

GRIDLOCK AND OTHER STORIES

(A Collection of Shorter Fiction)

By

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FOREWORD

When an author becomes successful, the publishers leverage the sales of his books by printing collections of his short fiction. For whatever reason, my publisher never seemed interested in doing a collection of my shorter works (perhaps they didn't think I was sufficiently successful).

With the introduction of Sci Fi - Arizona, I have decided to remedy that oversight. This book is a compendium of most of my short stories, novelettes, and novellas. The only works not represented here are the two sequels to *Beer Run* that make up the last two-thirds of *A Greater Infinity*.

This book is intended for two audiences. The first, of course, are people who like the way I write. Here you will find 13 shorter works that I hope you will enjoy as much as the novels you have read.

The second group is those newer writers who take part each month in Sci Fi - Arizona's Writer's Workshop. In the *Author's Notes* that follow each story, I will try to give you a sense of how the work came to be and discuss the writing techniques that make each story a successful piece of fiction. And, of course, I hope to entertain you. That is, after all, what a professional writer is supposed to do!

Finally, as a bonus, I have included the first chapter of my latest novel, *Gibraltar Earth*, as a preview to what you can expect to find at Sci Fi - Arizona in the future. *Gibraltar Earth* is the first book in the *Gibraltar Stars Trilogy*. With it, I hope to prove that fiction distributed on the INTERNET is every bit as good as what you find in bookstores. Look for it in 1999, right here on Sci Fi - Arizona!

-----Michael McCollum, Tempe, AZ, April 24, 1998

DUTY, HONOR, PLANET

**A story of love, honor, courage,
and the Strategic Defense Initiative...**

Jan Pieter Heugens had been a hod carrier, a sailor, a revolutionary, and a hard working diplomat in his time. As he stood before his spacious office window and watched the rain sluice down on New York from leaden skies, he reviewed his checkered career with a mood that matched the gloom of the weather. In the last dozen years, he had seen famines, and floods, and revolutions aplenty -- all of which the UN had somehow weathered under his stewardship as Secretary-General. As he watched the rivulets of water cascading down the glass wall in front of him, he wondered if either he or the UN would last long enough for his term of office to reach a dozen and one years.

The oaken door behind him opened and his secretary ushered a ragged figure inside. Heugens took a deep breath and turned to face the man he was careful to think of only by his code name, "Bernard."

Bernard peeled off a threadbare raincoat and tossed it over the back of one of the leather chairs in front of the Secretary-General's desk.

"Did you have a good flight down?"

"Average good for a re-entry, Mr. Secretary-General. A little bumpy on final approach to the Cape," Bernard said, seating himself in the other chair. "I see by the *Times* that the Security Council has scheduled a vote for next Wednesday."

"Don't believe everything you read in the papers. Torres is not about to let it come to a vote. The Motion to Censure is dead. It just hasn't laid down yet."

"Then we go as planned?"

"We go as planned. Have you found your man?"

Bernard nodded. "Yes. Of course, a thousand things *could* go wrong."

"Such as?"

"Our intelligence could be faulty. Maybe Torres is on to our scheme and feeding us what he wants us to hear."

"In that event, Bernard, we'd better prepare for the firing squad."

"What about Warren? Can we trust him?"

"He is the President of the United States. If not him, who?"

Bernard's response was a rude noise.

"When can you get the ball rolling?" the S-G asked, tamping tobacco into his pipe. His doctor would not let him light it, but the act of holding it clenched between his teeth relaxed him.

"Forty-eight hours."

Then we start operations two days from now. You put our plan into action.”

“Order acknowledged, Mr. Secretary-General.”

Heugens sighed. Now that the decision had finally been made, the burden on his shoulders felt lighter than it had in days.

“How about a glass of sherry before heading back?” asked his visitor.

“A whiskey’d go down better.”

“Then whiskey it is!”

#

The Earth was a blue-white jewel poised against the jet-black canvas of open space. Occasionally a patch of brown or green, or gray would poke through the all-encompassing white bands of clouds that girded the globe and obscured the familiar outlines of the seas and continents.

Friedrich Stassel gazed absently at the viewscreen at one end of the mess hall and noted the trailing terminator was near the western salient of Africa. He hurriedly gulped down the last of his tea. Two quick bites finished off the last of his toast and peach marmalade. It was late and he was due on duty in a few minutes.

Unnoticed by Stassel, Major N’Gomo, the Station Executive Officer, stepped through the messhall hatch and surveyed the crowded room with sharp eyes. He spotted the young German and moved quickly through the clutter of tables and subdued conversation to stand beside him. Stassel looked up to see a set of flashing white teeth set in a face of darkest ebon.

“The Commandant would like to see you, Fred,” the Ghanaian said.

“Yes sir,” Stassel replied. He looked quizzically at N’Gomo, but the Exec’s face was an aloof mask as always. No one could ever tell what went on behind those yellow tinged eyes. Stassel gathered up his tray, standing slowly to keep the cup and silverware in place in the one-third gravity of the space station, and headed for the main hatch. As he passed the disposal chute, he stuffed the utensils into its gaping maw with a clatter of steel on steel.

The Commandant’s office was ninety degrees spinward around the Station’s rim from the officer’s mess. Stassel quick stepped his way around the rising curve of the Alpha Deck corridor, hurrying as fast as the in-station traffic laws would allow. He chewed his lower lip and wondered about the summons as he walked, mentally reviewing all of his activities for the last week. Had he committed an offense serious enough to warrant being called on the carpet by the Commandant himself? Offhand, he could not think of anything.

Of course, just because you did not know about it was no sure indication of a clear conscience as far as General Heinemann, the Commandant, was concerned. More than one officer had walked jauntily into Heinemann’s office, only to emerge a whipped man. Rumor was that the Commandant could see through steel bulkheads up to a centimeter thick. Stassel had no reason to doubt it.

Outside the Commandant’s office, Stassel stopped to check his uniform in the mirror provided for just that purpose. A blond young man with Heidelberg dueling scars around his scalp, a serious face, and soft blue eyes that ill befitted a soldier peered out of the mirror at him. The picture was completed by an asymmetric nose -- the result of ejecting from a burning plane at too high a speed in pilot training -- and a spotless black and silver uniform. He carefully brushed a couple of imagined wrinkles from his tunic and

rubbed mirror-polished boots on pants legs for insurance.

Then he took a deep breath and knocked on the Commandant's door. A few seconds later he heard a muffled order to enter. Stassel marched to the front of the Commandant's desk, snapped to attention, and saluted. Heinemann was making notes on a yellow note pad and continued writing as Stassel held the salute.

After a few moments, he put down the pen and looked up, his steel gray eyes more tired than Stassel could remember having seen them before. The Commandant returned the salute and leaned back in his chair.

"Have a seat, Friedrich. Smoke if you like."

Stassel was momentarily startled by General Heinemann's use of his first name. He had not known that the Commandant knew it. He hesitantly took one of the gray UN issue chairs in front of the desk, politely declining a cigar from the Commandant's humidor.

"How is your dear mother? It's been almost five years since I've seen her," Heinemann said, puffing a stogie alight and blowing a blue cloud of smoke toward the ventilator shaft. "I'm afraid I have been derelict in not visiting since your father left the service."

"*Mutteris* fine, Herr General."

"I served under your father inboard *Graf Von Bismarck*. Did you know that? I was his Executive Officer and his friend."

"My father used to talk a great deal about his days in space aboard *Bismarck*, Herr General. He spoke of you often, and only with highest regard."

"I was sorry to hear of his death last year, Friedrich. An accident on the autobahn is a tragic end for a spaceman, no?"

"Yes sir. Most tragic."

"He was a good German, your father. In your great grandfather's time, that was a term of derision, Friedrich. Did you know that? It has been men like Hans Erich Stassel who put some respect back into the word *Deutschlander*. Why as late as fifteen years ago, a Luftwaffe officer could never have worn black and silver. To do so would have been to invite comparison with Hitler and his maniac *Schutzstaffeln*, the dread SS. Do you understand what a handicap we have had to overcome, Friedrich? It was no easy thing to re-earn the respect of civilized folk after having lost it so thoroughly."

"Yes sir." Stassel wondered what the Commandant was getting at. The old martinet did not usually give himself over to reminiscing. It was a bad sign.

The Commandant cleared his throat, and snubbed out the burning cigar, attacking it as if it were an enemy. "I have orders, Hauptmann Stassel. You will report to the shuttle docking portal immediately after your meeting with the Briefing Officer. There you will take the in-orbit shuttle to Peace Control Satellite Alpha-Nine for duty until relieved. Your personal gear is already aboard."

"Alpha-Nine, Herr General? Robertson has Alpha-Nine on the duty roster next shift."

"Robertson is in the brig with Garcia. They got into a disagreement in the Lounge last watch and will be cooling off for the next ten days or so."

“Robertson and Garcia? I can’t believe it. What started it?”

“What else?” the Commandant asked, staring idly at the blue and white UN flag that decorated one side of his office. His voice was weary with too much strain and work.

Stassel did not have to ask what he meant. Robertson was an American and Garcia a Mexican. Their fight had started over the border crisis, of course. They were too good friends to let anything other than women or politics come between them.

“It’s getting bad, isn’t it?” he asked.

Heinemann sighed. “Worse than you might think, Hauptmann. Even the ranks of the Peace Enforcers are not immune to these internecine squabbles that have broken out all over the face of the Earth. If it is not the North Americans against the South, then it is the Australians versus Indonesia, or Japan against China and West Russia. I tell you the whole world is going to Satan in a hand trolley.” Heinemann glanced at the chronometer on the bulkhead behind Stassel. “The time is getting short, Hauptmann. You still need to be briefed.”

“Yes sir.”

“Before you go, Friedrich. Do you know why I am picking you for this assignment instead of the backup astronaut?”

“No sir.”

“Because, like your father, you are a good German. And the world needs more of us. We know how to follow orders without question. Few other people do. It is a much-maligned trait, Friedrich. The Yankees and French are always making snide comments about blind Prussian obedience to orders. Do not let them faze you. In the current situation, blind obedience to orders is the only thing that is going to save us. I need men in orbit who can keep their heads and do their duty. Can you?”

“I think so, sir.”

“So do I, Friedrich. You are your father’s son. Now you had better see the Briefing Officer in Compartment One-Twelve. You are minus minutes for that shuttle launch. They’ll hold it if you’re late, but they won’t like it.”

“Thank you, Herr General.”

Wing Commander Livingston was on detached service from the RAF. His powder blue uniform looked out of place next to Stassel’s silver and black. Stassel sat in an aluminum chair and took notes as Livingston reeled off figures in his clipped, Oxford accent.

“... Your area of responsibility will include Longitudes 100 West to 120 West, Captain. Your satellite will be in an alternating synchronous orbit with Beta-Nine, of course, and you will have prime responsibility in the Northern Hemisphere during even watch periods and Southern Hemisphere during the odd. Luckily, south of the equator there is only empty ocean between 100 and 120 West, so you’ll be able to get some rest.

“You are hereby directed to pay especially close attention to the situation around the US--Mexican border...” Livingston looked up, the podium light casting shadows on his face. “Watch your ass on that one, Fred. It is a tinderbox. The Mexicans are bound to try a raid between now and the Security Council vote on Friday.”

“I thought the vote would be Wednesday,” Stassel said.

“Wouldn’t bet on it if I were you, chap. Besides, I have Friday afternoon in the pool. So I can hope.”

“How do you think the Council will vote, Livingston?”

“I’d say they will turn the resolution down flat. Too many people do not like the Yanks for it to pass. They enjoy the sight of the Mex dwarf tweaking the Giant’s nose, and they will vote against it just to keep the pot boiling. However, to make sure, you can bet the politicians in Mexico City will try to score another coup to intimidate the rest of the Council into voting their way. God knows it’s easy enough to do.”

“And if the Mexicans keep it up?”

“Then it’ll come to war quick enough. With Warren in the White House, it is practically preordained. He barely scraped by last election with strong Ecocrat support. The Mex’s are punching the Ecocrats right where it hurts. Warren is going to have to act quickly or else lose his base of power. And if it comes to war, you know what that will mean.”

Stassel nodded.

It had started as an argument over import quotas on Mexican sugar beets. In the bad old days, nothing would have come of it. The Mexicans would have complained to Washington, only to be ignored. A storm of injured Latin pride would have boiled up in Mexico, but they would have been powerless to act.

However, the bad old days were long gone. Two things had occurred to permanently change the balance of power in the world, and not necessarily for the best as far as the current situation was concerned.

The first was the rise of the powerful Ecocrat lobby. Growing out of the environmental movement of the late twentieth century, they were a power in every democracy in the world. In the US particularly, they represented a large, powerful, and vocal voting bloc dedicated to the proposition that all things ecological were sacred. They were one-issue voters, ready to kick politicians out of office *en masse* for the slightest ideological impurity.

The second development was the formation of the UN Peace Enforcers following the twenty-day scare of the Misfire War. The Peace Enforcers were a multinational force with a single mission: To stop any aggressor who struck against any UN member state. Their unofficial motto was, “You start the war and we’ll finish it!”

In theory, any act of aggression by one nation against another would be met instantly by the orbital lasers and Peace Enforcer fusion rockets. However, in practice there was a threshold level of violence, a tripwire effect, below which the cumbersome Security Council machinery would fail to respond.

These two facts were the natural precursors to the current crisis on the North American continent.

Lone Mexican Air Force planes -- officially piloted by bandits and renegade officers -- had struck north at a series of unusual targets designed to put intense pressure on the administration in Washington in the sugar beet dispute. Instead of hitting cities or centers of military and industrial power with the nuclear weapons Mexico was rumored to have, the planes struck against targets that the powerful Ecocrat lobby considered irreplaceable national treasures.

Carlsbad -- where a single smart bomb had penetrated the visitor center and elevator shaft to explode in the cavern below, causing massive destruction. And more importantly, sealing the caverns for a hundred years due to radioactive contamination by the Cobalt 60 powder that had cladded the high explosive bomb.

Lake Mead -- where a specially developed film of evil smelling resin lay on the surface of the lake, killing fish by the millions, leaving their rotting bodies to wash ashore and provide graphic pictures for the television cameras.

The Tonto National Forest -- thirty percent destroyed in a firestorm started by Mexican incendiary bombs.

Such limited violence was primarily psychological in its impact and well below the tripwire level that would galvanize the Security Council to action. Instead of hard action to stop the raids, the Council had indulged in bombast and recriminations. Complicating the matter were a number of small nations who supported Mexico for reasons of their own. Supported her to the point where they refused to believe the irrefutable evidence provided by Peace Control Satellite cameras. When a Resolution of Censure was finally introduced, the small nation delegates had fallen to bickering over the placement of commas.

There the crisis stood, stalemated and explosive. But should the situation develop into a shooting war -- in other words, should the Americans attack -- Stassel had no doubt of the UN response.

The Peace Enforcers would be ordered in on the side of the 'innocents' being invaded. Weapons of mass destruction laboriously stockpiled in orbit would be ordered used. Every attacking missile and aircraft would be lasered out of the sky. Every ship would be destroyed at sea. If simple surgical destruction did not work -- and against the Americans, there was every reason to think it would not -- then the less selective weapons would be released. Fusion warheads that had slept in the bellies of Peace Enforcer ships for twenty years would be unleashed against the "aggressors."

To do otherwise would split the UN into a dozen squabbling factions. The majority had always held that no provocation could be great enough to go to war.

Except in this case, the 'aggressors' would be in the right and every man and woman aboard the space stations and satellites knew it. Worse, the Americans were not the minor league imperialists the PEs had been formed to stop. They had ground-based lasers of their own. The Peace Control Satellites were few in number and in fixed orbits. No one knew who would eventually win the fight, but one thing was certain. When the smoke cleared, the UN Peace Enforcers would be in no condition to continue their mission and war would have been unleashed once more upon the world.

"Maybe the Council will approve the Resolution of Censure," Stassel said, as the Briefing Officer struck a match and lit a cigarette.

"Care to back your opinion with cash?" the Englishman asked, grinning. "I hate to take advantage of a babe in the woods, but that is too good a chance at profit to pass up."

"Bet with you, Livingston? Do you think my mother raised stupid children?"

"Hmmm ... I'll not answer that." Livingston glanced at the chronometer on the wall. Its red glowing numerals read 08:31-- except one of the LED's had burned out and the numeral one was missing half its height. "You haven't got much time, Fred. The shuttle leaves in twelve minutes."

"Yes sir," Stassel said, gathering up his notes and a situation briefing tape to be studied on the trip to the satellite. He got up to leave.

“Not so fast,” Livingston said, his bantering tone suddenly turned serious. “The guardian of our virtues wants to see you.”

Stassel strained to keep his expression neutral as Livingston pressed a buzzer. Within a few seconds, the cabin door opened and a dumpy, hard-faced woman in the uniform of a UN Political Officer strode in. Stassel avoided looking at her. Colonel Irma Shetland was not one of his favorite people. She was a dour faced American with a nasty habit of delving into other people’s confidential files. Stassel had spent an uncomfortable hour with her when he’d first come aboard the space station and he had not forgotten the experience. His face still turned red with anger when he thought about it.

“Good morning, Hauptmann Stassel,” she said in her flat, emotionless voice.

“Colonel Shetland,” he replied.

“I understand you are going into one of our hot spots. I am sure you will do well there.”

He remained silent.

“It is my duty, however, Herr Hauptmann, to inform you of the penalty for violation of Peace Enforcer regulations should you decide to get involved without authorization.”

“I have read the regulations, Colonel,” he said.

“I hope you have. In addition, I hope you remember that thirty-five years in a UN prison is a long time. So stay out of it no matter what your personal biases.”

“Should you fail us in this,” she said, pausing to let the import of her words sink in. “I will order Alphas Eight and Ten to laser you out of the sky. Got that?”

“Yes, Colonel,” he said aloud. Silently he let the word he never dared say in her presence float to the surface. *Gestapo!* It was the worst insult he could think of.

“Then get out. I have important things to do. Seems the UN is sending up another bigwig observer and I’ve got to hold his hand,” she said.

Stassel hurried to a spoke entrance a hundred meters spinward from the briefing cubicle and punched for the lift. He frowned, considering Shetland’s warning to him. He could see cautioning an American against taking sides. However, why talk to him about it? He was nominally neutral in the dispute. Was his psychological profile so clear that she could read his thoughts? Was her warning merely a precaution, or did she have hard information that he was not as disinterested as he pretended to be?

Did she know about Alicia? Stassel shuddered at the thought. How could she possibly know? He was nearly positive that his personnel file did not list her. Could the Political Office be investigating him for suspected disloyalty?

