as did the silence.
She stepped into the doorway and felt the ass to her left hand and reached up through her right fist, something for the right one. Nothing happened. I feel it. Lissandra said but it doesn’t seem to
Then she was screaming, and she stumped backward. A great white sanding had camped itself around her wrist. Blood welled through her skin and where the mandibles had sunk in, it was truly as large as her hand.
Lissandra did a horrid little jog across the room and began to smash her hand against the nearest wall. Again and again and again. It landed with a heavy rhythmic thud. Finally, the sanding fell away. She whimpered and fell to her knees.
I think my fingers are broken, she said softly. The blood was still flowing freely. She had dropped the laser near the cellar door.
I’m not going down there, her operative announced in clear firm tones.
Lissandra looked up at him. No, she said. Stand in the door and flame it all. Cinder it! Do you understand?
He nodded.
Kress moaned. My house he said. His stomach churned. The white sanding had been sourage. How many more were down there? Don’t he continued. Leave it alone. I’ve changed my mind.
Lissandra misunderstood. She held out her hand. It was covered with blood and greenish black ichor. Your little friend bit clean through my glove, and you saw what it took to get it off. I don’t care about your house. Simon. Whatever is down there is going to die.

Kress hardly heard her. He thought he could see movement in the shadows beyond the cellar door. He imagined a white army busting out each soldier as big as the sanding that had attacked Lissandra. He saw himself being lifted by a hundred tiny arms and being dragged down into the darkness, where the maw waited hungrily. He was afraid. Don’t he said.
They ignored him.
Kress darted forward, and his shoulder slammed into the back of Lissandra’s operative just as the man was bracing to fire. The operative grunted but his balance and pitched forward into the black. Kress slammed him to the floor, and the sanding was driven down.
Kress was aware of the wooden floors creaking and the wall of the cellar door slamming closed.

Kress swung around to face Lissandra. He was drenched in cold sweat but a sickly kind of excitement possessed him. It was almost sexual.
Lissandra’s calm eyes regarded him through her mask. What are you doing? she demanded as Kress picked up the laser she had dropped. Simon.
Making a peace, he said giggling. They won’t hurt god no no we are as old as god and generous I was cruel. Starved them. I have to make up for it now you see.
You’re insane. Lissandra said. It was the last thing she said. Kress burned a hole in her chest big enough to put his arm

through. He dragged the body across the floor and rolled it down the cellar stairs. The noises were louder—chirrurous clacking and scratching and echoes that were thick and liquid. Kress nailed up the door once again.
As he fled he was filled with a deep sense of contentment that coated his face like a layer of syrup. He suspected it was not his own.

He planned to leave his home to fly to the city and fake a room for a night or perhaps for a year. Instead he started drinking. He was not quite sure why. He drank steadily for hours and ratcheted it all up violently on his living room carpet. At some point he fell asleep. When he woke it was pitch dark in the house.
He covered against the couch. He could hear noises. Things were moving in the halls. They were all around him. His hearing was extraordinarily acute. Every little creak was the footsteps of a sanding He

Something moved from shadow into light.
A pale shape on the seat... it was as long as his forearm.
Its mandibles clicked together softly.
Kress slowly backed away.
its body.

Kress wet his pants and backed away slowly.

There was more motion from inside the skimmer. He had left the door open. The sandking emerged and came toward him cautiously. Others followed. They had been hiding beneath his feet, seared by the heat, and the sun. They formed a ragged ring around the skimmer.

Kress lifted his hips, turned, and moved quickly toward Lissandra's skimmer.

He stopped before he was halfway there. Things were moving inside that one too. Great maggoty things were seen by the light of the moon.

Kress whispered and retreated back toward the house. Near the front door he looked up

He counted a dozen long, white shapes creeping back and forth across the walls of the building. Four of them were clustered together near the top of the unused belfry where the cannon hawk had once rested. They were carving something—a face. A very recognizable face.

Kress shrieked and ran back inside. He headed for his liquor cabinet.

A sufficient quantity of drink brought him the easy oblivion he sought. But he woke up.

Despite everything, he woke up. He had a terrific headache and he stank, and he was hungry. Oh, so very hungry! He had never been so hungry.

Kress knew it was not his own stomach that was empty.

A white sandking watched him from atop the dresser in his bedroom. The antemara moving family was as big as the one in the skimmer the night before. He tried not to think about it. He tried not to feel it. He didn't want to wake up.

His mouth was horribly dry. Sandoop's water was no good. He locked his lips and fled from the room.

The house was full of sandkings. He had to be careful where he put his feet. They all seemed busy on errands of their own. They were making modifications in his house, burrowing into or out of his walls, carving things. Twice he saw his own likeness staring out at him from unexpected places. The faces were warped, twisted, livid with fear.