The lift whooshed him upward toward the station axis. The familiar, ever changing Coriolus force as he approached the axis clamped his stomach muscles in a familiar vise. At the zero gravity axis, Stassel kicked off and floated to the docking port at the north pole of the station and through a flexible tube to the shuttle.

The shuttle was a standard orbit-to-orbit supply bus -- three spherical sections assembled as though they had been skewered onto a shish-kabob sword with a hydrogen-fueled rocket at one end and the personnel cabin at the other. The shuttle was used to transfer personnel and consumables from the

mid-Atlantic Space Station (and her mid-Pacific counterpart) to the orbiting Peace Control Satellites.

The station was in synchronous orbit 37,000 kilometers above the equator so that it hung perpetually over thirty degrees west longitude. The Peace Control Satellites also orbited 37,000 kilometers out, but in two separate orbits, each inclined sixty degrees from the plane of the equator and from each other. Each satellite thus described a figure eight over a stationary strip of land, taking one day for the full traverse across the face of the planet. The satellites climbed to the latitude of Hudson's Bay in the north and dropped to the northern tip of Antarctica in the south. Spaced every ten degrees of longitude - or 7500 kilometers apart -- in their orbits, the satellites passed over every industrialized and developing nation on Earth four times daily. The seventy satellites and two space stations in orbit gave the UN's hundred gigawatt lasers overlapping fields of fire against any conceivable opponent. War was impossible.

At least, that was the theory.

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"How you doing, Krauthead?" Smiley Burgess, the shuttle pilot greeted him as he floated into the cabin. Burgess spoke in a slow Texas drawl that Stassel found irritating. In fact, Burgess embodied most of the characteristics he found objectionable in Americans.

"I am fine, Mr. Burgess," he said. He noted the six empty couches around the pilot. "Where are the rest of your passengers?"

"You're it, Friedrich old pal." He pronounced the name "Fred-rick," completely mangling the final 'ish' sound. "I guess the *Hun* wants to get someone he can trust into Alpha-Nine ASAP. I made a special trip to Beta-Nine yesterday. Took off Powell and substituted that chink, Hsin Liu, in his place. Funny thing about it, the flanking satellites all have Europeans, or Africans, or Asians in them. Not a single American, north or south, to be seen."

Stassel nodded absently. The Hun was General Heinemann.

"Strap yourself in, boy. This is going to be the fastest change of plane maneuver you ever did see."

Stassel took a couch and fastened the safety strap across his chest. He ignored the undocking maneuver and preliminary bursts of the attitude jets. He inserted the briefing tape into the couch reader and tried to concentrate on the mission.

After five minutes of futile efforts, he snapped off the viewer in disgust. He cursed himself under his breath. What was the matter? He did not usually have trouble concentrating on a briefing. Why now? Maybe it was the irritation he felt with Burgess. Except he knew it was not. Burgess always irritated him. He was like a mosquito buzzing around in the blackness while you were trying to sleep. It wasn't the actual sting that kept you awake, but rather the anticipation. With Burgess, you waited, wondering what he was going to say to rub you the wrong way next. No, Smiley Burgess had never bothered him so much before that he could not concentrate on the mission at hand.

Colonel Shetland was the cause of his dry mouth, and sweaty palms, and inability to concentrate. Colonel Shetland and her not-so-stupid insinuations that his loyalty might not be completely with the *Vaterland* and the UN. In that instant of honesty, Stassel felt the memory that he had tried so hard to suppress boiling to the surface, plain for him to touch and feel, and smell.

It was the memory of Alicia.

#

Alicia Delgado. She of the raven hair and the piercing black eyes. The ready smile and the quick wit. The soft warmth, the quick passions, and the quicker temper.

There had been those who had laughed at them, the tall blond German and the short, dark Mexican girl. They had always looked upon Alicia and him as a joke -- two fighter pilots in helmets and flight suits walking across the hot tarmac hand in hand, chattering lovers' nonsense to each other.

However, Friedrich Stassel had not considered it a joke. Twice he had wiped smiles off the faces of fellow pilots -- one German and one American -- behind the Officer's Club after the Friday night dance. Mostly though, he felt the haughty laughing eyes on the back of his neck and burned with anger that he was the butt of their jokes.

Alicia just laughed back, comforting him until he had no room for anger within him.

Stassel chewed his lower lip and gazed out the shuttle viewport at the silver points of light that were the stars. His mind flowed back to those first days of advanced fighter training in the cloudless skies of Arizona.

He had been stationed at Luke Air Force Base a month when he had been invited to a party at the Base Commander's home. All the instructor pilots and foreign pilot-trainees had been invited. They made a sizable group since Luke was one of the focal training bases of the military assistance program of the United States. Halfway through the evening he'd found himself steered by a Major's fat wife to a group of young officers in civilian clothes, gathered in a tight clump around a pretty, black haired girl. He barely noticed the men as they introduced themselves. His attention was riveted on the girl.

"Friedrich Stassel," he had stammered, taking the warm softness of her hand in his.

"*Teniente* Alicia Delgado, Mexican Air Force," she had said in a voice dripping velvet.

"You ... a pilot?" he'd asked lamely. "I thought..."

"That I was a wife or girl friend?"

"Well, Uh."

"A whore perhaps? Imported for this party to entertain the troops?" She laughed, the gaiety of her tone taking the sting out of her words. "What's the matter, Leutnant? Don't you think a woman can fly a fighter plane as well as a man?"

It was then that all the bright young Yankees had first laughed. True, in retrospect he could see they were laughing with Alicia. However, at the time it had seemed they were laughing at him. He had beat a hasty retreat with his backbone locked ramrod straight and his ears turning bright crimson. Never again would he speak to the *verdammte* bitch, he vowed.

A week later, they were lovers.

Stassel sighed as he watched the back of Burgess' head while the American was busy with the course computer checking over the next delta V burn. He tried to think about the mission, but the pull of Alicia was too strong. His thoughts were drawn to their last leave together.

It had been late spring, a time when the mercury began to climb dramatically on the deserts of Arizona. He and Alicia had managed a week's furlough from training. The occasion was an expedition

to the Grand Canyon with two other officers and their wives. Captain Hardy, Stassel's instructor, had promised to show them Havasu Falls, one of the last unspoiled wonders of the world. Unspoiled because it was accessible only by backpacking or horseback.

Stassel remembered the hike down only as an uncomfortable four-hour walk. The heat was building by the time they departed Hualapai Hilltop, a ledge carved out of the side of the canyon almost a thousand meters in elevation and 20 kilometers distance from the falls. The hike through dry creek beds became more miserable by the hour as the temperature soared.

Alicia did not seem to mind the heat at all. She wore shorts and a close fitting halter-top for comfort. Her dark brown skin quickly shone with a fine layer of perspiration as she stepped out quickly, her hiking boots crunching the loose gravel of the trail underfoot.

Fifteen kilometers down the trail they came to the Havasupai Indian settlement. A village of neatly painted frame houses set in a wide spot in the canyon, it was like stepping into a Garden of Eden from the wilderness. A cool creek bubbled through the village and soothed their hot, tired feet. Another five-kilometer walk brought them to the falls.

Stassel smiled as he remembered the falls. A white torrent of water rushed over a sculptured cliff in a drop that seemed unending. The water finally pounded down with a roar into a sparkling mist and a pool of azure-green. In the pool, built up over thousands of years, were limestone terraces over which the waters of Havasu Creek bubbled in a dozen cascades.

They stayed in the campground at the base of the falls for a week. He remembered the evening of the last day before starting the grueling hike back to civilization. It had been a Thursday and the campground was nearly deserted.

At dusk, he and Alicia had decided to go for one last swim in the pool at the base of the falls. They had staked out a secluded spot on the far side of the pool and stripped off their clothes, not bothering with suits. The few other swimmers were far away and predisposed to mind their own business.

Stassel remembered the icy bite of the water as he dove in. Fed by a mountain stream, the chilled water of the pool momentarily took his breath away. Then there had been the warm touch of Alicia as they embraced and kissed. They had sunk beneath the surface of the pool, finally separating to gasp and sputter their way to the surface. Afterwards, he remembered the warmth of her as they lay together on a towel, shivering in the last light of day.

"This is paradise, Friedrich," she had said, propping herself up on one elbow, her face barely visible in the oncoming gloom. "Why not stay? No one would miss us. The world no longer has any need of soldiers. So why do we bother?"

"Because it is expected of us," he had replied.

"Oh, our duty then?" she asked.

He nodded. "Our duty."

"I hate that word," she said, scowling. "To whom do you owe your duty, my love?"

The question surprised him. He had not really considered it. Finally, after a moment of silence, he said, "My father, I guess. I come from a long line of military men. He would be disappointed with me if I were not a soldier, too. After my obligation to the *Luftwaffe* is over, I plan to try for space. My father commands a ship in space, and it is his dream that I follow him. How about you, my dark haired

Adlerin?

“Adlerin?”

“It means eagle. *Aguila* in Spanish, I think. Why have you taken up the male sport of war?”

“Because it was expected of me also. And because I am the first woman pilot in the history of the Mexican Air Force. There are those in Mexico City who would have our backward nation join the twenty-first century. I am their token for progress. As such, I dare not fail.”

“And it means a lot to you?” he asked.

She shrugged. “I suppose. However, when I see this beautiful place around us, I sometimes wonder. Are all of mankind’s concerns more important than a single minute spent in this paradise?”

“I don’t know. Tell me if you ever find out.”

“We should do something to memorialize this moment, *liebling*.”

He had raised his eyebrows in surprise, forgetting that she could not see them in the dusk. “*Liebling*, is it? You have been studying. I suppose I could carve our initials in a tree ... *Oof!*”

His ribs ached where she had punched him.

“*Monstruo!* You do and I’ll carve my initials in you.” She laughed, a high sparkling sound nearly drowned out by the roar of the falls. “Besides, I am getting cold. Perhaps we can think of something in our tent to celebrate the moment ... and to keep each other warm.”

#

“What are you smiling at?” Smiley Burgess asked.

Stassel was suddenly pulled back to the present. The shuttle pilot had squirmed around in his seat to stare at his passenger. Stassel realized that he had been smiling and the expression quickly turned to a frown.

“A girl I’ll bet.”

“What?” Stassel asked.

“That expression on your face. I’ll bet you were thinking about a girl.”

Stassel nodded. “A girl I met while training in your homeland. She was a pilot, too.”

“Love her?”

Stassel nodded again.

“Well then, why aren’t you married to her?”

Stassel looked into his laughing eyes, seeing all the laughing eyes of his past. He suddenly felt a knot in the pit of his stomach, wishing that Burgess would go away. “She was killed two weeks before graduation in a crash. Her plane went down in a desert canyon and burned on impact.”

Burgess’ sneer was instantly gone. For the first time since he had known the shuttle pilot, Stassel thought he saw compassion in those eyes.

“Look, Fred, I didn’t know. I’m sorry.”

“That’s all right. I should not burden you with my problems. Besides, it was a long time ago. Before I joined the UN.”

The pilot cleared his throat. “Uh, get your things ready for transfer. We’ll be coming up on Alpha-Nine in about twenty minutes.”

Peace Control Satellite Alpha-Nine floated into view fifteen minutes later. Like all such, it was constructed in two pieces. The thirty-meter long cylinder that housed the hydrogen-fluorine gas dynamic laser and its fuel tanks was attached by a hundred meter long umbilical to a sphere painted in a haphazard pattern of light and dark checks. The ten-meter sphere was festooned with antennas, telescopes, and the more arcane paraphernalia of a dozen different kinds of information sensors and communications devices. The doghouse, as the sphere was called, was crammed solid with hardware that acted as the satellite’s eyes and ears and brains. The umbilical -- floating limply in space as the shuttle moved in slowly for a hard dock -- connected the two halves of the satellite together and isolated the laser module with its sensitive aiming mechanisms from extraneous perturbations. For instance, the force of a hundred-ton shuttle coming to rest in the doghouse’s docking collar, or the effect of the satellite commander doing his morning calisthenics.

The satellite living quarters were located at the end of the doghouse arbitrarily labeled ‘top’. They were tiny, consisting of a control center, shower bath, and combination galley and recreation-bunk room. The crew quarters of a PCS did not have to be large. The satellite commander was the only crewmember. Even so, the UN had a perennial problem keeping seventy satellites manned with reliable people on a one-week rotation schedule. What the satellite commander lacked in numbers, he more than made up for in firepower. At his fingertips were the controls to a hundred-gigawatt laser, powerful enough to strike down any opponent. Moreover, if needed, he would be backed up by the power of the space fleet.

The shuttle nudged the satellite-docking collar with a dull thud followed by the hiss of compressed air being vented. Stassel unstrapped from the acceleration couch and floated to the locker where his vacsuit was stored. Burgess busied himself computing the return trip to the space station.

In ten minutes, Stassel was suited up, with helmet in hand. He stood beside the open hatch to the transfer tube. “Thanks for the ride, Smiley,” he said, holding out his gloved hand to the pilot.

Burgess took it hesitantly. “Bye, Fred. See you next week.” Burgess looked down at the deck, hesitant. “Look, I’m sorry if I said anything ... well, you know...”

“Forget it,” Stassel said. “It was a long time ago. I’m over it now.” He knew as he said it that it was a lie. Thinking about Alicia on the trip out had ripped open the emotional scab he had secured on the wound of losing her. All the old emotions were once more raging within as fresh as the day she had died.

He hoisted his helmet and snapped it down over the neck ring, twisting it into place until the vacuum seals engaged. The familiar dirty sock smell of his suit engulfed him. The vacsuit was merely a precaution. The tunnel to the satellite was pressurized.

Stassel kicked off up the tunnel, towing his personal effects behind him in a net bag. As he reached the other end, the hatch before him popped with a soft sighing sound as the pressure equalized.

Raj Bahmani, Indian Air Force, stood on the other side of the tiny airlock. He was suited up and anxious.

Stassel twisted off his helmet and lifted it free. "Hello, Raj," he said, shaking hands with the short brown officer.

"Hello, Fred," Bahmani said. His Cambridge accent was as incongruous as the turban he wore. "Where's Robertson?"

"Brig. I am his backup. Anything to report?"

"Have you heard about Sequoia National Park?"

Stassel nodded. Sixty hours earlier, a Mexican jumbo freighter masquerading as a commercial airline flight had broken through the Pacific Air Defense Identification Zone. Their target had been the giant redwoods. A thousand tons of highly toxic herbicides were dumped on the ancient trees. Reports from the area indicated lethality had reached eighty percent in some stands of trees.

"I picked up some Ecocrat orator on my last pass over the States," Bahmani said. "He was haranguing the faithful, urging them to rise up and smite the greasers. Things won't hold together much longer, I'm afraid."

"I'll keep an eye on it," Stassel said. He snapped to attention, his boots held to the tetrahedral grid set in the deck by mechanical clamps. He saluted the Indian. "I relieve you, sir," he stated formally.

Bahmani did the same. "The station is yours to command, sir," he replied, completing the formula. "Good luck, Fred. You are going to need it."

Then he was gone head first down the transfer tube. Stassel shut the hatch behind him and began peeling off his suit. Minutes later, two metallic clicks and a muted clang announced the departure of the shuttle.

Stassel grabbed a sandwich from the galley and munched thoughtfully as he studied the tactical briefing tapes and the situation display Bahmani had left in the control center. The Indian was right. Things did not look good.

#

Stassel lay in the command couch of PCS Alpha-Nine and sipped tea from a hot squeeze bulb. The tea left a bitter aftertaste in his mouth. Before him were a dozen screens over which his eyes roamed ceaselessly. On the large central screen was a view of all of the Mexican State of Sonora and small patches of the Sea of Cortez and the southernmost region of Arizona.

Around the edge of the big screen were smaller screens, each with a different view. In one, he could see the long form of the satellite laser module, half in sun and half in dark, a semi-cylinder that appeared stationary against the ever-changing image of the planet. In other screens, he saw views transmitted from low orbiting reconnaissance satellites, zipping in a north-south orbit just beyond the limits of atmosphere. He glanced at the position map, noting that Alpha-Nine had just crossed the equator headed north. For the next four hours, Stassel would be over the crisis area and would be subjected to the awful strain that can come from harboring mixed loyalties.

On the one hand, he was an officer in the Peace Enforcers and sworn to uphold the peace and the rulings of the Security Council. On the other, what if the goals were mutually exclusive? The S.C. was impotent, a mere squabbling band of grasping politicians who were going to let everything he and so many others had worked for be flushed down the drain. Stassel liked Mexicans -- How could he help but like them? Alicia had been one -- and like most Europeans, he found Americans to be overbearing,

brash, and insensitive boors. In fact, they were a nation of Smiley Burgesses.

Nevertheless, this was one time when they were the injured party and the underdogs were in the wrong. It was anti-Americanism in the Security Council that emasculated the Peace Enforcers. Stassel scanned his screens and shuddered at the thought of what he would do if the Mexicans chose the time when he orbited overhead to step up the pressure. What they were doing was wrong, and it stuck in his craw to have to sit back and let them get away with it. Better for everyone if the next Mexican raid came during Hsin Liu's watch when Beta-Nine was in the Northern Hemisphere.

What about it, Alicia? Would you have destroyed Carlsbad over a sugar beet? Could you have brought yourself to follow orders and kill the thousand-year-old redwoods? How about Lake Mead? After all, it is a manmade lake rather than a natural one. Does that somehow make it right?

Alicia did not answer. In Stassel's opinion, she did not have to. She had loved the beauty of nature and to think she would have had anything to do with its destruction was ludicrous ... at least, to him.

An hour later he licked tongue over dry lips and watched a death duel take place ten thousand meters above the twin border towns of Nogales, Arizona and Nogales, Sonora. A dozen planes wheeled, and stooped, and dodged in a deadly dance of sputtering guns and sprinting missiles. Stassel watched the fight through the eyes of a low-level reconnaissance satellite. He followed the progress of the battle by means of an array of sensors ranging from infrared scanners to side looking radar. The quick thrusts and parries of the combatants were spelled out in glowing electronic symbols on the face of the main screen.

Stassel inhaled sharply as the tiny dot of a missile merged with the image of a plane. He tasted bile and smelled the stink of involuntary fear. His eyes burned from too little sleep and too much time spent in the command couch in the last seventy-two hours. On the screen, the wounded plane began its death dive Earthward as the missile exploded under one wing.

Stassel sighed heavily and released the couch armrest from his white-knuckle grip as he turned his attention away from the battle. Monitoring its progress was the job of specialists aboard the space station. He had another job to do.

As deadly as it was, the dogfight was a sideshow.