He went outside to get the bodies that had been rotting in the yard. Hoping to appease the white maw's hunger. They were gone, both of them. Kress remembered how easily the mobbies could carry things many times their own weight.

It was terrible to think that the maw was still hungry after all of that.

When Kress reentered the house a column of sandkings was wending its way down the stairs. Each carried a piece of his shambler. The head seemed to look at him reproachfully as it went by.

Kress emptied his freezers, his cabinets, everything, piling all the food in the house in the center of his kitchen floor. A dozen whites waited to take it away. They avoided the frozen food, leaving it to thaw in a great puddle out carved off everything else.

When all the food was gone, Kress ate his own hunger pangs. It was just a bit, though he had not eaten a thing. But he knew the temptation would be short lived. Soon the maw would be hungry again. He had to feed it.

Kress knew what to do. He went to his communicator. 

...the skimmer. But he knew he must do it. He got up, and walked to his front door. He left them outside. He did not follow.

When four of them had gone through the skimmer finally worked up his courage. He closed the door behind his latest guest. Ignoring the startled exclamations that soon turned into small gibbering and scurrying for the skimmer the man had arrived in. He slid in safety. The stentorian and swore it was programmed to lift only in response to its owner's thumbprint of course.

Rakkis was the next to arrive. Kress ran to his skimmer as it sat down and seized Rakkis by the arm as he was climbing out. 'Get back in quickly.' he said, pushing. Take me to the city. Hurry, Rakkis! Get out of here!'

But Rakkis only stared at him and would not move. Why was this so? Kress couldn't understand. What about your party?

And then it was too late because the whole sandal all around them was stirring and the red eyes were staring at them, and the mandibles were clacking. Rakkis made a choking sound and moved to get back into the skimmer, but a pair of mandibles snapped shut about his ankle and suddenly he was on his knees. The sandal seemed to boil with subterranean activity. Rakkis thrashed and cried feebly, as they tore him apart. Kress could hardly bear to watch.

After that, he did not try to escape again.

When it was all over, he cleaned up what remained in his liquor cabinet and got extremely drunk. It would be the last time he would enjoy that luxury. He knew. The only alcohol remaining in the house was stored down in the wine cellar.

Kress did not touch a bite of food the entire day but he fell asleep feeling bloated and satiated at last the awful hunger vanished. His ast thoughts before the nightmares took him were about whom he could ask out tomorrow.

Morning was hot and dry. Kress opened his eyes to see the white sandking on his dresser again. He shut his eyes again quickly, hoping the dream would leave him. It did not, and he could not go back to
sleep and soon he found himself staring at the thing.

He stared for almost five minutes before the strangeness of it dawned on him. The sandkings were not moving.

The mobiles could be preternaturally still to be sure. He had seen them wait and watch a thousand times. But always there was some motion about them. The mandibles clacked, the legs twitched, the long fine antennæ stirred and swayed.

But the sandkings on his dresser was completely still.

Kress rose, holding his breath, not daring to hope. Could it be dead? Could something have killed it? He walked across the room.

The eyes were glassy and black. The creature seemed swollen somehow as if it were soft and rotting inside, filling up with gas that pushed outward at the plates of white armor.

Kress reached out a trembling hand and touched it.

It was warm, hot even and growing hotter. But it did not move.

He pulled his hand back and as he did a segment of the sandking's white exo-skeleton fell away from it. The flesh beneath was the same color but softer looking, swollen and feverish. And it almost seemed to throb.

Kress backed away and ran to the door. Three more white mobiles lay in his hall. They were all like the one in his bedroom.

He ran down the stairs, jumping over sandkings. None of them moved. The house was full of them all dead, dying, comatose. Whatever Kress did not care what was wrong with them. Just so they could not move.

He found four of them inside his skimmer. He picked them up one by one and threw them as far as he could. Damned monsters. He slid back in on the ruined half-eaten seats and thumped the startplate.

Nothing happened.

Kress tried again and again. Nothing. It wasn't fair. This was his summer. It ought to start. Why wouldn't it lift? He didn't understand.

Finally he got out and checked, expecting the worst. He found it. The sandkings had torn apart his gravely grid. He was trapped. He was still trapped.

Grimly Kress marched back into the house. He went to his gallery and found the antique ax that had hung next to the throwing sword he had used on Cathm' Lane. He set to work. The sandkings did not stir even as he chopped them to pieces. But they splattered when he made the first cut. The bodies almost bursting. Inside was awful strange half-frothed organ, a viscous redish cote that looked almost like human blood and the yellow ichor.

Kress destroyed twenty of them before he realized the futility of what he was doing. The mobiles were nothing. Really. Besides there were so many of them. He could work for a day and night and still not kill them all.

He had to go down into the wine cellar and use the ax on the maw.

Resolute, he started toward the cellar. He got within sight of the door then stopped.

It was not a door anymore. The walls had been eaten away so that the hole was twice the size it had been and round. A pit that was all. There was no sign that there had ever been a door nailed shut over that black abyss.

A ghastly choking fetid odor seemed to come from below.

And the walls were wet and bloody and covered with patches of white fungus.

And worst, it was breathing.

Kress stood across the room and felt the warm, moist, warm wash over him as it exhaled and he tried not to choke and when the wind reversed direction he fled.

Back in the living room he destroyed three more mobiles and collapsed. What was happening? He didn't understand.

Then he remembered the only person who might understand. Kress went to his
Kress stopped suddenly. "No," he said, "oh, no. No."
He backpedaled, slipped on the sand, got up, and tried to run again. They were ghastly little things with bulging eyes and dusky orange skin.

Kress had decided and they would suffer for it. Lissandra was dead, but Kress knew others in her profession. He would have his revenge. He had promised himself a hundred times as he struggled and sweated his way eastward.

At last he hoped it was east. He was not that good at directions, and he wasn't certain which way he had run in his initial panic, but since then he had made an effort to bear due east as Wo had suggested.

When he had been running for several hours with no sign of rescue, Kress began to grow certain that he had miscalculated his direction.

When several more hours passed, he began to grow afraid. What if Wo and Shade could not find him? He would die out there. He hadn't eaten in two days, he was weak and dehydrated, his throat was raw, and he was afraid of water. He couldn't keep going. The sun was setting now, and he would be completely lost in the dark. Where was she wrong?

The sandstorms eaten Wo and Shade. The heat was on him again, filling him, and with it a great thirst and a terrible hunger.

But Kress kept going. He stumbled now when he tried to run and twice he fell. The second time he scraped his hand on a rock, and it came away bloody. He sucked at it as he walked, and he worried about infection.

The sun was on the horizon behind him. The ground grew a little cooler for which Kress was grateful. He decided to walk until last light and settle down for the night.

Surely he was far enough from the sandstorms to be safe, and Wo and Shade would find him come morning.

When he toppled the next rise, he saw the outline of a house in the dusk. It wasn't as big as his own house, but it was big enough. His stomach was beginning to growl. It was time to have nourishment. He could taste the meal already. He was eating with hunger. He ran down the hill toward the house, waving his arms and shouting to the inhabitants. The light was almost gone now but he could still make out a half dozen children playing in the twilight.

He was shone. He helped them, and they came running toward him. Kress stopped suddenly. "No," he said, "oh, no."

Kress did not count on the heat. The kids were dry and rocky. Kress ran from the house as quickly as he could run until his ribs ached and his breath was coming in gasps. Then he walked, but as soon as he had recovered he began to run again. For almost an hour he ran. He walked and he walked and walked. Beneath the fierce, hot sun he sweated freely and wished that he had thought to bring some water and watch the sky in hopes of seeing Wo and Shade.

He walked in this way for six hours. It was too hot and too dry and he was in no condition. But he kept himself going with the memory of the way the man had breathed and the thought of the wiggling little things that he was sure were crawling all over his house. He hoped Wo and Shade would know how to deal with them.

He had his own plans for Wo and Shade...
How an army of lizards missed the train

A new pictoral novel by Harry Harrison and Jim Burns dramatizes the sense of experimentation publishers are now bringing to science fiction. Planet Story opens with an eccentric space commander who decides that the fragile planet Sabirus is an ideal spot to pursue his hobby: driving antique locomotives. A monstrous machine is dispatched to lay track indiscriminately over the tiny planet's surface. The mothership descends on Sabirus to off-load a gold-plated locomotive. The commander's entourage boards the train and rides off down computer-built tracks. It becomes immediately clear to everyone on board that Sabirus is not uninhabited. Lizard-like aliens appear everywhere. Their outrage at the earthling assault is a call to battle, but their puny spears are no match for the speeding train. Having evaded one alien enclave, the train stops on the far side of a simulated London Bridge. The commander asserts that no manner of lizardoid greenies will disrupt his penchant for dodging and railing.
Lasers burned to the accompaniment of shrill alien screams. Depressed by their newest failure, the lizards withdrew.
Supertrack cut the lizardoid city exactly in two, which is why the aliens had prepared a pointed welcome.

The train rolls on to the outskirts of what appears to be the capital of Lizardoidom. Ahead lies the locomotive's gigantic colleague set on the tracks - there to impede the oncoming surfings. The train fails to penetrate with these aliens, talking through a translator, the two sides reach an agreement. The team will go free if the humans help the lizardoids defeat the latter's mortal enemy, a gaggle of crustaceans. The lizardoids prepare to scout enemy lines in a spy balloon. Several humans go along.
As soon as those lizardoids grab us, they'll nationalize your railroad and you'll follow us through the kitchen.