Pilots were fighting and dying down there in a militarily senseless engagement. Six Mexican fighters had crossed the border to attack a like number of American planes. They had no hope of success. Even now, the American reinforcements were swarming south to help their brethren. However, the men who had ordered the attack were not stupid. Their actions to date had been near brilliant in their reading of the international situation, as evidenced by the knots that they had managed to tie the Security Council into. Therefore, their purpose in initiating hostilities had to be something more than a straightforward provocation.

The dogfight was obviously a diversion. The Mexicans knew it, the Peace Enforcers knew it, and the Americans knew it. Peace Control Satellite Alpha-Nine, orbiting over 10 degrees north latitude, 110 degrees west longitude, scanned the battleground with powerful sensors. The electronic brain of the satellite sorted through a forest of information looking for that one telltale return that would indicate the presence of an unseen intruder. The bandit would be low and fast, and incorporate every concealment device possible. But it had to be there. No other explanation of the air battle raging below made sense,

Suddenly there it was in the lower right hand corner of the big screen. A flickering blue dot with a string of green symbols beside it. The raider was on the deck, hugging the ground as it screamed at

Mach 1 through a series of mountain passes and dry river valleys. It followed a path that offered the maximum in concealment for a low flying airplane. In fact, Stassel noted with grim satisfaction, it was much the same course followed by two generations of aerial drug smugglers. Having spotted the raider, Stassel ordered the whole array of sensors onboard Alpha-Nine and the string of recon satellites to focus on the speeding dot of titanium and high alloy steel.

Then he sat back nervously to wait. The computers would record all the information they could glean from the mass of data being collected. From that information, they would be able to guess the raider's armament, his probable future course, and with luck, his target.

Three minutes of data collection confirmed his worst fears. The intruder was trailing a minuscule wake of ionized particles. In itself, it meant little, but knowing that the situation was getting as desperate in Mexico City as Washington, he had little doubt as to the cause. Having trained in similar fighters, he could picture the red tipped missile slung at the midpoint of each wing, its high explosive warhead clad with radioisotopes harvested from commercial power plant waste. A sheath of metal that would become deadly radioactive shrapnel fragments when the missile exploded. If the raider managed to launch his weapons, the resulting explosion would contaminate an area five hundred meters in radius and the contamination would remain dangerous for decades. Any spot where the explosion occurred would be effectively defiled for the remainder of the lives of everyone living.

Stassel broke into a cold sweat at the thought. To use such a weapon at Carlsbad had been bad enough. However, a cavern did contain the fallout. Most of the non-American-press had gone to great lengths to point that out in their stories on the raid. Third Worlders had used the point with telling effect in their defense of the Mexicans in the Security Council. However, to use an isotope warhead in the open air was something else again. World opinion would never forgive them for it.

Stassel punched a communicator key with shaking hand. "Hello, Control, this is Alpha-Nine. I have a bandit at grid Bravo-Gamma-Three-One-Eight. He is hot. I repeat, he is hot!"

"We have him, Alpha-Nine," the Combat Center Operator aboard the space station replied. Stassel thought he detected a tense undertone in the man's voice. It was nothing like the bored acknowledgment he usually got from the CCO. *He must realize that this may be the spark that puts Civilization to the torch*, Stassel thought.

A fan-shaped area shaded in blue flashed on the screen, with its apex at the blinking blue spot that was the raider. The satellite brain had computed the probable flight path of the bandit. Spotted across the face of the big screen was a scattering of red dots with tiny vector arrows pointed down. These represented the position and course of American planes drawn out by the dogfight over Nogales. The intruder continued his zigzagging northern course. The Americans were seemingly unaware of his presence as yet. Their positions showed they were in rough search formation rather than having shifted to the more purposeful attack order. With the establishment of the Peace Enforcers, the UN had taken control of all the surveillance devices beyond the atmosphere. It put the various nations at more than a small disadvantage.

Stassel extended the probable flight path of the raider. As he did so, a white ellipse formed on the face of the screen. This was the computer's estimate of the target area, based on the raider's speed and fuel situation. The ellipse was centered on the Grand Canyon National Park.

Stassel cursed the depths of stupidity to which human beings could be driven by injured pride. He reached for the transmit button. "He's after the Grand Canyon, Control," he said with a quaver in his voice. *Gott im Himmel, let me be wrong!* He thought as he punched for a list of possible targets in the Grand Canyon.

The list was displayed on one of the auxiliary screens and was relatively short. The Grand Canyon was a huge place, a fact that had been drilled into him that long ago day when he had hiked down from Hualapai Hilltop. It was far too large an object to be held hostage in this game of environmental blackmail. Even a full-fledged nuclear weapon would have had trouble leaving its mark. Therefore, an aircraft armed with an isotope warhead would be aimed at a smaller target, an enclave within the greater National Park. First on the list of probable targets, just as he knew it would be, was Havasu Falls.

Stassel cursed the day he had decided to follow in his father's footsteps. He cursed the father of that unseen, misguided patriot who was being bounced around by wicked thermals and wind shears 37,000 kilometers below him. Most of all he cursed the Security Council and the UN in general for letting him get into this situation.

They were not after some picture in a travel brochure this time, a place he had never been and would never miss. They were after Alicia's place! The beautiful azure-green pool with its indescribable waterfall would become the deadly center of a radioactive cloud within minutes. No more would lovers swim in the icy water of Havasu Creek, to lie in the gathering dark and compete with the roar of the falls as they talked of the future. Possibly, the last place on Earth that had yet to see a parking lot would be no more.

And he had orders to let it happen.

Take no action without orders... Wait for the Security Council to vote Censure before we move ... It is your duty to obey your superiors, Friedrich. You keep that in mind. (Yes, Father) ... I need men in orbit who can keep their heads and do their duty. Can you? ... (I think so, Herr General.)

All the authority figures he had ever known poured out of Stassel's memory. There had been his father, the proud spaceman. There had been his science teacher in die gymnasium ("Excel at everything you do, young man"). There had been his first unit commander after he had returned to Germany from training in America. Major Von Brandt had helped put him back on the track after Alicia's death. It had been Von Brandt who had steered him toward the Peace Enforcers.

However, all of these stern images were suddenly overshadowed by a quiet, black-eyed face that stared up at him as she had done in life. *"It is wrong, Friedrich. Don't let the misguided fools do it."*

He made his decision and punched to energize the manual controls for the laser.

The long cylinder that was the laser module rotated on an auxiliary screen as raw, unfiltered sunlight flashed brilliantly from its flanks. On the main situation screen, a tiny black cross inside an aiming circle appeared and moved toward the blue dot of the raider. It had traversed half the distance to the bandit when the emergency communicator alarm erupted in his ears. He hurriedly shut off the alarm with his left hand while still controlling the motion of the laser with his right.

Colonel Shetland's angry face appeared on one of the small screens. "What the hell do you think you are doing, Stassel?"

"What, Colonel?" he asked, not taking his eyes off the target.

"Why have you activated your laser?"

"Activated my laser? You have to be kidding. All my dials show normal here," he said. In spite of himself, he could not help grinning at the thought of Colonel Shetland's face turning red with rage. He

stole a quick glance at the screen and gasped. She had passed the red stage and was well on her way to purple.

“By God, Stassel, shut that damned thing down!”

He suddenly gave up trying to bluff her. She had too many readouts that told her what was going on to be fooled by his denials. *Damned Gestapo and her spy cameras!* He thought.

“Why should I, Colonel?”

The cross was centered on the raider’s image on the big screen. He locked the laser on target and set the pumps into operation. He imagined he could hear their high-pitched whine in the laser module as they precharged the combustion chamber with fuel. Of course, he was wrong. The umbilical that held the two halves of the satellite together did not transmit sound.

“Because it is a direct order from a superior officer!” she screamed.

“Not good enough, Colonel. Think up some other reason.”

“Because you will be starting World War III.”

Suddenly indecision swept over him. Did he alone have the right to make such a decision? Could he risk the world just to save a bit of natural beauty that happened to have personal significance? What about all the people who had never seen Havasu Falls and could care less? Didn’t they deserve a vote too?

Shetland saw the indecision on his face and knew that she had won. Her manner was suddenly calm, her voice soothing. “Come on, Fred. Shut down. You are minus on your sleep. If you were thinking clearly you would never even consider this.”

The big screen suddenly blurred in front of him as tears welled up in his eyes. “But they are after Alicia’s place,” he pleaded. “I can’t just let them destroy it without doing anything to save it.”

Shetland looked perplexed, running his service record over in her brain. Then recognition showed in her eyes. “Oh, the incident during your training. The girl who was killed in the accident,” she said, her eyebrows furled in bewilderment. “Is that what this is all about?” She threw back her head and laughed. It was the first time Stassel had ever heard the sound issue from between her lips. “Don’t tell me you are ready to blow up the world because of some long dead girl friend?”

“*Do you know a better reason?*” he screamed, a red rage blocking out all else as his finger stabbed at the firing stud.

An invisible pulse of light erupted from the end of the laser module. And 37,000 kilometers below, a pencil beam of light sheared through the tail surfaces of an aircraft skimming the surface of a dry desert arroyo. There was no time for the unsuspecting pilot to react. Before he could comprehend what was happening, he was the center of a cartwheeling mass of scrap metal and flame and a towering cloud of dry, brown dust.

Stassel leaned back in his couch and shivered, his hands shaking out of control. There would be no turning back now. If the world wanted to blow itself up, he had just given it a good excuse. He turned to Colonel Shetland, still staring out of the screen at him, horror on her face.

“You’ve just killed us all,” she whispered, unable to find her voice

“Maybe,” he replied, feeling washed out and listless, but at peace with himself for the first time in years. “But maybe I just saved us, too. You can come get me anytime, Colonel. I’ll surrender peacefully.”

#

Jan Pieter Heugens sat once more behind his desk and watched storm clouds gather over the New York skyline. This storm seemed somehow less gloomy than the one a week before. It was suddenly a bright new day. That morning he had caught himself whistling in front of the bathroom mirror while shaving. It had been years since he’d done that. Not since Katrina had died, in fact. The intercom on his desk buzzed.

“General Heinemann is here to see you,” his secretary said. “And President Warren is reported to be in the building.”

“Fine, send the General in now.”

The door opened and a man with close cropped, graying hair stepped through into the office. He wore the black and silver uniform of the Luftwaffe and the blue beret of the UN Peace Enforcers.

“Good to see you again, Willy,” Heugens said.

“No more ‘Bernard’, Mr. Secretary-General?” Heinemann asked.

“I think Mr. Bernard can safely die now, don’t you?”

“What is the purpose of this meeting? I have urgent duties aboard Atlantic Station. As you may well guess, things are a bit unsettled right now.”

“It won’t take long, Willy. In fact...”

The intercom buzzed again. “The President is here, sir.”

“Send him in, Miss Callahan.”

Heugens stood and crossed to the door as a photogenic middle aged man entered. Heugens thrust out his hand to have it grasped in a firm grip. “How are you, Mr. President?”

“Well. And you, Mr. Secretary-General?” Heugens noted with amusement that Warren stood half turned for the benefit of the television cameras in the outer office. Then the door closed, cutting off the glare of the media lights, and the pose was suddenly gone. “Kind of public for a meeting of a cabal, isn’t it?”

“Don’t worry,” Heugens replied. “I am also meeting with Ambassador Torres this morning. We are going to discuss ‘the international situation’, as it is called. Mr. President,

I would like to present General Heinemann of the Peace Enforcers.”

“The man we have to thank for this happy state of affairs?”

Heinemann stood to attention and clicked his heels. “Not I entirely, sir.”

“Ah yes,” the President said. “Where is the young Captain who fired the shot heard round the world? I wanted especially to meet him.”

General Heinemann shifted nervously from foot to foot. "I'm afraid that is impossible, Mr. President. Colonel Shetland has him locked up aboard Atlantic Station. She is bound and determined to see him shot."

The President frowned. "You aren't going to let that happen, are you?"

"No, we are not," Heugens said. "I'm afraid Hauptmann Stassel's career in the Peace Enforcers is ended, but we will not waste him. He's too valuable a man for that."

"Good. He should be rewarded beyond his wildest dreams. Without him, the Council would still be stalemated. By the way, when is the vote?"

"This afternoon," Heugens said. "Torres is so incensed that he demanded it with no delay. Of course, he does not know that four of the delegates who have been making noises of sympathy at him are my agents. So he will be greatly surprised by the vote."

"You are sure we will win?"

"Positive, Mr. President. When it came out that the Mexicans were using isotope warheads, their goose was cooked. It's all over but the shouting."

Warren nodded, a half smile on his lips. "That's great. Tell me something, Mr. Secretary-General. Just how did you do it?"

Heugens turned to the General. "Want to tell him, Willy?"

The General nodded. "I've known Stassel's family for years, Mr. President. I served with his father aboard a German cruiser before the UN took over the national space navies. Stassel's father was something of a ... how do you say it? ... A maverick. He was the type of man who did his duty as he saw it and worried about following orders later.

"I figured that Stassel had a lot of his father in him. So, I called him into my office and gave him my Good-Germans-always-follow-orders speech. It bothered him. I could see it in the way he squirmed in his chair. Meanwhile, the S-G infiltrated one of his spies into the Mexican hierarchy and suggested the attack on your national monument that had the most meaning to Stassel. From there on, nature took its course."

The President looked doubtful. "Come on, General. I have seen the tapes. There was a moment there when this Colonel Shetland of yours had him on the ropes."

Heinemann laughed. "Poor, Irma. She is one of those who see conspiracies everywhere she looks. Come to think of it, all UN Political Officers are like that. When she saw that Stassel had activated his laser, she conjured up visions of some huge international conspiracy."

Heugens chuckled. "She was more right than wrong, too. Otherwise the three of us wouldn't be here."

The General nodded. "True, but Stassel didn't know that. So, Shetland got him calmed down at the last second and found out that he was ready to shoot, not because of a conspiracy, but for this girl he once loved. The incongruity of it was too much for her. She burst into an explosion of laughter ... almost an attack of relief. It was exactly the wrong thing to do. Stassel's psychological profile shows he has an unreasoning fear of being laughed at. When Irma broke down, it was just like thrusting a dagger into him. He fired that laser in angry reflex, without thinking."

Warren smiled. "Remind me to send Colonel Shetland a thank you note in about twenty years."

Heugens shook his head slowly from side to side. "I don't think she would appreciate that, Mr. President."

Author's Note for Duty, Honor, Planet:

I was bitten by the writing bug in 1975. Any professional writer will tell you how it happens. You become very critical of the stories you read, no longer deriving the satisfaction from them you once did. Eventually, this dissatisfaction builds to the point where you find yourself throwing a book or magazine across the room while shouting, "Any idiot can write better than this!"

That is what happened to me. I think the story that eventually set me off was the serial in Analog where a few fanatics in the United States decide to compress the whole of the Earth's atmosphere into big submerged tanks as a weapon against the Russians.

Therefore, having decided that I could do it better, I set off to prove it - which I did some three and a half years later on my twentieth attempt. That story was Duty, Honor, Planet.

I got the basic idea for the story while dangling my feet in the very cold water of Havasu Creek at the bottom of the Grand Canyon. My department at work had arranged a hike to Havasu Falls, even going to the expense of renting a couple of pack horses from the Havasu Indians so that we wouldn't have to carry anything in. (Note for city-bred hikers: Packhorses are both volume and weight limited! Of course, we packed way too much, so most of us had to carry our packs in anyway).

After staggering out of the canyon and returning the 250 miles to Phoenix, I began to compose the story. The prototype for Alicia Delgado was provided by the wife of a coworker, who I followed on the trail for seven miles -- I can still close my eyes and see her rather perky posterior stepping out in front of me! The choice of the Mexicans as the villains was simple. To see why, take the following simple quiz: "Name all of the foreign nations which border Arizona on the south."

In 1978, the moon landings were complete, the Vietnam War was over, and there was a struggle to see where the news media and the country would focus their attention next. Personally, I was in favor of continuing the emphasis on space, but the environmentalists were better organized than NASA. (They still are.)

In case it is not obvious from the story you just read, I am a strong supporter of the Strategic Defense Initiative. For one thing, it was my idea before it was Ronald Reagan's. I first became aware of the possibilities while working the night shift at the Pratt and Whitney's Florida Research and Development Center in 1969. All P&W engineers pulled night duty one shift a week in those days. There was not a lot to do, but if the shop needed engineering support interpreting a drawing, you were available. Considering the cost of even a one-hour delay in the machine shop, the arrangement made a lot of sense economically.

So each night of the week, one-fifth of the junior engineers caught up on their paperwork, held bull sessions in the big empty engineering bays, periodically walked the shop floor to look busy, and read a lot of magazines. One such was the magazine put out by the American Institute of Aeronautics and Astronautics (I don't even remember its name now). There was a very short article in one issue entitled "Zap!" It was a report of the first

aircraft (a small model) having been shot down by a laser.

The possibilities of a beam weapon that could shoot down anything it could see so intrigued me that I immediately fell in love with the idea. Most Americans do not realize that we are vulnerable. Even the Ukrainians can wipe us out if they want to!

Therefore, when I became a writer, it was not surprising that I would eventually get around to writing about a laser battle station in orbit. *Duty, Honor, Planet* is more than a technological SF story. It is a love story, and hopefully, gives the reader the feel of the real world in its rather tangled political situation. It also, I believe, postulates a completely practical way that a constellation of laser battle stations can be set up.

Having decided to become a writer in 1975, and having collected more than fifty rejection letters, I was thrilled to receive a letter from Ben Bova, the editor of Analog, stating that he liked my story. He asked me to trim it by 10% and resubmit. In the same letter, he informed me that he was leaving the magazine. After more than three years of sending him short stories, and finally training him to recognize good stuff when he saw it, he would no longer be around to read my deathless prose!

It was with mixed emotions that I sent in the modified story a few weeks later. Ben Bova had left and Stan Schmidt had not yet arrived. Yet, my story was bought anyway - apparently by the magazine's secretary. When talking to would be writers, I always advise them to try to get their stories bought while no one is watching the store.

One of the high points of my writing career came on a Saturday in 1978. I received a letter telling me that I had just sold my first piece of fiction and that it was going to be the cover story in the April 1979, issue of Analog. When I began my quest to become a writer, writing for Analog was the total extent of my ambitions. I had not only gotten a story published there; I had made the cover the first time out! Is it any wonder that *Duty, Honor, Planet* is my favorite short story?

The next year, when I needed a proposal for my second novel with Del Rey Books (my first real novel), I used the world I had created in *Duty, Honor, Planet* as the backdrop of my new novel, *Life Probe*. Friedrich Stassel is the grandfather of Eric Stassel, the protagonist of *Life Probe*. Four years after the story was published, Ronald Reagan initiated the Strategic Defense Initiative with his famous Star Wars speech of March 23, 1983. I doubt he ever read much science fiction and, therefore, it is unlikely that he got the idea from me. Still, one can never tell about such things, and I would not mind starting the rumor whether it is true or not!