The balloon was too close to the crustacean and the human hero was separated and carried away by the lizard King. For the, the, for the

Convinced, the commander agrees to duplicate the gazpacho into following the train away from the defenses. Aware only of the last minute of this incivility, the lizard hordes charge after the train, but the locomotive's escape is only its final escape of Plane Story brought to you by Adler Publishers (New York).
"There's a tremendous amount of space travel going on around the universe. When a vehicle arrives here, we'll know about it."

INTERVIEW

ARTHUR C. CLARKE

In 1945 a young English technical officer who had spent World War II helping to develop radar systems for the Royal Air Force published a remarkable prescient article in the British journal Wireless World. The article showed in detail how artificial satellites could be used to relay electronic communications around the world. The writer was Arthur C. Clarke.

Thus began the most remarkable marriage of startling imagination and realistic scientific fact in the history of English letters. For as much as anyone, Clarke has been a founder of the Space Age. In his writings, both fiction and nonfiction, Clarke has been the Space Age's prophet and one of its chief movers.

His books are world-renowned, and his writing has earned international acclaim. Less well known is the fact that he helped to push a doubting scientific community to serious consideration of space flight, back in the days when "shooting for the moon" was synonymous with attempting the impossibly.

As chairman of the British Interplanetary Society, Clarke encouraged scientists and engineers to look at the possibilities of space travel. In an interview with the same English writer who had described the "exploring of space and the inner depths of Earth's oceans" as Clarke's "most stunning contribution," Clarke now resides in Sri Lanka, where he was interviewed exclusively for Omni by journalist-photographer Malcolm Kirk.
SRI LANKA, MARCH 1979

Omni: I understand you have given up writing for good. About any subject what soever or simply about science fiction?
Clarke: I won’t even write a one-sentence blurb for the jackets of books for my best friends. I mean I have to be absolutely firm because once you’ve made exceptions you know you can’t stop. I’ve said all I want to say in both fiction and nonfiction at least at this point. But that doesn’t mean in five years or so I won’t recharge my batteries and start writing again. I may get involved in controversy from time to time. In fact in the local papers I’m having a controversy with some astrologers who think that the planets are going to be lined up at Christmas 1982 and hell will break loose. And I had fun pointing out that this is utter nonsense the planets aren’t lined up in 82. So occasionally things like this will trigger me off but I don’t expect to do any writing.

In The View from Serendip I have put all my recent nonfiction essays and particularly Sri Lanka articles and sort of wrapped that up. On what side. I mean I really never do anything as good as The Phantom of Paradise (Harcourt, Brace, Jovanovich). Everything came together in it—the locale, the theme, the idea, the biggest theme. I’ve ever tackled, a serious real theme which may involve the the large scale exploration of space on a scale never dreamed of—by people like Gerard O’Neill with his space colonies. And yet this is really hard engineering. All sorts of things have come together—religion, philosophy—in this one book.

Also, I want to enjoy my declining years and have some time for skin diving. I learned to play the piano, a secret ambition I had all my life and never dreamed I’d have the chance of realizing. I’ve got a library of videotapes I’m building up.

Omni: I consider you a writer of our generation. A writer I admire and respect. What do you think of the television industry of the 80’s? What do you think of the phenomenon of the video industry?
Clarke: Mostly science. It started out with a comercial I did for the Bell Telephone System when they made a two hour version of The Man in the Iron Mask at a fine performance with Louis Jourdan, Ralph Richardson and the star Richard Chamberlain. A very fine actor. Then the Bell System flew a team out here to film me in Sri Lanka and they gave me a video system so I could see the result. So now I’m building up a library with a lot of science programs—many of which I’ve got a 16mm library that I’m building up.

Omni: Do you still write music?
Clarke: We used to do quite a bit of filming. A partner and I made a film called Beneath the Seas of Ceylon or the Ceylon tourism board. A thirteen minute 16mm film. Then we did a two hour film Ceylon: The Man that was a smash hit and is still one of the best films ever made on the local market—in color original sound. Original music, a really first-rate film. We reissued it after more than ten years and it is packing them in.

And the next thing I did was 2001.

Omni: Have you ever intended to get involved in anything else major?
Clarke: No because when one sits at the top like that where do you go from there?
Omni: Was there at one point any talk of doing a film version of Childhood’s End?
Clarke: There was a talk of doing a film version of Childhood’s End. I started the movie more than ten years ago and at the moment there is a pass-and-don’t-stab order out from my agent to Universal Studios who claim they’re making a television version of it. I don’t know what’s going on. About five of my books have been sold to the movies.

Clarke: Bob Guccione was very interested in working on some film with you if you showed any interest at all. Do you think you would be interested or not?
Clarke: Well I’ve spread the word around that anyone interested in any of my books I’m willing to talk to them for a few days here in Sri Lanka, or on the telephone if they call at a reasonable hour. And I’ll even look at scripts although I hate scripts. More scripts are terrible. It’s meaningless—writes to directors. But I’m quite willing to cooperate within limits. What I won’t do is sit down at the typewriter and just type. If the sun is shining and the waves are sparkling at the reef.

But I’m willing to talk to anybody in general terms about projects and discuss things I’ve got a stunning new opening for Childhood’s End if anybody wants to look at it.

Omni: Are there any other kinds of projects that you might be interested in working on—underwater or anything like that?
Clarke: On the underwater side my partner Hector Ekanayake and his fiancee Valerie Fullen are having a party out from all over the world. In fact our most distinguished clients were the Apollo 12 team when they came back from the moon. We took them diving in Innominat. So I’m surrounded by dives taking place and I hope to spend some time underwater for a couple of days before the last of the sun is shining and the waves are sparkling at the reef.

Clarke: What brought you to Sri Lanka in the first place? For how long are you here and what keeps you here?
Clarke: Space brought me to Sri Lanka. I suppose if you go back to the beginning I became interested in underwater exploration and doing it simply because I realized that it was the only way of reproducing the condition of weightlessness which is characteristic of space flight. You aren’t quite weightless. You’re not quite weightless. You’re speaking underwater but there’s the nearest approximation you can get for any length of time. So that’s why I learned diving.

Clarke: How long ago was that?
Clarke: This was in the late 60’s I went to the Great Barrier Reef in Australia and on the way I passed through Sri Lanka and went up by the old Himalayas one afternoon and met some local divers and

Omni: Excuse me what’s the Himalayas? Is that the old P and O (Pacific and Orient) ship?
Clarke: Yes, she’s broken up; now. And during the course of this I got more and more interested in the country. I met many friends and kept coming back and eventually settled down here. I just had to be anywhere else.

Omni: It seems an odd place to find a science fiction writer. One would imagine you to be in Cambodge or Palo Alto, London or New York. And instead you’ve chosen a sort of exotic situation here.
Clarke: I’ve been to all those places. I don’t have friends in all of them. But because you are here now I have time to read all the materials that have been sent me. I have at least twenty new books of various kinds and a vast correspondence and everybody passes through Sri Lanka eventually. My friends come here. Bucky Fuller was here a few months ago and we flew him around and showed him the lovely pages of my new novel.

And there are also exotic ones. Inner red sons of for here. It’s a very nice way of living when you can see a lot of everything organized in this house—which I moved into four years ago. The only thing missing is the books. And I keep asking about leaving Sri Lanka.

Omni: Are you here all year at this point?
Clarke: I haven’t been out of the country for a year. I don’t plan to go out or another year and then it will only be for a brief visit to England. And it never leaves again that’s fine with me. I know in fact I shall be going. Something very important may come up. After that I can’t possibly turn down. But I’ve said hallo jokingly or maybe jokingly that as much as I love America—and I have a great many friends there—the only thing that will get me back is when there is a space shuttle for me to the NASA administrator. There’s no way.

Omni: How do you occupy yourself in a typical day here?
Clarke: On my goodness. I’ve often tried to answer this question and I found there’s no typical day. But I get tea at six-thirty and have a bowl of tea or coffee and then at seven have breakfast and listen to the BBC. Then my day starts about eight. My working day starts about eight o’clock. I always get about twenty books waiting to be read. In fact I have about thirty-six hours of reading. Normally twenty to four hours. The mail comes in. And then I try to get in at least an hour on the piano. I have a set up here for twenty visitors a day.

Omni: What are they usually here to see you about?
Clarke: Sometimes they just come or looking at the gardens. A lot of people do of course. I normally have to leave the house at all except at four o’clock in the afternoon when I go to the local swimming pool and play a couple of games of table tennis for a couple of hours. That’s my only recreation. I am a table tennis addict. I can’t bear to play at the amateurs here. Then I come back and may have a film show may listen to some music and get to bed a little early around nine o’clock. I never go to receptions or cocktail parties or dinners. Simply because
they're so time consuming

Omni: No more bash ing away at the typewriter?

Clarke: No, I haven't used a typewriter since January. I suppose I'm thinking of taking the typewriter down to the reef and photographing it surrounded by fish.

Omni: You're not active in the scuba diving school?

Clarke: I haven't been active in that way for a long time. I became totally paralysed in 1961 as a result of a spine injury and I was a basket case for many months. I'm lucky to be alive, let alone to be able to move around. And I never recovered my strength so I've got to take things rather carefully. But I still enjoy snorkeling when I have a chance of doing it. I can still stay underwater for nearly four minutes, even though I didn't take up diving until I was nearly thirty.

Omni: Hyperventilating?

Clarke: Yes, which is a dangerous and stupid thing to do.

Omni: Are you actively involved in any programs connected with the ocean?