Life Probe is one of the novels currently for sale at Sci Fi - Arizona. If you liked the story, you will probably like the novel.

SCOOP

**For Those Who Think Chernobyl and
Three Mile Island Were Big Deals,
In the Words of the Immortal Al Jolson:**

“You ain’t seen nothin’ yet!”

Ever wake up one morning to find you were fat, balding, and forty? That the youthful genius that set out two decades earlier to blaze a trail of glory for himself was gone, and the great accomplishments were mostly undone?

No? Well give yourself time. The moment of truth will come someday. It did for me.

It is not that my life has been a total failure. Far from it. I have any number of professional feathers in my cap. I single-handedly exposed the Carbelli land fraud case ten years ago. I was nominated as one of the ten best reporters in the state. I am a past President of the Downtown Kiwanis Club. However, those kudos are all minor league. I cannot truthfully say I have ever done anything truly great.

Before muttering a comment about male menopause, consider the following: My ex is a shrew. My alimony payments to her are big enough to break the back of an elephant and habitually two weeks late. Beth, my girl friend, has started making not so subtle hints about matrimony. The only things I have to show for my twenty years with the paper are a condominium mortgaged to the hilt and a whopping great hole in the lining of my stomach, for which I have been sentenced to a gallon of cow juice daily and never again to allow liquor to pass my lips.

Is it any wonder that I sometimes have trouble getting up in the morning?

I was sitting at my typewriter, immersed in my troubles, when I was jolted out of my reverie by Stringham, the proofreader’s assistant.

“Hey, Tarkington. The boss wants to see you. Better get in there. He sounds mad.”

“He always sounds mad,” I snapped, looking up from the pitifully inadequate copy I had been trying to rough out. I was covering Mrs. Roper-Johnson-Smythe’s society bash that evening. I was also taking Beth to the Suns game. If I could work out the story in advance, leaving only the names of the distinguished guests to be filled in later, then I would be able to slip out of the party and make the tip-off. “What does he want with me?”

“Go into the lion’s den and find out,” Stringham, brayed in that foghorn voice of his.

I pulled myself out of my comfortable chair and shuffled into the great man’s office. Isaac Greenwald is a certifiable curmudgeon. Rumor has it that he would run an expose on his own mother if it would fill a dozen empty column-inches. True, he is the best editor I have ever worked for, but it does not make up for the fact that he is an all around pain-in-the-patoot.

“You roared?” I asked as I slumped down into the purple on mauve chair he keeps in his office.

“You’re late,” he growled. “I asked to see you over a minute ago.”

“Had to stop in the john,” I lied.

“Do it on your own time. We pay you to be a reporter, not a coffee purifier.”

“Right.”

“I’ve got an assignment for you, Tarkington.”

His calling me by my last name was his way of signaling that he was pissed about something. I could not think of anything I had goofed up lately, so I decided that someone else had torqued him off and I was merely the hapless recipient of his wrath. It was just the kind of aggravation that my stomach and I could do without.

“I’ve already got an assignment,” I said. “I’m covering the Roper-Johnson-Smythe bash tonight. Big society event. Everyone will be there. Can’t miss it.”

“We’ll send Lawrence. I’ve got something bigger for you to handle.”

I groaned. Jill Lawrence was our spinsterish cooking editor and better able to handle the society page gossip than I was any day. However, she did not have tickets to the Suns game and I did. That made me the more logical candidate. Oh well, maybe I could rush this other job through and still make the game.

“Okay,” I said. “I’m all ears.”

“Never mind your physical deformities. Let’s discuss your assignment.”

“Shoot.”

“I’m sending you down to the Marana power plant. Something fishy is going on down there. I want you to find out what it is.”

“Like what?”

“If I knew that, I wouldn’t be sending you.”

“The subject came up at the Governor’s news conference this morning. James over at Channel 3 asked him how long Marana would be down for repairs.”

“Didn’t know it was.”

“Yeah, they fell out of the power grid nearly forty hours ago. They put out a press release blaming unscheduled maintenance problems. It was in the back of yesterday’s edition. Don’t you read your own paper?”

“Just the sports section and the funnies,” I replied.

“I almost believe you. Now stop interrupting and listen. James asked the Guv whether he had a comment about Marana. The Guv replied that he was sure Arizona Consolidated Power was doing the best they could and that the plant would be back in operation presently.”

I whistled. Our Governor was the biggest publicity hound in the whole Continental United States. He and ACP had had a couple of battles royal. For him to pass up a chance to attack the hated utility was completely out of character.

“Suspicious,” I agreed, “but it still isn’t an indication that something is wrong at the power plant. Maybe ACP has come across with a donation to the Guv’s reelection campaign.”

“Oh yeah? I called Melrose over at the State Power Commission. His secretary was a bit slow muffling her telephone. I heard him tell her that he was not in. Now you know how much Jake Melrose owes this paper from the last election. Why the brush-off?”

“Okay, maybe ... just maybe ... you’ve got a point.”

“The clincher: I tried to hire a plane to fly over the plant for a look. Nothing doing. The airspace around the plant is restricted for fifty miles in every direction. Air Force claims they are running an exercise on the Gila Bend gunnery range and need the extra airspace to guide jets in and out.”

“So what do you want me to do?”

“Get in your car and get down there. I want a story and I want it in time for the afternoon edition.”

My stomach picked that instant to give out with one of its warning twinges. “Deadlines are going to be the death of me, boss,” I said, tasting the bitter flavor of bile.

“This one certainly will if you don’t make it,” he growled. “Take a photographer along. Have him get some nice fisheye shots of the plant and the surrounding hills. You know the kind of artsy-fartsy things the publisher likes.”

“Right. I’ll take Watabe. He’s good at that sort of thing.”

“Watabe is covering a fire south of the river bed.”

“Siles?”

“Two weeks vacation.”

“Okay, she’s a pain in the butt, but I’ll take Gloria Price.”

“Off covering a convention at the Coliseum.”

“Who’s that leave?”

“Roger Witby.”

I groaned. First, I would probably have to break a date with Beth -- not to mention missing the big game -- and now I was being saddled with Roger Witby. “Haven’t you got anyone experienced available?”

“Witby’s experienced,” Greenwald said. “He’s worked here nearly two years now.”

“Part time. Your enthusiasm for him wouldn’t have anything to do with his being the publisher’s nephew, would it?”

Greenwald’s craggy face split in that satanic grin of his. “Could be, Tark. Besides, he is a hard worker. Take him along. He’ll be out of school in a couple of weeks and you’ll have the whole summer to rest up in.”

“You’re the boss.”

I got out of Greenwald’s office as quickly as I could. One thing I have learned working for him, don’t stick around longer than necessary or else you will find yourself handed some other dirty job. I wolfed down a couple of antacid pills at my desk and called Beth at the bank. She wasn’t exactly heartbroken about the possibility of missing the game.

I grumbled about Witby all the way down to the garage. He is a nice enough kid, but he is not a newsman. His eye for detail is lousy and he is constitutionally unsuited for working to a deadline. In a business where getting there thirty seconds late can mean the difference between Page One news and the classified section, he lacks the drive to be a first rate newsman. Not that he lacks drive. It just is not

channeled in the right direction. He only works for the paper part time during the school year to make extra money for college. In the summer, he goes off to New Mexico to work for some laboratory full time. His field is engineering, but he took an elective course in photography once. Therefore, his uncle, our dear publisher, sees to it that we hire him every year.

Roger met me in the basement just as I was packing my notebook computer into the trunk of my car next to my digital still camera. He sauntered up with fifty pounds of old-style camera equipment strung over both skinny shoulders - our publisher still believes in the sanctity of film. A lopsided smile split his pimply face.

“Hi, Mr. Tarkington,” he said. “I see we are working together again.”

“Fine, Kid. Dump your stuff in the back seat and let’s get moving. I want to get down to Marana and back by full dark. I’ve got tickets to the game tonight.”

“Yes sir.

I hated to be brusque with the Kid, but I had learned my lesson. He is the type that is as friendly as a month old puppy. Encourage him just a little and he would talk your head off. As it was, we were headed south on I-10 before I said two words to him. We’d come ten miles. That was the longest I had ever heard him quiet.

“You ever seen the Marana Power Plant, Kid?”

He shook his head.

“You’ll find it interesting,” I said. “Has a big golf ball two hundred feet in diameter sticking up out of it. They call it a containment thingamajig.”

“Oh no, Mr. Tarkington.”

“What?”

“A containment vessel is used in a fission plant. You know, like the old Palo Verde Nuclear Generating Station west of town.”

“Yeah, so?”

“A power plant like Marana has a fusion sphere where they smash the hydrogen nuclei together to release the energy of fusion. That is what the big white concrete ball is. A fusion sphere, not a containment vessel.”

“What’s the difference?”

“Well, the old fission plants could generate a lot of internal radioactivity. In case of an accident, some of that radiation might have been released to the environment. To prevent that from happening, they sealed the reactors inside a concrete and steel bottle -- the containment vessel. A fusion plant, on the other hand, generates virtually zero radioactivity -- except for the induced radiation in the structure from constant bombardment by neutrons, of course.”

“Of course.”

“But fusion plants need a spherical structure to focus the pressor field onto the reaction chamber where the fusion takes place. Without it you would never be able to build up sufficient pressure and heat

to initiate the fusion reaction.”

I thought about what the Kid had said. I had not understood a word.

“I didn’t understand a word,” I said aloud.

“About what?”

“About the fusion sphere, pressor fields, anything.”

“Would you like me to start at the beginning?”

I resigned myself to a boring half-hour and nodded. “But keep it short.”

He wriggled in his seat just like a little puppy. Apparently, the subject was one that was near and dear to his heart. He began his lecture with gusto: “You know that mankind tried to imitate the sun for almost forty years without success, right? Uncontrolled fusion was easy. We discovered that when Bikini Atoll was blown off the face of the Earth in the 1950s. However, controlled fusion proved to be a stubborn goal to reach. They tried compressing superhot plasma in magnetic pinch bottles, smashing fuel ions into each other at high speed in Tokamaks, and exploding fuel pellets with lasers. They got close, even made break even in the 1990s -- that is where the process generates more energy than it consumes -- but nothing ever proved to be commercially practical. In fact, it wasn’t until Mendez invented stressfields that fusion power became more than a gleam in the physicists’ eyes.”

“Stressfields? I’ve heard of them,” I replied, feigning more interest than I truly felt.

“I should think you have,” the Kid said. “It’s just the biggest thing to come along since Sir Isaac Newton got bonked on the head by the apple. Mendez invented a method for generating a force at a distance that was wildly different from anything we had ever done before. The force resembles a stress tensor in that it can be described by three compression components and six shear,” the Kid said, continuing what had ceased to be a conversation and had turned into a lecture. “A stress-like forcefield - stressfield for short. It was the breakthrough that engineers had been praying for in fusion. It made fusion plants feasible in two ways. The first bit of fallout from Mendez’s work was the pressor field. The inner surface of a fusion sphere acts as a sort of antenna, concentrating the pressor field at the point in space where the reaction takes place. Pressure at that point rises to unbelievable levels. Professor Conrad at school thinks the density at the focus of a fusion sphere might be as high as in the center of a neutron star.”

I nodded and made a mental note to find out what a neutron star was as soon as we got back to the office. “What was the second bit of fallout?”

“What?” he asked.

“You said that stressfields made fusion power possible in two ways. What was the second?”

“Oh yeah. Well the thing to remember about a pressor field is that it is very powerful. It presses inward on the fuel with a lot of force. So naturally, the field also presses outward against the fusion sphere. Equal and opposite reactions, you know. If a fusion sphere were merely concrete and steel, then the outward pressure would distort it and ruin the focus. A distorted field will not boost the pressure high enough to sustain fusion.

“A different kind of stressfield is used to overcome the problem. It is more complex and is generated in the structure of the sphere to counteract the stresses set up by the pressor field. The second field stiffens the sphere and allows the pressor field generators to hold a tight focus.”

“Sounds complicated,” I said.

“Oh, it is! That is another reason why the fusion sphere has to be a sphere. Any other shape and the stress pattern would be too complex for even the smartest computer.”

An errant memory suddenly came floating back to me. “This stressfield the widget they use in submarines to allow them to dive so deep?”

The Kid nodded. “Submarine pressure hulls and tank armor. They both use stressfield generators for extra strength. There’s even talk of drilling a hole down through the Earth’s crust and releasing an instrumented probe with a stressfield enhanced hull into the mantle.”

“How interesting,” I said, stifling a yawn.

“Yes, it is. However, one thing that is interesting is the correlation between the stress-strain equations and the stressfield-power curves. If you transpose a single term in the S-P curves, for instance...”

“Kid, would you do me a favor?”

His eyes snapped back from the blank stare they had been getting for the past several miles. “Sure thing, Mr. Tarkington.”

“Let’s talk about something else. My head is starting to ache.”

“Pick a subject.”

“Girls.”

“Near and dear to my heart,” he replied.

We spent the rest of the trip in enjoyable discourse concerning the proper size for a set of mammary glands. Personally, I favor them petite. Roger, on the other hand, was a “bigger is better” man.

The Marana Power Plant is situated twenty-five miles to the west of the town of Marana in the foothills of the Santa Rosa Mountains. To get there you leave I-10 at Marana and take a two-lane highway through the abandoned mining town of Silver Bell toward the old Papago Indian reservation.

We were only five miles out of Marana when we came to the roadblock. Two highway patrol cars sat astride the narrow ribbon of blacktop where it swooped through a steep sided cut in a hill. The two patrolmen stood around a small fire with a squad of khaki clad soldiers. The group had tin mess kits and were sipping coffee as we pulled into view.

I eased the car up to the roadblock and put on my most engaging grin. A cop put his cup down and walked over to the car. I rolled my window down and gave him a hearty: “Morning, Officer.”

“Morning, men. Mind if I ask where you are going?”

“Sure thing, Officer. My son here is a photography student at the U of A. We are out to get some shots of the wildlife. What’s going on?”

“Nothing to concern yourselves with,” the patrolman said. “The National Guard is on maneuvers in the hills back there and we’ve been asked to detour traffic. Wouldn’t want any citizens injured accidentally.”

“Thanks for the warning,” I said. “We can snap jackrabbits and cactus wren anywhere.”

“Very good, sir,” the patrolman said. “If you’ll just turn around, you can probably get better pictures around Picacho Peak. It is a national monument, you know. Only Civil War battle ever fought in Arizona.”

“You don’t say. Thanks for the advice, Officer.”

I slowly backed the car down the grade until I got to a wider spot in the road. Then wheeling about, I drove off leisurely in the direction we’d come.

“I read something about the Guard being out on maneuvers,” the Kid said.

I grinned and looked him in the eye for a second before turning back to my driving. “Notice those soldiers back of the police cars?”

“Yeah, so?”

“Since when is the 101st Airborne Division part of the Arizona National Guard?”

“Oh,” he said. There did not seem much else to say. “What now?”

“We improvise. That cop reminded me of something when he mentioned Picacho Peak. I grew up in Phoenix. My father used to bring us south to do some hunting, doves mostly. If I remember correctly, there is an old rut of a road that runs from the Picacho National Monument to the north side of the Santa Rosas. If we could get to the end of it, we just might get ourselves into position for a telephoto shot of the power plant.”

“Want to bet the Army stops us before we get within ten miles of the place?”

“No bet,” I answered.

We were both a little surprised when we pulled up to the base of a mesquite-covered hill not more than three miles from the power plant. We had seen nothing on the twenty-five mile ride across the desert except a couple of cottontail rabbits and a roadrunner. It was a little unnerving when we expected a helicopter to swoop down on us any second. The power plant was still out of sight from where we parked the car in a dry wash, but a short climb would remedy that problem. I helped Roger with some of his camera junk and we started up a well-traveled path littered with organically grown cowpats.

By the time we reached the top, we were both puffing like a couple of old fashioned steam engines. I carefully laid the big telephoto lenses I had been carrying on a handy rock and slumped down on another to catch my breath. The Kid, with the enthusiasm of youth, continued on another fifty yards to a viewpoint from which he could see the plant.

Within seconds he came galloping back up the trail to where I sat with hands on knees, head arched forward. I had nearly managed to catch my breath as he scurried back to me and pointed downhill.

“What?” I asked, mild fire still rasping in my throat from our climb upwards.

Nothing came out of his opened mouth except ragged panting.

“Slow down and catch your breath,” I counseled. The trouble with these young kids was that they had no conception of their limitations. A man could get a heart attack running up a twenty-percent grade as he had just done.

Finally, his breathing slowed a bit. “Come look at the plant!” he gasped.

Since his comment was notably lacking in semantic content, I decided the easiest thing to do was to force my leaden legs down the trail to the lookout point.

When we got there, I knew what he meant. Below us, spread clear across a valley nearly four miles wide, was the Marana Power Plant. The ribbon of blacktop we’d been following earlier that morning wound its way down from the purple hills to the east and ended in a sea of asphalt crosshatched with neat yellow lines. Dozens of Army and state vehicles were parked haphazardly around the lot. There were even a few cars sporting the distinctive red-white-and-blue paint job of a federal motor pool. Immediately in front of the parking lot was the plant’s main gate with its white stucco guard shack flanking cyclone fencing topped with barbed wire.

The plant itself was spread across a hundred acres of desert landscape. A modern steel and glass administration building flanked the parking lot, its green lawn and manicured flowerbeds in sharp contrast to the dirty brown of the surrounding desert.

Behind the office building sprawled the working parts of the plant. Outbuildings tended to be low and rambling, temporary shelters or storerooms constructed of corrugated sheet steel. Building size increased radially inward, with two and three story concrete boxes occupying the middle distances. At the center of the plant stood the huge generator buildings and cooling towers.

All of these were dwarfed, however, by the giant roundness of the fusion sphere that towered over everything else in the scene except the distant mountains. Raised completely clear of the ground, it was supported every hundred feet or so around its perimeter by soaring concrete pillars that reached upwards to the sphere’s equator.

It was an impressive sight made more impressive by the fact that half of it was missing.

It looked like an egg after the chicken has hatched out. The entire upper hemisphere had somehow been blown away. The evidence of the explosion lay everywhere in the form of huge jagged pieces of concrete eggshell. Several of the buildings showed signs of extensive damage where debris had fallen. One entire wing of the administration building had been caved in. A jagged multi-ton projectile lay blackened in a deep crater in the tangled ruin of a transformer substation a mile south of the plant proper. Another chunk had created a small lake when it fell on the pipeline that supplied the plant with cooling water, smashing it beyond repair.

Even as my eyes surveyed the damage, my mind was writing the headline: **POWER PLANT EXPLODES: RADIOACTIVE CLOUD ENDANGERS CITY!** It was a lot to stuff onto the top of a newspaper, but it certainly told the story.

“Pulitzer Prize, here I come,” I muttered.

“What?” Roger asked.

I quickly outlined how I planned to handle the story.

“You can’t say that,” he replied, his brow furrowing in distaste. Fusion plants are completely clean except for a bit of neutron-induced radiation in the inner structure. Remember?”

I wet a finger and held it up in the breeze. A light wind was blowing toward us from the remains of the plant.

Suddenly my skin started to crawl as though army ants were using my body as an invasion route. If

there were a cloud, I was sitting in the middle of it right now. I ruthlessly put down the feeling of panic that wanted to send my feet scurrying back up the path and down the other side of the hill to my car.

“No cloud, huh?”

“None.”

“Okay, I believe you. I rubbed my hand across my scalp. I wanted to believe him. I was too young to die.”

“Get me some nice arty shots of the debris.”

“Right.” He set to screwing a two-foot long telephoto zoom lens to the body of his camera.

“How do you suppose it happened? Terrorists blow it up with dynamite?” I asked.

“No mere chemical explosive could have done that to a fusion sphere. Remember it has an internal stressfield to strengthen it. Only a fusion explosion in the reaction chamber could have breached it like that. Even so, it must have been a whopper. Those things are strong!”

He seemed to know what he was talking about, even if I did not. Therefore, my second headline -- **TERRORISTS DESTROY POWER PLANT** -- died a’borning. I sat for a few seconds and thought about the problem while listening to the quiet whir of the ancient Hasselblad’s automatic film advance interspersed with the clicking of the shutter.

“How many shots?” I asked after we returned to the car.

“About a dozen.”

“Okay, get them developed and we’ll shoot them back to the paper at the next phone we see. Old Greenwald will be ecstatic over this!” The logistics would have been easier if my digital camera had had a long enough lens to get the shot. We could have modemed the pictures back to the paper using my cell phone. One of the bulky machines the Kid had in the car was a portable film developer. I did not have a scanner on my computer, so we would have to get to a phone booth with a fax option.

“Pictures are already in the tank,” he said, hooking his thumb toward the trunk.

“What do you think caused the explosion?” I asked, musing half to myself.

He shrugged. “It’s above my level. I’ll bet Professor Conrad would know.”

“Who?”

“He’s the Professor I was telling you about. The one who lectures on fusion power systems at ASU. Word around campus is that he was a big man with the Nuclear Regulatory Commission before he was fired. It was supposed to be a big scandal. No one will talk about it.”

“Too bad he isn’t here.”

“He lives in Casa Grande,” the Kid said. “Maybe we should stop and ask him.”

I felt a surge of excitement as I considered the suggestion.

Casa Grande was on the way back to Phoenix. A short stop to pick up background might be just the thing this exclusive story of mine needed.

We pulled into a gas station at the junction of I-8 with I-10 and checked the phone book. Professor Conrad lived on the outskirts of town near the freeway. Glancing at my watch, I let my conscience fight a brief, sharp battle with itself. I had the basic story and could get it in well before the deadline. Yet, if I stopped for background data I might turn a mere bulletin into a story in depth, but only at the risk of missing the deadline. It was a cruel decision to have to make. Go with what you have or go for something better?

I decided to chance it. We could wire in the photos and the basic story from the professor's house. I'd modem the follow up story directly into the composing computer just before the paper was due to go out to the thousands of fax subscribers and to city street corner printers. It would be a tight schedule, but I thought I could pull it off.

It was a gamble worth taking. We would be on the streets with the story while the television stations were still previewing Mrs. Roper-Johnson-Smythe and her party. It would be quite a scoop to have under my belt.

Professor Conrad lived on a two-acre ranchette in a house constructed of red slump block. Two horses cavorted in a white-painted pipe corral out back. He seemed genuinely happy to see the Kid who quickly explained what we had found and handed over the negatives, still wet from the developing tank. The Professor grabbed them with hands that trembled with excitement. I am not sure he even noticed me. I stood in the doorway with my notebook computer tucked precariously under one arm. When it became obvious that he was not going to be polite and invite me in, I invited myself in.

The Professor was a wizened senior citizen with a wisp of whitish hair atop a freckled balding dome. At the moment, his frosty blue eyes were devouring the negatives that he held up to the light of the living room window.

"Mind if I use the phone, Professor?"

He ignored me, intent on drinking in the pictures. I picked up the telephone and began dialing the paper.

By the time I had outlined the situation to Greenwald, the professor had put down the pictures. His face was etched in deep worry lines. I wondered if he had stock in Arizona Consolidated Power. He was probably trying to figure out how to dump his shares before the story broke. I gently took the pictures from him and fed them into the fax slot of his telephone. Within a few seconds, it had gulped them down and spewed them out to the paper's master composing computer. I told Greenwald to put the paper on hold until he heard from me. He told me to go to hell. I pleaded with him. He informed me that the deadline was less than an hour away in words of no more than four letters. I glanced at my watch and did some swearing of my own. Where did the time go?

If the telephone had had a vision attachment I would have gotten down on my knees and begged. As it was, I put on my most convincing voice and pleaded with Greenwald to hold the paper as long as he could. There was dead silence on the other end for half a minute and then he agreed. I knew by the tone of his voice that my career was on the line.

I hung up the telephone and held out my hand to Professor Conrad. "Hi, I'm Ed Tarkington. People call me Tark. Glad to meet you, Professor."

He seemed to snap out of his trance long enough to introduce himself.

"I understand you're quite an expert on fusion plant pressor systems."

“I know something about them,” he agreed.

“Mind telling us what happened to this one?”

“I’m not sure I should,” he replied. “I should check with Washington first.”

“From what I hear, Professor, you have every reason to dislike the Nuclear Regulatory Commission.”

He grimaced. “I can’t deny it.”

“Then you have no reason to protect them if they are at fault in this Marana accident. Why did you quit the NRC, Professor?”

“I had a technical disagreement with my bosses over a specific safety system for fusion power plants. I thought it was necessary, they did not. I’m out of a job...” He picked up the roll of negatives and waved it around. “These prove my ex-bosses soon will be.”

“That’s the spirit!” I said. “Tell us what happened and we’ll spread those Washington bureaucrats over every front page in the country.”

“You don’t know how true that statement is,” he muttered, almost to himself.

“Come on, Professor, give!”

“I had better check on something first,” he said, going to the phone. He picked it up and dialed a 202 area code. I had telephoned the capital enough to recognize the code for Washington, DC. After a minute’s wait, he got someone’s secretary on the phone and had a brief argument with her. It seemed her boss was in conference and could not be disturbed. However, the Professor was not to be denied. Within another minute, the unidentified boss was on the other end of the line. From that point on, all we heard was one-half the conversation. I would have given a year’s pay to hear the other half.

Professor: “Is that you, Fred? ... Yeah, long time no see ... What happened to Marana, Fred?”

There was a longish pause while the buzzing sound of an angry voice on the other end of the line filtered out to my straining ears. I could not understand what was said, but the emotional content came through loud and clear.

Professor: “Never mind how I found out. Was it an implosion accident?”

Another longish pause. This time, though, there was silence on the other end and when the voice resumed, the waspish buzz seemed much more subdued.

Professor: “Never mind the excuses, Fred. What did the radiation detectors record? Uh huh, I thought so ... It was a point source, I assume. Okay, thanks for the info, Fred ... Yeah, I am sorry too. Goodbye.”

He replaced the telephone in its cradle and slumped into an easy chair. Where he had had the manner of a fighting bantam before the call, he suddenly looked like nothing more than a tired old man. Something about the call had taken the will to fight right out of him.

“What is an implosion accident, Professor?” I asked as gently as I could.

He looked at me, pity in his eyes. “A theoretical resonance of the pressor field brought on by a phase shift in the generator’s power source. It would tend to increase the energy level of the field to

inconceivable levels for an instant before burning out the field generator. It would also overwhelm the stressfield stabilization system in that instant. That is what caused the explosion of the fusion sphere. The reaction force produced by the sudden surge in the pressor field literally tore the top off.”

The Kid looked puzzled.

“What’s the matter?” I asked.

“A resonance in the pressor field, Professor Conrad? I don’t understand how that would be possible.”

The Professor looked at him. “You’ve learned your lessons well, Roger. Calling it a resonance is a bit sloppy, but that is the most analogous phenomenon I can think of. A sudden power spike builds up in the field as in any system in resonance. I warned those fools in Washington that it might happen someday. I told them we needed better phase control of the generator systems, but they would not listen. They just could not believe my figures were correct. Now they will have to believe me. I’ll be vindicated for all the good it will do me.”

“So we lose a fifty billion dollar power plant because the bigwigs at the NRC wouldn’t listen to someone who knew about the problem years ago?” I asked. I felt a burst of exhilaration. It was a dynamite story, far more than I could ever have hoped for!

“We lose a lot more than that,” the Professor said. “The resonance probably formed a Schwarzschild Discontinuity in the reaction chamber. That is why I asked about radiation. As the discontinuity pulls in additional matter, it emits very hard radiation. The automatic recorders detected a pattern of radiation nearly like that which I predicted would occur after such an accident.”

“A Schwarzschild Discontinuity, Professor?” Roger asked, perplexed. “Do you mean a Black Hole?”

The Professor nodded.

Now I was confused. I was not a complete dunce when it came to technical matters. A Black Hole was something the astronomers talked about. If I remembered correctly, it was the nothingness left over when a giant star collapsed in upon itself, taking all its matter and light with it. How such a thing could be associated with a terrestrial power plant was a bit unclear to me. I asked the Professor.

“You are right as far as you go, Mr. Tarkington. A Black Hole is formed when a star several times larger than the sun runs out of fuel. The star is no longer able to fight the pull of gravity and collapses in upon itself. The internal pressure rises so high that even the neutrons of the atomic nucleus are squeezed out of existence. The pull of gravity in such an object is so powerful that light itself cannot escape, and thus the hole is formed. However, a hole does not have to be created by the collapse of a massive sun. One will form anywhere the pressure exceeds the structural strength of a neutron.

“That is exactly what happened at Marana. The microscopic focus of the pressor field normally compresses heavy hydrogen fuel to a density where the protons and neutrons are crammed together and made to undergo fusion. The resonant condition raised that pressure at the focus considerably -- just for the barest nanosecond and that pressure collapsed the fuel atoms into a Black Hole.”

“And this Black Hole thing is still inside the Marana reactor?” I asked.

“Oh, heavens no,” the professor said, mopping droplets of sweat from his brow with a white handkerchief. “It has weight and it dropped onto the ground as soon as it formed. That is a bit

inaccurate. It dropped *into* the ground, consuming any matter that got in its way. At first, only single atoms or even chunks of nuclei were pulled in. However, as it consumes matter, it gets endlessly larger and better able to consume even more matter. I imagine the effect is exponential in its progress.”

“You mean this thing is gobbling up chunks of ground even as we sit here? That it is getting bigger every passing second?”

He nodded. I noticed Roger was getting green around the gills. Being technically trained, he must have already jumped to the same conclusion the Professor had.

“How do we get rid of this thing?” I asked. “It sounds dangerous.”

“It is,” the Professor replied. “And there’s no getting rid of it. Whatever matter crosses the Schwarzschild radius -- that is the boundary around the hole where a body must exceed the speed of light to escape -- is gone forever. You can never get it back.”

“I remember an article in Reader’s Digest when I was ten or eleven,” the Kid said. “It was all about Black Holes. I remember it saying that a hole that fell to Earth would consume the entire planet, leaving the Moon to circle around an empty spot in space. Can you imagine the feelings of an astronaut on the Moon watching the Earth disappear a bit at a time? It gives me the creeps just thinking about it.”

His creeps were nothing compared to the chill that ran down my back.

“Are you saying the Earth is going to be destroyed because of a Black Hole created in the Marana Power Plant explosion?” I asked, half-afraid of the answer I would get.

There was a long silence in which the Professor chewed on his lower lip and thought of a way to say it. Finally, he merely nodded. The mute gesture conveyed more meaning than any hour-long oration could ever have done.

What do you say in answer to a man who has just told you your world is going to be destroyed? What emotions are you supposed to feel?

I gently probed my psyche. It was funny, but I did not feel anything at first. It was as if he had told me rain was predicted for tomorrow. Even my ulcer had stopped its fire dance for the moment. The news was just too much to comprehend in one gulp, I guess. Then I did feel an emotion taking hold of me. Surprisingly, it was not fear or anything akin to it. If anything, it came closest to excitement. This was the big break I had been waiting all my life to get. It was the biggest story in the history of the world, and it would have my byline on it.

It would be the scoop of all time!

Breathlessly, I pumped the professor for details. It was like pulling teeth. His answers were monotone and monosyllabic. I prodded him mercilessly for a layman’s explanation of his theory. He responded reluctantly, wasting valuable time.

Eventually, I had enough of a sketch of what had happened to file my story. I looked at my watch. It was nearly three thirty -- only half an hour left. At four o’clock sharp, the composing computer shot the paper out to the fax machines and a waiting world. My story had to be loaded into the computer at least two minutes before that happened.

I spent the next fourteen minutes typing feverishly. Every second that slipped past burned itself into my consciousness. Why is there never enough time? I should have had eight or ten hours to polish the story into a thing of beauty. Instead, I had fourteen minutes.

I hurriedly dialed Greenwald's number when I had given it all the time I could afford. He picked up the telephone on the first ring, a sure sign that he had chewed his fingernails to the elbow. I talked fast and furiously. The power plant disaster story, which would have been my lead, would have to be relegated to the second page. I had something far bigger for page one. I did not have time for a long-winded argument, so I just gave him the bare facts.

Dead silence came out of the phone. Finally, a hoarse whisper came on the line. "Are you sure?"

"Sure, I'm sure. I've got two experts here."

"You had better be."

"Clear the computer," I yelled. The telephone was cradled on my shoulder while I used both hands to plug in my notebook PC. The labored breathing on the other end of the line finally emitted a single word:

"Cleared."

I punched for transmission and watched the text scroll up the screen: ACCIDENT DOOMS PLANET! The headline said. I would set it for a six-centimeter headline...

CASA GRANDE -- An accident at the Arizona Consolidated Power Company's Marana generating station has doomed the Earth to extinction it was learned today. Professor Joseph Conrad of the Arizona State University engineering staff stated that the accident that destroyed the power plant (story and pictures on page 2) created a Black Hole that will expand to devour the entire Earth in time. Professor Conrad, a former NRC scientist, bases his opinion on...

Suddenly, I was through. The last character flashed through the computer's communications buffer, and the paper's distant composing computer sent its acknowledgment that everything had been received.

I let my arms drop to my sides. Relieved of their duty, they began to shake uncontrollably. The Kid picked up the telephone and talked to Greenwald. I did not hear what was said. I was too emotionally and physically drained to take an interest. I had just written the story of my life. I had won the Boston Marathon, climbed Mount Everest, and made love to a dozen screen goddesses all at once.

I had turned out the greatest story any newsman has ever written.

I was fulfilled at last.

I do not know how long a time went by before my eyes refocused. I didn't really care. The feeling of accomplishment washed me in languor. A gentle lassitude similar to what the womb must have felt like held me in its grip. I sat unseeing and enjoyed the feeling for a few precious seconds or minutes. However, all good things must come to an end and life must go on.

For a while, anyway.

I wondered if I still had time to get back to Phoenix in time for the basketball game. It would be nice to see Beth one last time. Maybe getting married again was not such a bad idea after all. Even Irene, my ex, and I had had our good moments. I wondered if there would be time for spring to come again before the dark maw below my feet ended everything. The thought jarred me back to reality.

I cursed myself royally. The excitement of the story must have hypnotized me like a mouse before a snake. The sheer immensity of it all must have affected me far more than I had thought. Here I was contemplating the possibility of winning the last Pulitzer Prize and I had pulled the dumbest cub reporter trick in the book. Of the five big *W's* of reporting, I had completely forgotten the *When!* Nowhere in my story had I mentioned how long the world had to live.

“Say, Professor, how long has the world got before the Black Hole eats it?” I asked. I wondered if I had time to amend my story before the paper went out on the wire.

The Professor looked off into space for a minute and shook his head. “I’m not sure. The problem is a difficult one.”

“How so?”

“Well, not knowing how big the hole was to start with, or the density of the strata through which it has dropped, or the pressure forcing matter across the Schwarzschild radius. No, there are too many unknowns. In addition, there is the problem of how much of the Earth must be consumed before the catastrophic earthquakes come. It shouldn’t be very long, I fear.”

“Couldn’t we make some worst case assumptions?” the Kid asked. “Assume the hole has attained a mass of a hundred million metric tons in the two days since it was formed and that it has dropped to the very center of the Earth. Then assume a linear rate of mass increase with time, or possibly a rate that increases with the square root of two exponentially.”

The Professor nodded. “It ought to give us a ballpark estimate I would think. The mass will give us the Schwarzschild radius and thus the surface area. We can treat the hole as a three dimensional orifice and use Bernoulli’s fluid flow equation to find the mass gain.”

He sat down at the desk in the corner and began to tap on the computer console lying on top of the dark mahogany. He quickly worked his fingers across the keys, setting up the problem. Roger was kept busy looking up physical parameters in the Handbook of Chemistry and Physics that the Professor kept on a bookshelf over the desk.

I occupied myself with looking at my watch and praying they would hurry it up. Four o’clock was nearly upon us.

The professor tapped one last key and the answer was displayed on the computer screen. He frowned and began tapping again. This time the answer took a little longer to appear.

The frown was etched deeper into his face. I looked at my watch and began to wonder if I even had time to finish a cup of coffee before the end came. The professor worked the problem a third time. As the third answer flashed onto the screen, he turned around to face me. There was a strange look in his eyes.

I searched my brain for an instant before finding a label to put on the look. I decided it was a combination of sheepishness and relief.

“Well?” both Roger and I echoed.

“Gentlemen, I seem to have overlooked something. A hole on a sub-stellar scale is an extremely tiny object. In fact, one massing a hundred million tons would have a diameter only one hundredth that of an electron. And such a tiny hole is so small that it would take virtually forever to force even a single additional pound of matter across the Schwarzschild radius.”

“What are you saying, Professor?” I asked, a sick feeling welling up in the pit of my stomach.