Clarke: Yeah, I am. I like looking at the reefs here. The coral reefs have been blasted up to make timber and around the tourist centers you'll see hundreds of people smashing up the beautiful reefs right beside the hotels. It's incredibly against the law but there's such an economic pressure to do it that no one is able to stop it. I'm also trying to set up marine sanctuaries.

Omni: Do you see exciting developments in the future of oceanographic exploration work with 'dolphins'—things along those lines?

Clarke: Well, I've always been fascinated by dolphins, and I have written a couple of books about them. Dolphin Island I mentioned is being filmed by Radarf Productions. I've tried to get them to come here although the story takes place on the Great Barrier Reef. Of course the ocean is the other great frontier as everybody says. I mean that's a cliché now. The most important thing in the ocean at the moment is probably oil and deep-sea mining which is now held up with the problem of getting international agreement. The other thing I'm interested in which is rather speculative is ocean thermal power. That's the use of the temperature difference in the tropical oceans where it's always about eighty or so. It's always an interesting feature. I don't know why we're not doing much about it.

Omni: Space brings me to Sri Lanka. I was interested in diving here simply because it is the only way of reproducing the condition of weightlessness, which is characteristic of space flight.

It was called the Satellite Instruction Television Experiment. And to my delight and surprise the Indian Space Research Organization flew a complete ground station set up on my roof and gave it to me so I could see the program. For one year the only set was on this island. And everybody from the president down came to see the telemetry on programs.

Omni: Is there anything you do to follow up on this? Have they stopped it altogether?

Clarke: We keep the satellite only on loan for a year or so and now it's gone back and is doing much the same thing for the Eskimos and over the western United States. The Indians will have to allow or fairly quickly with their own satellite.

Omni: Do you think the current interest in science fiction is a passing fad? Or do you think it indicates a wider interest among the public at large in the near future?

Clarke: There's always been a background of interest in science fiction. It has always been popular whether it's been called science fiction or not. Right back to Verne and Wells and then to the modern era with the science-fiction magazines. Almost any number of well-known writers have tried their hand at science fiction on a time or another with disastrous results. Some with good reason. H. G. Wells and J. B. Priestley and H. G. Wells are the major American writer has written some science fiction, but his work which is an interesting one. He tried to prove his point. The first robot language in English fiction was written by Herman Melville. I mean it's almost a universal language. Everyone recognizes and respected. People are not turned off by it. Obviously judging by Star Wars and Close Encounters of the Third Kind, which I haven't yet seen.

Omni: I was just going to ask you about that.

Clarke: I was dying to see Close Encounters. I've seen Star Wars twice and thoroughly enjoyed it. I can't really compare the two. It's like comparing steak and kidney pudding with strawberries and cream. Close Encounters I've not yet seen. Obviously this is a new phenomenon. There is a great deal of interest in the universe and great possibilities and of course I'm incredibly happy about this.

Omni: How do you think Omni fits into this by the way?

Clarke: I think it's really very impressive. The contents were uniformly interesting. There was none or very little of the non-sequitur, rather tedious kind I mean you can't keep the UFO people out. The treatment of that sort of thing in the fringe sections was very sensible. I tell in many ways that it was the sort of magazine I'd like to have designed for myself.

Omni: What else would you like to see in Omni?

Clarke: I would like to see a hard-headed treatment of some of the cranks who are littering the scene and ranges of science. Some of my friends like Martin Gardner and James Randi are trying to put some sense into the public debate. You know I think it's now more or less discredit. Although I think I think I'm a real charmer. And the Bermuda Triangle, which is of course utter nonsense.

I think it would be a pity if there weren't some people like that around to liven up the world but what does annoy me are the Von Danikens and the ancient astrologers. People because I take it very seriously. Because of their activities there's no way to stop them. So what I think Omni can do something about this. Of course there's nothing you can do about the complete nuts, the religious maniacs who believe in flying saucers landing all the time. I mean they're just mad and that's all there is.
Omni: What are your feelings about things like telepathy and UFOs and fa la la la? Clarke: Well you've put a bunch of different things together. In general I've always been interested in ESP and of course Childhood's End was about that. But I've grown disillusioned, partly because after all it's all time they're still arguing about whether these things happen. I suspect that telepathy does happen, partly because the evidence seems so overwhelming. On the other hand, you have to have a much higher level of evidence for this kind of thing than for anything else. Something strange is going on.

Obviously we don't know at all about the universe. As far as psychokinesis metal bending and that sort of thing, I've read books by Geller when he bent my door key and I think I know how he did it. People like Randi are quite sure they know how he did it.

Omni: How do you think he did it?
Clarke: First of all, there's always chaos around us and several things are happening at once. No one is quite sure what went on at any given time. You'd have to have three video cameras X, Y, and Z watching him. I've seen good conjurers do the same sort of thing and do it well. And I've seen some evidence of something that I still have now, don't know how they could have done it. Unless you're a professional conjurer, it's utterly useless for a layman to even comment on this. And it's amazing how few scientists seem to realize this.