“From my calculation, Mr. Tarkington, I must conclude that the Marana Black Hole is considerably smaller than a hundred million metric tons. In fact, I would be surprised if it weighed much more than a single kilogram -- if it exists at all.”

“If it exists at all?” I screamed.

“We are talking about a scale of between 10^{-16} and 10^{-18} angstroms. I am not at all sure that Mendez’s Theorem holds true on the scale where quantum mechanics is operative. I will have to give the idea some serious thought.”

“But the hole must exist,” I said. “They detected radiation coming from it ... didn’t they?”

He shrugged. “It must have been coming from another source. If a hole did form in Marana, it is still trying to gobble up its first atom. Its tidal effect might be felt on the scale of the hydrogen nucleus, but it can hardly be big enough to cause the radiation burst that was detected.”

What do you say when you find out the world isn’t going to be destroyed after all? What emotions are you supposed to feel? Joy? Thankfulness? Love for your fellow creatures that have been miraculously saved? My emotions came nowhere near any of these. My feelings could be summarized by a single word:

Panic!

The Earth would die of old age after all and I had just filed a story that said it was doomed. I had used a headline six centimeters high to say it. Worst of all, it was due to hit the cable any minute now.

I punched Greenwald’s number frantically into the telephone.

I had to kill that story before it went out. I would be the laughing stock of every reporter in town ... hell, in the whole country, if it ever saw print.

Somewhere in the house, a clock started to chime. It struck four times as I listened to Greenwald’s telephone ring in my ear. A few seconds later another sound began at my elbow.

It was a sound I knew well. The fax machine in the corner had begun churning out the afternoon paper.

Author’s note for *Scoop* :

When I first became a writer, I wrote stories about places that are far away and glamorous to me, places like New York and Boston. For some reason, however, the editors who lived in those fabled cities do not view them as I do. Consequently, my stories did not sell. And in this, I learned a valuable lesson. Since it is the editors who buy a writer’s work, you need to write about places that they consider glamorous and mysterious, not the ones you find that way.

Therefore, I started to write about Arizona, the state in which I was born and where I have lived most of my life. I do not consider the Sonoran Desert or the various natural

wonders of Arizona to be mysterious. I have seen them too many times. They are just the mundane sights of home. However, other people do consider them far off and glamorous. A writer must write for his audience and not himself.

Shortly after I began writing stories about Arizona, I began selling fiction to the SF magazines. *Scoop* is actually the story I wrote before *Duty, Honor, Planet*. The idea for it came from reading one too many "black hole eats Earth" stories. As I mention in the story, any black hole we might produce (and theoretically, we could indeed create one if we could generate a large enough pressure) would still be so microscopic that it would have trouble interacting with normal matter. It is an interesting question. What would happen to an electron that encountered a black hole 1/1000th its own size? Would you drill a hole in the electron, would the whole thing be gobbled up, or would it pass right through without affecting the electron at all?

The idea of treating a hole as a three dimensional orifice is my own. I had been a pneumatics engineer for some six years when I wrote this story, and orifices are what we pneumatics engineers care most about in the entire world. (I know, it sounds boring; but at least one orifice problem caused us to shoot the tail off a helicopter. It got exciting that day, I can tell you!)

Scoop was also written years before either Three Mile Island or Chernobyl. I found when re-reading it for the first time in 20 years that it echoed some of the events of those two latter day crises of the modern age. I also discovered something else. The computer equipment in the story was so outdated that it sounded like something from out of the 1950s. The story you just read has been updated in self-defense. That is one of the most interesting things of all. That a story written in 1978 would sound so ancient when read in 1996 proves that though we do not usually notice progress from day to day, modern life is whizzing along at least at Mach 1, and accelerating!

After finishing the manuscript, I offered it to Ben Bova at *Analog*. He rejected it, stating that he had been a reporter and my rendition did not seem true to him. After several rewrites, I published it in the June 1979, issue of Isaac Asimov's *Science Fiction Magazine*. Except for the technological updating, I think it has held up well over the years.

BEER RUN

What if you went out for a six-pack and never came back?

It was midwinter, one of those crystal clear nights where the almost freezing wind whips in off the desert from the east and the moon bathes everything in a bright, pearly glow. Hal, my landlord, was off to a science fiction convention back East and the UFO Spotters were using our place -- a dilapidated rooming house in the old section of Tempe near the University -- for their monthly meeting. Being the only roomer in residence (the others having taken off for parts unknown, it being semester break), I was assigned the job of keeping them from tearing up the place and making sure the cops had no probable cause for a drug bust.

They came drifting in about eight. By the time the formal meeting had started, there were fifty-odd people scattered in the various nooks and crannies around the old house. And I mean fifty odd people! In Hal's absence, Weasel Martin took over the meeting. Weasel is a short, bearded graduate student

whose most prominent feature is his nervous tic. He banged on a table with a wooden spoon to get their attention and called the meeting to order.

I was in the kitchen dishing out taco chips and bean dip. Jane Dugway was helping me, as well as pulling the pop-tops off two dozen cans of Coors. Somehow, they managed to disappear into the other room as fast as she opened them.

I had first met Jane at school. Although I am an engineering major, the University is determined that I get a well-rounded education. Therefore, in order to complete my eight hours of social studies required to graduate, I took a course in Anthropology. Jane was a graduate student in Anthro and my discussion group leader for one semester. She is not one of those lucky women blessed with the gift of beauty. Her hair has a terminal case of the frizzies, and the coke bottle glasses do nothing to improve her image. However, there is a mind behind that mannish face of hers that is as sharp as a razor blade.

We carried the taco chips and bean dip into the living room just as Weasel Martin called for old business. PeeJay Schwarz got to his feet and began an excited narrative about an Alabama farmer who claimed to have been to the moon on a flying saucer. Weasel ruled him out of order. PeeJay sat down with a thump and a pout on his face.

After that, things settled down considerably. It might as well have been a meeting of the League of Women Voters, with everything run in strict adherence to Robert's Rules of Order. I was fast losing interest when Joel Peterson decided to get the evening's debate launched. Joel is a prissy sociology major who wears bow ties with his blue denim shirts and dirty Levi's. He revels in being the club skeptic and is especially skilled in sparking controversy.

"I don't believe in UFOs," he declared loudly. "Not as interstellar visitors, anyway."

There was a murmured undercurrent in the crowd -- something like you see in the movies just before the lynching. Weasel Martin got red in the face and prepared to smite the unbeliever.

"Then you're dumber than you look," he said to Joel. There was a scattered round of applause and a couple of muttered comments that that must be pretty dumb, considering his looks.

I had to give Joel credit. He stood his ground. "What makes you think UFOs aren't just a mammoth hoax? Have you ever seen one?" It was a good attack. Although several members claimed to have spotted UFOs, everyone knew that Weasel never had, and considered that fact a personal affront.

The wrangling went on for another half-hour before Weasel got fed up. "Okay, smart ass. If they aren't visitors from other stars, what are they? And don't tell me swamp gas!"

There was a pregnant pause. Joel got a smug look on his face. His trap had been set, baited, and sprung. "They're time travelers from the future, or maybe from a parallel universe," he said in triumph.

This was greeted by a chorus of Bronx cheers, boos, and catcalls. Weasel was about to launch his counterattack when Sam Grohs pushed open the kitchen door and diverted everyone's attention.

"Hey, what happened to the beer?"

"Gone," I said.

"Gone? Hey man, I'm dying of thirst."

Then the general chorus began. "*Beer run, beer run, we want a beer run!*"

Weasel took time out from the debate to look around. He found someone's discarded cowboy hat and passed it to the assembled congregation. "Okay, you turkeys. Ante up for a beer run."

While the hat made the rounds, Weasel gave us all the once over with his eyes. "Who'll make this run?" he asked.

"Duncan MacElroy," someone in back piped up. "He's not doing anything."

The chant began again. "*Send Duncan, send Duncan...*"

I did not join in the chanting. I am Duncan and I did not want to go out into the cold to buy another case of beer.

"How about it, MacElroy?" Weasel asked. "Want to make a run for us?"

I shrugged. "Why not? But I can't carry it all by myself."

"I'll go."

I turned around to see Jane Dugway get to her feet. I might have predicted it would be her. Jane is one of the few people in the club who ever volunteer for anything.

"Okay, wait a sec while I get my coat," I said.

Jane waited for me on the sidewalk out front, bundled up in a fur coat with her black leather purse over one shoulder.

"Got the money?" I asked.

She nodded. "Shall we take a car?"

I looked around. I could barely see my classic Jag through the cluster of parked cars that slopped over from the driveway onto the front lawn. "I'm parked in," I said

"Me too. I guess we walk."

"Okay," I said. "It's only two blocks." We set out at a leisurely pace up Oak toward the red and white sign of our local convenience market.

The liquor coolers of the market were sparse hunting. We finally ended up with twelve six packs of three different kinds of beer. I loaded them into two sacks and we started for home.

The conversation drifted to anthropology. I walked in front, feeling my way over the tilted, broken slabs of the sidewalk, discussing a pet theory I had developed about the affinity of modern Americans for vicarious enjoyment via the boob tube. The next thing I knew there was a hard shoulder in the small of my back and I was flying head over heels into a hedge of Texas sage. I landed on my belly amid the clatter of aluminum cans. Two of the cans burst on impact, spraying me with a cold shower of carbonated hops.

I spit out a mouthful of dirt and grass and turned over. It was dark there in the shadow of the hedge, but I could see Jane lying flat on her belly peering down and across the street at something.

"What was that for?"

"Quiet," she hissed.

“What the hell is going on here?” I asked, sitting up. I wrinkled my nose as the wind carried an odor to me. I smelled like a brewery.

She reached up with one arm and pulled me down again. She was surprisingly strong and I could feel the bruises where she had grabbed me.

“If you value your life, stay down.”

I opened my mouth to reply, and then shut it again. I had just caught sight of the gun.

Except it was not a gun. Even in the gloom with only scattered patches of moonlight to see by, that much was obvious. The thing in her hand was a weapon of some kind. It had a handle, a trigger, and a trigger guard. However, the barrel was a long thin glass pipe that glowed with a faint blue fluorescence. My mind sorted through its dusty files and came up with a name for that glow. Cherenkov radiation! It was the glow of a nuclear reactor under two dozen feet of water.

“What’s going on?” I asked.

“Over there,” she said, gesturing toward a large oleander hedge halfway down the street on the other side. “At the base of the oleanders, about twenty feet from the end.”

I strained my eyes; conscious of how much the cold wind bit into me where the beer had soaked into my clothes. The spot she named was well lit by the corner street lamp, but I could see nothing.

“I don’t see anything,” I said.

“Look closely. See the area that seems to be fading out of focus?”

I squinted. I was not sure, but I thought I saw what she referred to. Some trick of light and shadow caused a small section of bushes to advance and recede while I watched.

It was like seeing something under water, all blurry and changing.

“I see it,” I said.

“That’s a Dalgiri aversion field. One of them is watching your house.”

“What’s a Dalgiri?” I asked, thinking I was being set up for a joke. You know: “What’s a Greek Urn? Oh, about two dollars an hour.”

“A near man and my mortal enemy,” she said, glancing up and down the street. Somehow, she did not look the type to have enemies. “He will try to kill me if he can. You too, I’m afraid, if he sees us together.”

“What the hell is going on here, Jane?”

“Shhh,” she said, placing a finger to her lips. “I’ll neutralize him. You stay put.”

Without waiting for an answer, she crawled into the black, leaving me to listen to the rustle of the wind through the bare limbs of the trees.

I lay still for nearly five minutes, feeling more foolish by the second. Joel Peterson had put her up to this, I decided. It was just his kind of joke. I felt a flush rising in my cheeks. I got to my hands and knees and peered over the Texas sage.

A bolt of lightning flashed before my eyes.

There was no answering thunderclap, no sound at all. However, the blast of searing light cut into my eyes like a knife, followed quickly by a sudden wave of heat. I dropped to my stomach once more, whimpering in panic. The night returned to normal. Darkness closed in again except for the whirling afterimage of the flash that continued to dance before my eyes. Besides the odor of stale beer, another stink penetrated my nostrils. There was a strong smell of ozone in the air.

Nothing happened for two minutes and I risked raising my head once more. The white splotches were still carved into my retinas, but my vision was clear enough to see Jane in a crouching run across the street to where the oleanders reached the sidewalk on the other side. She disappeared into the dark. I waited one more minute and then scrambled to my feet and raced after her.

I found her kneeling over the body of a man. He had been no beauty in life, and his looks had not improved in death. He stared unseeing at the moon, a gaping hole burned in his chest.

The wound smelled of cooked flesh. I gagged twice, trying to keep the beer and taco chips down.

“My God, Jane! What have you done?”

She looked over her shoulder at me. “I thought I told you to stay where you were.”

“You killed him!”

“He would have killed me.”

“With what? For all you know he was just some poor peeping tom.”

She felt around in the bushes where the dead man’s hand disappeared into the shadows and came up with a gun similar to hers. It too had an oddly shining glass barrel.

“What’s going on here?” I asked.

“No time, Duncan.” She turned to look directly into my eyes. “I need your help. Where there’s one Dalgir, there’ll be others. Can I count on you?”

“Sorry, but when it comes to murder, I draw the line. See you around!” I backed out of the hedge hastily, turning to run.

“Wait!”

I felt a prickling sensation run up my spine. I’d almost forgotten the gun she held.

“For what?” I asked, turning back to her.

“Hear me out. Then if you want to leave, go ahead.”

“Okay, start talking,” I said.

“Well, firstly ... this is a Dalgir, a near man.”

“Okay, you’ve already told me that. Now what exactly is a Dalgir?”

“You would name him Neanderthal. One of a race that died out fifty thousand years ago on this timeline. On others, however, they survived and prospered. It is such a line that I and my people war

against.”

I looked at the corpse. Damned if he did not look like the Neanderthal exhibits in the museums. Jutting bony eye ridges, sloping forehead, slouching posture as he lay in death. However, the Neanderthals in the museums had not worn hunting clothes straight out of the Sears catalog. And they had not carried glass-barreled pistols that emitted Cherenkov radiation as they lay quiescent on the ground.

“Timeline?”

“A parallel universe with its own history, culture, and peoples. Joel Peterson was speculating on the concept only an hour ago.”

“I hope you think up a better story than that before the police arrive,” I said, turning once more to leave.

“If I’m not from a parallel universe,” she said, a hint of humor in her voice, “How do you explain these?” She gestured to the two guns.

She had me there. I had attended a couple of lectures on laser weapons. One thing every expert agreed on: A laser pistol with a six-inch barrel was theoretically impossible. Except a dead man lay at my feet with a hole burned in his chest with just such a weapon.

“Okay,” I said. “Let’s suppose you are telling the truth. What do you want me to do about it?”

“This Dalgir was waiting to ambush me even though they aren’t supposed to know this timeline exists. The very fact that he’s here is a disaster. I must report.”

“So report,” I said. “But take this body with you when you go.”

“I need you, Duncan. You have to help me dispose of the body. It would never do to have it discovered by the local authorities.”

I chewed on my lip, squirming on the horns of the dilemma. I have never even been late paying a parking ticket. Here I was being asked to cover up a cold-blooded murder. So why did I choose to help her? Damned if I know! Maybe down deep I really believed her story.

“Okay,” I said, regretting the decision even as I made it. “What do you want me to do?”

“We need some place to dump the body where it won’t be found for eight hours or so.”

I lifted my right arm and pointed west. “There’s an old weed filled ditch that parallels the Southern Pacific tracks half a block over. How about there?”

“It’ll have to do. Grab his arms. I’ll take the legs.”

“No.”

“No?” she asked, perplexed.

“No. Not until you hand over that firepower.”

I could see indecision flash across her face.

“Look, Jane, you are going to have to trust me. You haven’t got any choice.”

“You’ll see me safely away?”

I nodded. “I don’t know why I believe such an obviously ridiculous story --” She opened her mouth to say something. I held up my hand and she closed it again. “-- I know, you have a Buck Rogers ray gun. So hand them over or I take a walk.”

She bit her lower lip, but held out her hand with the two lasers in it. I took them. They were warm to the touch. I hesitated.

“These emit anything that might disagree with my gonads?” I asked.

She shook her head. “Both beamers are well shielded.”

I slipped the guns into my belt in back, hiding them under my jacket. “Fine, let’s get rid of Mr. America here.”

The Neanderthal was heavier than he looked. He was barely five feet tall, but chunky. We half carried-half dragged him through deserted back yards and trash-strewn alleys. When we finally lowered the body at the edge of the ditch, I stood up and puffed from the exertion.

“Strip him!” Jane said, working to loosen the leather belt he wore. There were a dozen or so pouches on the belt and she quickly sorted through them.

“What have you got there?” I whispered as I worked to peel his pants off.

“Equipment kit,” she whispered back. She pulled each strange mechanism out of its pouch, examined it, and then put it back. About the time I had managed to remove the Dalgir’s shirt she found what she was apparently looking for. It looked like a tear gas pen -- you know, the kind they advertise in all the men’s magazines.

“Okay,” I said as I stripped the last of the clothing off the body. “What now?”

The Dalgir lay obscenely exposed in the moonlight, and not because he was naked. It had more to do with the hole in his chest.

“Roll him face down into the ditch and then get back,” she said, pulling on gloves from her purse. She held the tear gas pen gingerly in her gloved hands.

“What is in that thing?”

“A specially mutated bacteria. Get any of it on you and you’ll be dead of what appears to be an advanced case of leprosy in a matter of hours.”

That was enough warning for me. I backpedaled until I was a good fifty feet away, carrying the bundle of clothing with me. She bent over the body and did something with the pen. What she did made a certain amount of sense ... in a gross way.

How does one solve the problem of introducing a strain of man-eating germs into a corpse? You cannot very well ask the victim to swallow a pill. However, we sometimes forget the mouth is only one of two openings to the alimentary canal. Jane used the second.

She quickly rejoined me, carefully pulled off the gloves, and buried them in the center of the charred clothing that she tied in a bundle. She leaned down and stuffed the bundle into the storm sewer.

“Let’s go back for the beer. The others will be getting worried.” As she turned to leave, the light

caught her face. I could see droplets of perspiration on her forehead in spite of the chill wind that blew around us.

“What about...?” I thrust my thumb over my shoulder toward the irrigation ditch.

“In eight hours there will be no trace of our departed Dalgir. Now we have to report.”

“How?” I asked. “I’m afraid my subspace radio is broken at the moment. “

She laughed a high nervous giggle. Reaction was setting in. “Then we’ll just have to rely on Ma Bell. We’ll use the phone in the rooming house.”

The debate was still going hot and heavy. I lugged the beer into the kitchen while Jane went to the telephone in the hall. She carried it to the length of its cord into the bathroom and shut and locked the door. I stationed myself outside on guard duty. With my ear half pressed against the wall, I could barely make out her side of the conversation. Not that it did me a lot of good.

When she spoke, it was in rapid-fire gibberish that somehow reminded me of an orchestra tuning up for the big concert. After a few minutes in which she did most of the talking -- to judge by the short silences coming through the wall -- she said good-bye in English and hung up.

I was waiting for her when she unlocked the door and stepped into the hall.

“Well?” I whispered.

“They’re sending a shuttle to pick me up. It will arrive tomorrow after sundown.”

“Where?”

“The Mogollon Rim north of Payson.”

“I know the area. One of my uncles has a cabin outside Christopher Creek at the base of the Rim.”

“Then you’ll take me there? I do not dare use my car. They may have managed to put a tracer on it.”

“You’re out of luck. The whole North Country is knee deep in snow this time of year. My Jag was never designed to play snowmobile. We’ll have to find a Jeep.”

Tony Minetti chose that time to head for the bathroom.

He heard the last of our conversation.

“Jeep?” he asked. It was then that I remembered that Tony had an old relic of the Second World War that he kept parked in front of his apartment six blocks away.

“Yeah,” I said. “I promised Jane I would drive her up to Payson tonight. She just remembered that her Aunt Agatha was expecting her for the holidays. How about it, Tony? Can we borrow your Jeep?”

He bit his lip. “I don’t know, man. You’re talking about my pride and joy.” He wrinkled his nose. “Boy, you smell like a brewery!”

“Spilled some beer on myself.” I took a deep breath and made the ultimate sacrifice. “I’ll let you borrow my XKE.” Tony had cast a lecherous eye on my car for as long as I had known him.

“It’s a deal, man!”

We exchanged keys with me wondering if I was making the mistake of my life. Jane and I headed for my bedroom and began digging in the closet for some warm clothes. Coming originally from Michigan, I had an ample supply.

When we were outfitted for snow -- Jane in my blue B-9 parka over her coat and me in my heavy leather jacket and boots -- we slipped out the back way. Joel Peterson was screaming something about parallel universes while the crowd around him booed in unison.

As I stepped out into the cold dark on the back porch, I could not help smiling. If they only knew!

#

Arizona -- land of parched, overheated deserts and a dozen different kinds of poisonous insects, snakes and lizards. Where rain does not fall for six months at a time and the natives huddle in air-conditioned warrens for a quarter of the year, dashing outside only long enough to dodge from one cool hidey-hole to another. Right?

Half right.

That is a pretty accurate picture of the southern desert. The northern part of the state, on the other hand, is blanketed with high mountains and lush forests. Driving down from Detroit on the Interstate, I was amazed to discover the amount of variation in climate that can be found in a hundred-mile stretch. It made for interesting driving.

Except now I was driving like a madman into the high country in a forty-year-old jeep whose canvas top had never been meant to withstand a dozen years of desert sun. Two gaping holes ducted a freezing slipstream of air in to overpower the ancient heater. Jane and I were nearly blue with cold as the wan yellow headlights flashed across the dilapidated log walls of my uncle’s hunting cabin.

I pulled off the road into the high snowdrifts surrounding the cabin. The Jeep’s transfer case growled in protest as we slithered and bulled our way the last hundred feet. It almost sounded grateful as I turned the key, allowing the wheezing old engine to finally rest. I left the lights on to show the way to the porch, with me breaking trail and Jane stumbling after.

It was three A.M.

I got the door open and ushered her inside before going back to turn off the headlights. When I returned to the cabin, she had set up something that gave off a pearly white glow on the kitchen counter. I glanced at it and recognized one of the devices we had gotten off the Dalgir’s body. I headed for the fireplace and began stacking wood against the blackened grate. Within five minutes, cheerful tongues of flame were licking at the wood.

“Get over by the fire,” I told her. “I’ll go out back and get the generator started.”

My boots made soft crunching noises as I made my way through the virgin snow to the shed out back of the cabin. By the time I had plowed a path to the shed -- actually an old outhouse that had been expanded and converted for storage -- I was panting from the unaccustomed exertion and high altitude. In spite of the cold, beads of perspiration trickled down my back between my shoulder blades. I took off my fur-lined jacket and hung it on a nail in the generator shack.

I checked the gas and oil in the old, rusty generator using a flashlight I had picked up in the cabin. Crossing my fingers, I pulled on the starter rope. For once, it caught with a roar on the first try. I fiddled

with the choke until the inevitable case of hiccups passed. Throwing the large knife switch on the spider web draped wall; I listened for the sound of the generator coming on line.

When I got back to the cabin, the fire had taken some of the nip out of the air and the lights were burning brightly. I began to unlace my boots. It had been a helluva night and I was dead tired. Jane was puttering around in the bathroom, doing I had no idea what. With the water turned off for the winter to keep from bursting a pipe, the bathroom was one of the less functional rooms in the cabin.

I busied myself with the fire until I heard soft steps behind me.

“Well, what do you think?” she asked.

I turned around. “What do I think about what? ... “ I asked, catching my breath.

She stood on the Navajo rug in front of the fire and posed like a model out of *Mademoiselle*. She had made dramatic changes in her looks. Her hair was neatly combed, no longer standing out at right angles to her head. Her coke bottle glasses were gone to reveal a pair of sensitive eyes that were now violet. They had been brown. She had done something to her face too. What, I could not be sure. It was a bit rounder and softer than it had been.

She still was not beautiful, but she was far from ugly. In fact, she was quite pleasant looking. As I stood speechless and checked out the changes, I noticed that her figure seemed to have improved as well.

“Like it?” she asked, pirouetting for me.

“What happened?”

“How do they say it on television? My cover is blown so there is no need to continue the masquerade.”

Her comment brought me back to reality, a place I had not been in a number of hours.

“Which reminds me. Tell me about parallel universes.”

She bit her lower lip and looked worried. “I suppose I do owe you an explanation, Duncan,” she said, sitting cross-legged on the couch, patting the cushion next to her. I sat down beside her and caught a whiff of her perfume for the first time.

My heart began to beat faster of its own volition.

“You can begin any time,” I said, more to change the subject of my thoughts than anything else.

She cast her eyes down at the floor. “I shouldn’t. It’s against regulations to discuss paratime with the natives.”

“We’re both a little bit pregnant in that department aren’t we?”

“A little bit...” She looked puzzled for an instant, then her eyes got wide and she laughed. “I confess that I hadn’t heard that expression before, but I see what you mean. After tonight, the regulations don’t make very much sense, do they?”

“No, they don’t.”

“I won’t bore you with the technical details about temporal energy balances between universes and

entropic shock-waves. A good temporist goes to school for twenty years to learn about such things. Just take it on faith that your concept of parallel universes is an oversimplification of the true situation. Timelines just cannot be thought of as parallel.

“Energy considerations are our biggest problem. They keep most of the timelines closed to us. And when a volume of low temporal energy does form -- a paratime portal in other words -- it is usually limited to a few square miles of area. A portal’s life can be measured anywhere from milliseconds to thousands of years. There is one between my home timeline and the Gestetni Republic, for instance that has been continuously open for over six thousand years. Others come and go intermittently, eventually closing forever as the two timelines drift apart. That is the case with your timeline, Duncan. The portal between our universes opened five years ago. We will remain in intermittent contact for about a thousand years and then go our separate ways.”

“So why have you people been skulking about?” I asked.

“Experience has taught us caution,” she replied. “Terrible things can happen to a shuttle once it makes the jump ‘tween universes, not all of them having to do with the temporal physics of the situation either.”

“Such as?”

“Oh, a million things. You can spend an hour in a strange universe and return home to find a hundred years have passed ... or that time has run backwards while you were gone ... or that no time at all has passed. The flow of linear time can be highly variable from timeline to timeline. We avoid situations where a large mismatch exists, but every paratime operative can expect to age at a different rate than family and friends.

“Then there are the nasty little surprises that people can pull on you. More than once a shuttle has jumped into an alternate history to discover the Earth ruled by powerful barbarians with both the yen and military might for empire. A thousand years ago, one of our shuttles discovered the Dalgiri Empire that way. The discovery cost us three cities, including two on my home timeline. Since then, all of our efforts have been bent toward containing that pack of wild dogs. They controlled eight timelines when we first met them -- twelve now. In the same time we have grown from an alliance of three lines to a confederation of thirty-two. Of course, every time we almost get them boxed, a new portal opens up onto a Dalgiri universe from somewhere else and the battle begins again.”

“Like this timeline?”

“No, not yet, Duncan. We have twenty years or so of grace before the Dalgiri get a direct line to your universe.”

“So how is it they are here?”

She looked troubled. “A puzzle that must not go unsolved. Either they passed through one of our universes on their way here, or they can jump energy barriers of unprecedented magnitude. In either case, it’s not good for either of our peoples.”

“And what are your plans for us?” I asked.

“To study you for the moment, perhaps establish diplomatic relations later. I really do not know, Duncan. Such decisions are made on a much higher level than mine.”

“So in twenty years we are going to play Poland to the Dalgiri’s Hitler and your Churchill?”

“If not sooner.”

“And you’ve given up your job as a spy to report that the Dalgiri are coming through earlier than expected.”

She smiled. “I guess I deserve that. I am not really a spy, you know. At least not in the classic sense of the word. I am exactly what I claim to be -- a graduate student working on her thesis in anthropology. Paratime anthropology, that is. But to answer your question: Yes, this is far more important than my information gathering function.”

I suddenly felt very tired. What had started as a boring evening listening to Weasel Martin and the other UFO freaks had turned into something else again. Either I had stumbled onto the greatest adventure of all time -- and I mean of all time -- or else I was in the hands of a certifiable nut. The whole night had been like a dream and fatigue had worn me down until I could hardly think. I bit down hard on my lip, hoping the pain would clear my fuzzy head. I had some hard decisions to make.

“What’s the matter, Duncan?” she asked, her voice a husky whisper. “Don’t you believe me?”

“I don’t know what to believe,” I said. “I’m not making any decisions until I get caught up on my sleep.”

“A good idea,” she said, standing and stretching. Her newly lithe form flickered in the firelight.

“You take the bedroom and I’ll take the couch,” I said.

She smiled broadly and grasped her sweater at the hem, pulling it quickly over her head. “No need for false chivalry. My culture is not your culture -- and I’ve been celibate much too long in this masquerade I have been playing at.”

She turned and walked into the bedroom, her naked back beckoning me to follow. After a moment’s tussle with my conscience, I gave in and followed. Suddenly the thought of not getting to sleep for another couple of hours did not bother me at all.

#

I woke to the sensations of morning; the constant drip of melting snow running from the roof; the smell of breakfast cooking on the stove the heat of pine speckled sunshine across my upper body. I smiled, stretched, and opened my eyes. I was alone. I could hear Jane moving about in the other room. A sunbeam flashed through the window, scintillating dust particles in the air. By the angle, I judged the time to be around ten o’clock in the morning.

I raised myself up on one elbow and yelled, “Where are you, woman?”

She came to the door wearing oversized Levi’s and a flannel shirt. “Morning, sleepyhead. I borrowed some of your uncle’s clothes. I hope he won’t mind.”

“Uncle’s a pussycat, at least where beautiful women are concerned,” I said. She blushed at the compliment. I was surprised to realize that I really meant it.

“Breakfast is almost ready. Why don’t you get up and get dressed? Lots to do today. We have to be up on the Rim by full dark. The shuttle could make the jump anytime after dusk.”

She went back into the kitchen while I dressed. I put on the same clothes I had worn since yesterday morning, feeling slightly itchy at the prospect. I wished the water had been turned on. I could

have used a bath. Running a hand across my chin, I scraped over the day's growth of beard. My tongue caressed slimy teeth. In spite of my general slovenliness, I felt good. Some of the mental haze that had plagued me since things had started last night was gone.

Jane ladled pancakes onto a plate as I came out of the bedroom. I crossed over to where she stood and nibbled her ear. She giggled just like any red blooded American girl. You would never know to look at her that she was a creature from another universe. I let my hands roam lovingly.

There was a sharp rap on the door.

Jane stiffened in my arms. "Who's that?"

I tried to keep my voice light. "Probably just the neighbors from across the meadow. They have seen the smoke and came over to get the latest gossip. It gets damn lonely up here in the winters."

She looked around frantically. "The beamers?"

Now it was my turn to be startled. The beamers! What had I done with them? Then I remembered. They had chafed me while tucked into my belt. When we had gotten back to the rooming house, I had transferred them to the pockets of my leather jacket. The jacket that I had taken off in the generator shack and which still hung on a nail out there. "Out back," I said, hooking a thumb in that direction. "Don't worry, I'll get rid of our visitors."

"Duncan Allen MacElroy?" the man standing on the porch asked as I opened the door.

I did not bother to answer. There didn't seem a need.

The stranger was short and squat, with overhanging eyebrows. His wide smile showed a jagged row of teeth. Those were not his most noticeable features, however. The beamer he held in my face guaranteed that I barely noticed his physical peculiarities.

The tinkle of breaking glass sounded behind me and Jane screamed. I whirled around to see a second Dalgir level his beamer at her through the broken window.

After that, things seemed like a dream again.

In a matter of minutes three Dalgir -- one had been hiding out back in case we had made a run for it -- had searched us with brusque, impersonal efficiency and frog marched us into the bedroom. I was ordered to turn and face the wall, while a scuffle went on behind me. When I was finally allowed to turn back, Jane lay face up on the rumpled bed. Her body was curiously limp; her violet eyes gazed dazedly at the ceiling.

Then two of them grabbed my arms and the third applied a shiny steel box to my neck. There was a sharp prick and I too was limp all over. It was as though my body had gone to sleep from the neck down. They brusquely tossed me on the bed beside Jane and left the room.

From then on, I did not see anything but the flyspecks on the ceiling, although I had no trouble hearing them in the next room. They had left the door open to keep an eye on us.

"Jane?" I asked softly. My mouth and eyelids were about the only things that still worked.

"Yes, Duncan."

"What happens now?"

Just then, the Dalgirs started speaking to each other in their native tongue. I heard a brief “Shush!” from Jane as she listened intently. It is funny, but the Neanderthals are always portrayed in the movies as talking in grunts. Hollywood has never been more wrong. They spoke a language that was more than a little reminiscent of French.

After five minutes, the conversation quieted down and one of them glanced in at us. I waited for him to disappear out of the corner of my eye and whispered to Jane, “What was that all about?”

“It’s bad, Duncan. Very bad. They’ve got a paratime communicator and are using it to call in one of their ... call it a cruiser. It is an armed shuttle with a crew of two hundred. It’s second only to our biggest warships in firepower and could easily destroy a continent.”

“But why call in something that large?”

“To ambush our transport when it arrives. This mission is very important to them for some reason. I was right last night. They crossed over to this timeline through my home universe. The cruiser must come the same way. A lot of people at home will die tonight.”

“What are we going to do about it?” I asked.

A short, savage sob escaped from her throat. “What can we do?”

If my shoulder muscles had been free to move, I would have shrugged. It did not look as though there was much we could do.

“If only we’d had the beamers,” she whispered.

I felt a hot flash of anger at myself for being so stupid. Then I savagely put the thought out of my mind. There had been no reason to think they would trail us here.

“Look,” I said. “If we’d been armed, we would now be dead. You saw the way they were deployed when they jumped us!”

“Maybe we could have won a fire fight. Now we’ll never know because the beamers are out with the generator.”

It was then that I smiled. My mind began to race as I recalled several previous visits to my uncle’s cabin. Not being hooked into the power grid was a real pain in the ass. You forever had to go out and pump some more gas into the generator’s fuel tank. Uncle had planned to build a reserve tank out of an old fifty-five gallon drum for years. However, he had never gotten around to it.

That meant the generator had fuel only for eight hours or so, even at the idle setting it used when there was no electrical load on the line.

“What time is it?” I whispered.

“About eleven. Why?”

I listened to the far off *put-put-put* of the generator.

It was a sound that I had not consciously heard since last night, although it had been there all the time. Now it somehow seemed louder. I licked my lips and waited, listening for the noise to stop.

I waited for an eternity that probably lasted only fifteen minutes. Finally, it came. The soft chugging of the generator stopped, bringing with it a silence louder than when it had been running.

One of the Dalgirs was in the bedroom in a matter of seconds.

“What has happened?” he asked.

“Generator’s out of fuel. Looks like you boys are going to get cold,” I said.

“Never mind that. We need power for our communications beacon. How do we get it back?”

“Know anything about cantankerous internal combustion engines?”

“I’m no barbarian,” he growled, sounding a bit like Ralph Nader.

“Then you’d better let me up so I can go get it started again.”

He turned and yelled, “Rimbrick!” A second Dalgir came into the bedroom, leveling a beamer at me.

Then there was a sharp prick on my neck, followed by fire coursing downward through my body. My arms and legs began to twitch uncontrollably.

When the spasm passed, they helped me to stand on weakened legs. I walked around the kitchen to loosen up a bit. Finally, the second Dalgir, the one called Rimbrick, ordered me out the back door. We crunched our way to the generator shack.

Once inside I set to work refilling the tank with gasoline, using an empty mayonnaise jar to transfer it from the storage barrel to the fuel tank. When the generator was topped off, I filled the jar one more time. Rimbrick stood warily two arm lengths out of reach in the doorway. I set the gasoline down next to the generator and began to putter around the mechanism. Then I picked up the jar in my left hand and leaned over to the big knife switch on the wall.

“Got to disconnect the load before I start it,” I said. My body shielded my right hand from view as I brushed up against the coat on the wall. I waited breathlessly for the bolt of lightning in my back. Nothing happened. I reached into the jacket pocket and felt the cold handle of a beamer. Praying the safety was off; I mentally judged my distance from the doorway and whirled, throwing the gasoline in one quick motion.

It caught him full in the face. He screamed, instinctively throwing his arms up to cover his eyes. Then he realized his mistake and brought the beamer down to bear on me once more.

The hesitation was enough. I pointed my weapon at him and pulled the firing stud. There was a crash of light and the overwhelming stink of ozone. When I could open my eyes again, I saw Rimbrick down in the snow with the familiar hole burned through him. The gasoline had caught fire. Flames and a thin stream of black smoke rose upwards from his jacket.

I quickly grabbed the second beamer and headed for the cabin. I pushed the back door open and padded across the linoleum to the door opening on the living room. I hesitated. It had suddenly occurred to me that I could not answer a very important question. Exactly whose side was I on? True, circumstances seemed to have thrown me in league with Jane, but was that what I wanted? She had killed the Dalgir without warning last night. What if she was with the bad guys and these Dalgiri represented the forces of law and order? What was an outsider like me doing mixed up in this mess anyway?