Omni: You do have an open mind to a certain extent?
Clarke: It's getting less and less open. I suspect that telepathy occurs, and I suspect that some kind of precognition occurs partly because I had some experience myself. But it's very hard to rule out coincidence.

Omni: We've talked on this trip to someone who said he's never suffered from headaches, and yet one particular morning he had the worst splitting headache that he ever had in his life. Later that morning he found out his son had died.
Clarke: There are so many examples of this. Yet it's hard to get a statistical correlation. You forget the misses and remember the hits. So how can one prove that the hits are significant because anything no matter how fantastic can happen by pure coincidence. And it's difficult to quantify this.

One person you might get on to is Professor Louis Alvarez, the Nobel Laureate in physics at Berkeley. He's a man who invented ground control approach radar. Louis then assembled the first atomic bomb. Then he got the Nobel Prize for physics a few years ago and he's written one of the most distinguished American physicists. Well he tackled the problem of coincidences and the paranormal and has written a number of interesting letters to science about it.

Omni: What's your own opinion about UFOs?
Clarke: When I was asked this question when I've been asked approximately a hundred thousand times or course say when you've seen so many UFOs as I have you won't believe in them. And this is not the flip answer I've been asking too many faces and every one of them would have convinced the layman.

Having been through the mill I'm totally uninterested in UFOs now. I am as convinced as one can be that they are important. But I can't be sure I had an absolute beauty the other night in the back of my house one of the best I've ever seen it turned out to be the comet I don't have a tail. But in other cases, of course one can never find out what it is one saw and so the mystery remains. The only UFOs I'm interested in now are once where people see and approach an artifact and forget all about it.

Omni: Have you personally seen any unusual phenomena, besides the experiences you've just recounted?
Clarke: I have a hundred to be sort of excited ever the long run. Even though I'm sure that many of the astronomical and atmospheric phenomena I've seen would have fooled the average layman who didn't know what they were. I'm really fond of pointing out Venus in the daytime. Yet Venus is shining so there at the moment and I could show it to you if I were clearer. People don't realize you can see a bright star on the daytime and they see Venus is easier to see but once you've lost it is very hard to find it again, so they think it's sort of snuf off at an enormous speed. That's such a big old example.

Omni: Looking back on how accurate do you think you were in Profiles of the Future and Prelude to Space?
Clarke: Well of course, Prelude to Space was written in 1950 and some of it I've been wrong I haven't been wrong to launch an atomic powered spacecraft. But we're coming toward that sort of concept. The shuttle was built to be a manned, powered spacecraft even though the shuttle isn't atomic powered. I'm not happy with my record as a whole, particularly with the communications satellite. And some of my other early ideas are now coming to the fore. The lunar-based electromagnetic launch of which I'm still is a dream for the space age. It was worked out by me in 1950 or 51. It is the key to all space colonization plans.

Omni: If you were to update either of those books would there be any changes that you would make?
Clarke: What I have done I think is write a new preface to Prelude to Space. I wouldn't dream of updating the text of the book any more than I'd dream of updating H.G. Wells' War of the Worlds. They're period pieces and must be left untouched in their own time stream. But what I have done is to set them in a modern perspective by comparing the reality of the Apollo program with my ideas of a most twenty years before Profiles of the Future, again I've updated with a new preface and footnotes pointing out where things have diverged. In fact I wrote Profiles of the Future with an eye to the space age distance future because I was fairly sure there'd be no major changes. And this has proved to be the case.

Omni: So the future doesn't appear to you to be any different now than it did at the time that you wrote those?
Clarke: Not in general. Of course a lot of things have turned out different. The biggest surprise of all was the speed at which we got to the moon. Second biggest
The biggest surprise was the speed at which we got to the moon. Second-biggest surprise was the speed at which we left the moon, probably not to be back until the end of the century.

Clarke: When you talk about a break with nature—well, I mean just look at New York City. A lot of people look at it happily. My friend Isaac Asimov is a city boy. He won't travel at all. Certainly not by air. People like Isaac seem perfectly happy totally out of their natural environment. Isaac's The Cage of Steel is a perfect example of this. The human being is an incredibly adaptable creature. Look at Hong Kong.

Omni: Yes, but there's this need to listen to water or to expose your body to the sun or smells. Even in that kind of artificial environment, we still need to get back to nature, don't we? We can't think that link.

Clarke: Yes. And I get the best of both worlds. In fact, I'm surrounded by trees. I see and note some of the colonies they've been talking about are more back to nature than any of the cities. In fact, they're rather ridiculous. Parke's transported us into space. We're living more comfortably. I'm sure, but I think we'll do it differently.

Omni: What do you think of the possibility of placing our industry out in space and keeping Earth as a natural wilderness?

Clarke: I think that perhaps many of the heavy industries and production systems may go to space. I suggest the planet Mercury, where you have all the power you need from the sun and probably all the heavy metals as well. I don't want to mess up the moon. I want to preserve the lunar wilderness.

Omni: But you think that human beings can go anywhere and do anything as long as they know what they're doing and perhaps have some means of relaxation that they need. But incredibly a lot of people don't seem to need it.

Clarke: What ideas do you have about trying to communicate with extraterrestrial civilizations? Do you think we're setting about it the right way?

Clarke: We're not in any other way. We can do it at the moment except listen to the radio. I'm appalled that Senator Proxmire has succeeded in destroying the first efforts to set up a listening system. He sort of got the SETI project thrown out of Congress and in fact has even awarded it the Golden Fleece, which is his sarcastic term for the project, which he thinks is least worthwhile. He doesn't seem to realize that with long-term imaginative projects you can never guarantee success. But unless you do have some of them, you'll never get anywhere. I'm sure Proxmire isn't such a fool as some of his statements suggest. I don't envy the congressmen who have the problem of selecting different budgets for different things, especially in view of the fiscal stringencies. You see, what happened today, where Carter has put out all these projects for improving the economy and ending inflation and the dollar drops to the lowest level ever.

Omni: How do you think we ought to communicate with possible civilizations out in space? I was reading an interesting little book called Lives of a Call that suggested music be our form of communication.

Clarke: That was the idea in Close Encounters wasn't it?

Omni: That's right.

Clarke: I think that's wrong, because I don't think music is the form of communication. You don't know how difficult it is to make any sense of Eastern music for Western ears. So I think music may turn out to be a very restricted thing.

Omni: How would you do it, yourself?

Clarke: By logic and mathematics, which must be universal.

Omni: What kind of information do you think we ought to send out?

Clarke: Well, it's too late. We've sent out so much now that that's all been settled years ago. Unfortunately think of all the super civilizations looking at Love Lucy?

Omni: What sort of repercussions do you think there would be if we were to learn we are alone in the universe?

Clarke: Well, we can never learn that of course because the universe is so enormous that if we go on for the next hundred million years exploring it and finding nobody we can't be quite sure that over the next hill there isn't someone. I admit that if the next hundred million years or so, will look more and more like there's nobody there. Just as at the moment on Mars, even though we've only looked at two landing sights, we found no trace of anything, and it seems probable that there's no life on Mars. But we can't be sure by any means.

Omni: What do you see as the most interesting developments in the near future technology oriented—social change?

Clarke: Hmmm, I don't think anything unexpected. Well obviously till was unexpected. I wouldn't think of it. Usually it is the unexpected things which are the most important. But as far as one can see on the horizon at the moment, the coming computers and the communications revelations. Maybe home computers. Not only home computers but the computer revolution. Microprocessors are getting into everything. We won't be able to pick up a single piece of equipment in the future except maybe a broom that hasn't got a microprocessor in it.

Omni: How will they affect our lives, in a very general sense?

Clarke: They'll take over much of the routine thought. Now what this is going to do to culture to education is still the big question or problem. A lot of people are very worried. Let's take a case that everybody knows about now—the hand calculator. No one is going to learn arithmetic but does this mean they'll go on to learn more real mathematics? It could well be. Because one of the beauties of the hand calculator is that it encourages you to do all sorts of calculations that you would never dream of doing if you had to do them by pen and paper, because they would be too tedious. It can teach you how to do it and what this will lead to in mathematics. On the other hand, it may produce a generation of—what's the equivalent of illiterates—enormous numbers who can add up a grocery bill but you have these two possible cases. And that's why we have a real challenge.

Omni: I seem to remember Huxley saying in his Brave New World that the most decisive changes in the future would be biological changes rather than technological ones. Do you agree with that or not?

Clarke: I don't think biological changes in the sense of human biology. Obviously biology is going to be very important and genetic engineering too. That's already started. It's going to have a revolutionary impact on society. Now they've got the first patent for it. A new organism issued by the patent office. That would have been incredible a few years ago. I think we can successfully produce insulin now from a purely biological micro-biological methods and it anyone can succeed in getting a nitrogen-fixing organism that's the main fertilizer problems. The impact of the Third World will be enormous. All sorts of terrific possibilities. Also some negative ones. People are worried about recombinant DNA work. I think that fear is greatly exaggerated. I think it would be very useful in this area.

Omni: Are you gloomy or optimistic about the future in terms of what we're going to utilize information that we're receiving? Do you think we're going too far too fast? Do you think its time to pause?

Clarke: No, we can never pause. You talk on your face if you do. I'm an optimist. We have a 51 percent chance of survival.
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