I pushed open the door to the living room, indecision lying on my shoulders like a sack of concrete. I am not sure exactly what it was that I planned. Perhaps they would surrender if I got the drop on

them. With the Dalgirs prisoner and Jane still drugged from the neck down, maybe I could sort things out.

The door squeaked slightly as it opened. Suddenly the whole question of right and wrong became academic. The leader faced me from across the room, a look of blank surprise on his face as he lunged for his beamer.

I shot him ... and the other when he tried to quick draw against me as well.

Then I sat down and was quietly sick for a few minutes. Later I released Jane, following her instructions on how to administer the antidote to whatever drug they had given us.

She wasted no time heading for the communicator. She did something incomprehensible to the controls and then cursed softly under her breath. Turning to look at me, she smiled sheepishly. "Darling, would you mind turning the electricity back on? They've drained their batteries."

I grinned. "Sure thing, boss."

I trudged back to the generator and quickly had it going again. When I returned to the cabin, Jane was just finished talking into the thing that looked like a portable radio. She snapped off the switch and turned to look gravely at me.

"Well?" I asked.

"Made it. I cannot use this thing to talk across timelines without the Dalgiri hearing, but I did get our office in New York. They will relay the message and a certain cruiser will have a big surprise waiting when it tries to cross over tonight. As for us, we wait here. The shuttle will come through right after dark to pick us up."

"Us?"

It was as though I had thrown a switch. Her eyes got a strange look in them, as though she were seeing me for the first time. Then she was in my arms.

"They could have killed us while we lay helpless in there," she said between sobs.

I held her, softly caressing the back of her neck. "Why didn't they?"

She lifted her head from my shoulder and dried her tears. "Because of you."

"Me?"

"Never mind just now," she said, sniffing. "Come over here. There is something we must talk about."

We sat on the couch. I reached over to take her in my arms, but she pushed me away.

"Don't! You can't afford to have your mind clouded with emotion just now. You've a decision to make, the most important decision of your life."

"What decision?"

She gulped and regarded me with red eyes. "Whether you will submit voluntarily to having your memories of the last day erased, or will exile yourself from this timeline forever."

“I don’t understand.”

“Don’t you see? You know about paratime! It’s standard procedure to memory wipe any local who learns of our existence.”

“That’s gratitude for you,” I said. I could feel the flush rising in my cheeks. Maybe I had picked the wrong side in this war.

“I know, Duncan. It is wrong! However, civilizations sometimes cannot afford the luxury of gratitude. It is a cruel universe out there. In fact, there are thousands of cruel universes throughout paratime. Sometimes we just don’t have any choice.”

“I don’t suppose it would do any good to conk you on the head and make a run for it?”

She shook her head. “I reported your being with me the first time I called New York from the rooming house. By now headquarters has every bit of information filed with the federal government. By next week, they will be down to the state and local levels. Within a few weeks at most they would hunt you down and you’d lose an even bigger chunk of memory.”

“And exile?”

“You could join us, Duncan. The Paratime Service always needs good field agents.”

“I don’t care much for being drafted, Jane.”

“Nobody does.”

“For one thing, I’m not sure you people are right in all of this.”

“All of what?”

“Your war with the Dalgiri. You did fire the first shot -- and without warning -- you know.”

Jane’s face darkened. It was as though a volcano was ready to erupt. She sat there considering her reply for a dozen seconds. Then she exploded.

“You are damn lucky I did, Duncan MacElroy!”

“What?”

“Don’t you see? How did that Dalgir track me down at your rooming house? And the three others. They found us here at your uncle’s cabin. How? How could they possibly have known where we were?”

I shrugged. “Damfino. Haven’t had much time to think about it.”

“Well I know! They had a most interesting discussion when you went out with that one to fix the generator,” she said.

“So?”

“They found us because they *were* looking for you ,Duncan, not me!”

“I don’t understand,” I said in the understatement of the year. “Why would they be looking for me?”

“Because they were from our future, stupid! Don’t you see what that means?”

“Huh?”

“It means that sometime in the next fifty years you are going to become a major problem for the Dalgiri Empire. In fact, you will be such a pain in their collective behinds that they will be willing to mount an expedition across the timelines for the sole purpose of killing you! Don’t you see? They found us so easily because they have studied your life since early childhood. They know you like an open book. The only thing that saved you was my chancing to spot that aversion field. Otherwise you’d be dead.”

“From the future?” I mumbled stupidly about ten times.

“Yes, from the future,” she said finally. “The five dimensional surface that describes paratime is convoluted beyond belief. Travel into the past is completely feasible -- if you are willing to spend a few years waiting on some skewed timeline for the right portal to open. There are timelines without number where time flows in reverse, you know.”

“Years? They invested that much time in killing me?”

“Probably. You are important to them. Important enough to expend four field agents and an armed cruiser in the attempt. That makes you important to us.”

I suddenly could not think of anything to say.

“Well?” she asked.

“Well, I’ll be damned!”

“You certainly will.”

#

The transport shuttle came through at full dark, guided to the cabin by the Dalgiri homer. It was an ebon egg some ten yards long that hovered a foot off the snow pack. The three-man crew was briskly efficient. Within minutes, they had loaded the dead into a cargo hold and begun to clean up all evidence of the fight in and around the cabin. A fourth man, their passenger, conferred hurriedly with Jane while I wrote a note to Tony Minetti.

The note explained that the stranger returning his Jeep was a cousin and asked him to hand over my Jag. I wrote another note to Hal Benson, my landlord, telling him to forward my clothes and stereo to an address in New York City. I wondered briefly what he would think of the three crisp hundred dollar bills I included in the envelope. Then it was out to the generator shack to kill the power for the last time.

Finally, it was time to go. The field agent pulled away from the cabin in the Jeep. Jane and I watched the red taillights out of sight before we turned and walked arm in arm toward the rectangle of blue light spilling from the open hatch of the shuttle.

Suddenly the confusion, fear, and fatigue that had plagued me in the last twenty-four hours were gone. A feeling of exhilaration washed over me. It was the exhilaration of being alive and on the threshold of a great adventure. Of being nine feet tall and covered with hair, and ready to buckle my swash from one end of paratime to the other. Of having seen the future and discovering greatness lay there.

“I’m sorry I called you stupid,” Jane said, snuggling close as we walked.

“You’re not the first,” I said. It was then that I stopped in my tracks. A funny thought had just hit me.

“What’s the matter?” Jane asked.

“Your shuttle,” I said with a chuckle.

“What about it?”

“I just realized. Joel Peterson was right! UFOs are ships from another universe.” Then I laughed. What started as a chuckle built quickly into a belly-jiggling guffaw. I laughed so hard tears began to run down my cheeks.

Suddenly Jane was laughing too.

When she had managed to get control of herself, she wiped the tears from her eyes. “I don’t know how to tell you this, Duncan. UFOs really are swamp gas! Or weather balloons, airplane lights, or St. Elmo’s fire. We shield our shuttles with aversion fields. They are practically invisible at night. There hasn’t been a sighting of one of our ships in the whole five years we have been operating on this timeline.”

I turned to stare at her. “Really?”

She nodded.

“Well I will be damned!”

Then we started to laugh again. This time the joke was even funnier.

#

Author’s Note for *Beer Run* :

Beer Run had an interesting genesis. I had just attended my first function with the Arizona science fiction fans in June 1978. It was a monthly gathering at the home of one of the leading members in central Phoenix. I went because I was about to attend my first World Science Fiction Convention and wanted to get some information on what went on at SF conventions. I remember being struck by the ambiance of the gathering. It was unlike anything I had ever been to before. Afterwards, I went home and immediately tried to capture that feeling on paper.

For the locale of the story, I dredged up a childhood memory. My aunt lived briefly in downtown Tempe, across Mill Avenue from Arizona State University. We visited her one night when I was about 10 years old. By some quirk of mind, I remember that as a magical night. I have a vivid memory of the streetlights shining among the tall trees along the back streets of what was then a university town. I even remember the cracks in the concrete sidewalks. It seemed a perfect place to set up the meeting on the UFO Spotters Club.

For those who are familiar with Tempe, Arizona, the neighborhood where *Beer Run* begins is between Monti’s La Casa Vieja restaurant and the railroad tracks to the west. Or rather, I should say, the neighborhood was there. It has since been torn down and is now a maze of theaters, apartments, and the headquarters of America West Airlines. In fact, I parked my car last month in the middle of a dirt parking lot almost precisely on the spot where Jane Dugway killed the Dalgir (after the Centerpoint Theater started charging \$5.00

to park in their garage.)

The mountain cabin was easy. It is my parent's cabin outside Christopher Creek, Arizona. My mother still lives there six months out of the year.

I have long been a fan of H. Beam Piper's and have read his paratime stories dozens of times. Finding myself well launched on what had started out merely as a practice exercise in writing, I decided to add my own bit to the sub-genre known as the parallel universe story. Except, as noted in the story, the universes are decidedly non-parallel!

I was very pleased with the way my non-story came out and sent it off to Analog Science Fiction/Science Fact Magazine. Stan Schmidt, the new editor, purchased it immediately. *Beer Run* is, I believe, the very first purchase that he made when he took over as editor in 1978 following the departure of Ben Bova. He published it in the July 1979, issue of Analog and asked for a sequel.

Therefore, having started out merely to write an evocative scene, I found myself continuing the adventures of Duncan MacElroy through not one sequel, but two. The other two stories were "A Greater Infinity," Analog, November 1980; and "Which Way to the Ends of Time?", Analog, 17 August 1981.

By the time I had finished my paratime series in Analog, I discovered I had 50,000 words of fiction with the same character and in chronological order. "Aha, almost a novel!" As the fates would have it, in 1981 I was ready to graduate from the magazines to novels. I wrote a couple of transition chapters, assembled the whole thing, and sent it off to my agent to find me a publisher. He did. He signed me with Judy-Lynn Del Rey of Del Rey books, where I spent the next decade happily publishing novels.

One of the advantages of being a writer is that it tends to make you more aware of the inner workings of your mind than do other kinds of work. I got a lesson in how my subconscious operates while preparing my Analog novellas for publication as a novel. I needed a catchy title, so I settled on Quest Crosstime as being descriptive and sent the manuscript off to Del Rey for editing. They wrote back to inform me that Quest Crosstime is one of Andre Norton's more famous books and asked me to choose another title. In checking my bookshelves, I not only discovered that I had Quest Crosstime in my collection, but that it was on the end of the shelf and in plain view when I sat at my desk. Apparently, the eyes see, but the conscious brain does not always register. In any event, I named the book after the second story in the series, A Greater Infinity, and it was published by Del Rey in 1982.

GIFT

If you think nuclear power is a dangerous way to generate electricity, then you obviously have not considered the drawbacks of solar energy!

It was a cold, blustery Wednesday that first time he came into the El Dorado. It was going on midnight and the place was deserted. Even Lucy and Suellen, our two "working girls" had given up for the night and gone home. I recognized him immediately, of course. Even without my photographic memory, I would have known R. J. Cowen.

“Hi,” I said, “what’ll it be?” I tried to be a study in friendly aloofness. I have always heard that Cowen does not like people fawning all over him. That and the fact that he has been known to leave a thousand-dollar bill for a tip made me keep my distance.

“You know who I am?” he asked. His voice was a low croak and his eyes were bloodshot. I recognized the symptoms. He had the air of a man in the middle of a weeklong bender. His breath confirmed my suspicions.

“You’re R. J. Cowen, the sunscreen tycoon,” I said. “Care for a drink, Mr. Cowen?”

“Yah,” he said. “Uh, a scotch-and-water.”

The beverage dispenser served up the scotch with its usual assortment of noises. I retired to the other end of the bar and went back to polishing glasses. He did not taste the scotch at all. He just sat there and stared into its dark translucence as though hypnotized. I watched him in the mirror for ten minutes, then put the glass down and sidled back to where he was sitting. He did not take notice of me until I was standing across from him.

“Pardon me, Mr. Cowen,” I said. “It’s none of my business, of course, but you look like you need a friend. Anything I can do to help?”

He looked up with those red-rimmed eyes and sighed. “You say you know who I am.”

“Yes, sir.”

“Who am I?”

“Some people around this burg say you’re the richest man in the world.”

He nodded. “Yeah, I’ve heard that nasty rumor myself. The funny part of it is that it is true. *I am* the richest man in the world. Not only that, I am richer than the next ten candidates combined. What do you think of that?”

I whistled long and low. Not because it was news to me, you understand. Rather because he seemed to expect it.

“Do you know how I got that way?” he asked, before finally taking a sip from his drink.

“Talent?” I asked.

“Like hell! It was luck. That’s right. Pure, unadorned, undeserved, and unexpected dumb luck. You want to hear the story?”

“If you want to tell it,” I said. Of course, I did not know then what I was letting myself in for.

Cowen drained the glass dry and asked for another. *Fizz, whirrr, plop* and I had it in front of him.

Remember the Vietnam War? No, me neither. Well, it was one of those brush fire things that went on about forty years ago. Cowen was in college at the time and dropped out to protest US involvement. To hear him tell it, those were the best days of his life. He and a bunch of others traveled around the country in a battered Volkswagen van. They organized demonstrations, burned draft cards, and just generally raised hell.

Then a terrible thing happened. The war ended and Cowen was adrift. He had been one of the hard-core protesters, a real agitator. Suddenly the cause to which he had given six years of his life was

gone. His side had won. There was nothing left to fight for. He felt like a knight who trips over the Holy Grail on his way to saddle up his horse. (I hope you realize I am condensing this. By the time Cowen finally got to war's end, it was almost 2:00 a.m.)

After peace broke out, Cowen just drifted. Bringing down a government had been a heady narcotic. Nothing afterwards had been the same. He tried consumerism, environmentalism, and even Eastern religions. Nothing gave him that same feeling of excitement he'd found in the peace movement.

"Have you ever belonged to something?" he asked me while nursing his third drink. "I don't mean the Boy Scouts or the PTA. I mean *really* belonged, like everyone around you was part of your family. That was the feeling that I had lost. It was what I was searching for."

"Must be a great feeling," I said.

"The best," he agreed.

Eventually his search took him to Los Angeles where he met an old girl friend from the peace movement. She had found a new cause of her own and invited him to attend a lecture on the dangers of nuclear power.

"You have heard of nuclear power, haven't you?" Cowen asked me. He slurred the name, of course, but it came out understandable enough.

"Sure," I said. "Used to be what they propelled submarines with, didn't it?"

He nodded. "They still use it on some of the real old boats, the ones they can't retrofit with cryogenic storage modules. Other than that, nuclear energy has no use. Know why?"

"Sunscreens are cheaper and safer," I said.

He slammed his fist down on the bar. "Damned right they are. Now, stop interrupting, I've a story to tell..."

That night at the lecture, Cowen had found another crusade he could give himself over to. For the next several years that is what he had done, heart and soul. He had crisscrossed the country in that same beat-up old Volkswagen, again organizing demonstrations and sit-ins. By 1980, they had the nukes (As God is my witness, that's what he called them) on the run. In the fall of 1982, Cowen was on the way to Arizona to join a demonstration outside the gate of the big nuclear power plant there; only he did not make it. He was sidetracked by an accident, the accident that made him the richest man in the world.

He had gotten off the interstate to buy gas for the Volkswagen. (Yeah, cars ran on gasoline in those days. Cryogen was just a gleam in a few people's eyes.) It was dinnertime and he stopped in a small roadside cafe. The sun was just going down as he finished eating. Apparently, it was one of those sunsets that you can only see in Arizona, so Cowen decided impulsively to go up into the hills to photograph it. He did not get the picture. What he got was lost. He wandered around in the desert until he topped a rise and stopped to check the small pocket compass he carried with him. He had spent hours wandering around and the car was again running on empty. He turned the dome light on and glanced down at the compass. It was a good thing he did.

Otherwise, the flash would have blinded him for hours.

"Funny things run through your mind when something explodes just over the next rise," he said to me while popping a peanut into his mouth and dropping a handful of shells on the floor. "I'd been demonstrating against nuclear power for four years and had learned a lot about how it worked. Know

your enemy, I always say. Well one of the first things I had learned was that a reactor could not explode like a bomb. I was not so sure during those long seconds after the explosion, I can tell you that! Mostly I spent the time curled in a ball on the floor of my van with the gearshift lever jamming me in the ribs. Every story I had ever heard about nuclear weapons flashed through my mind. All I could think about was the face of a little Japanese girl who had been looking up when the Hiroshima bomb went off ... never mind, Joe. No sense ruining your evening by being too graphic.”

“Whatever you say, sir,” I said. My name is Marvin Agronski, but if the richest man in the world wanted to call me Joe, that was fine by me.

“Eventually I concluded that it wasn’t the power plant,” he continued, “and that I wasn’t dead. The next thought was *plane crash!* Weren’t planes always going down at night in the mountains? Somehow the idea of a few hundred dead strangers lying mangled just over the next ridge didn’t bother me as much as that little girl’s picture.

“I extricated myself from the gear shift, got back into the driver’s seat, and then eased the car up the hill at dead slow to see what was burning. When I got to the top, I found myself looking down into a little hollow filled with scrubby desert trees. Many of the trees were ablaze. I stopped the car, got out, and walked as far as I could before the heat from the fire became too intense. It was bright as day down there.”

I leaned one elbow on the bar and began to pick my teeth, nodding occasionally so that it looked like I was intent on what he was saying. He didn’t even notice me. He was once more in a hollow in the mountains of Arizona some thirty years ago. Truth was that I could have left the room and he would not have noticed.

“Suddenly a figure walked out of a clump of trees that hadn’t caught fire,” Cowen said. “He took three steps towards me and collapsed to the ground. I did not have time to think. I just ran over to where he lay face down and rolled him over. That was when I got my second shock of the night.

“I’d whimpered in fright when I thought the power planet had exploded. This time I screamed. Even after all these years, I can still hear that sound in my head. It was a girlish scream. The figure on the ground was not a man. It was *athing!* In fact, it was nothing less than a bug-eyed monster!”

“Are you all right, Mr. Cowen?” I asked, touching him on the wrist. His eyes lost their unfocused look.

“Huh?”

“I said, are you all right?”

“Sure. Why shouldn’t I be?”

“You were just talking about bug-eyed monsters.”

“That’s right,” he said, nodding. “I was just telling you about the night I found Thing in the desert. “

“Thing?”

“The bug-eyed monster. Weren’t you listening?”

“I must have missed something,” I said.

“Well, be quiet and I’ll tell you about it.”

I shut my mouth. I had probably blown my thousand-dollar tip. Still, when a man has as much money as R. J. Cowen, you do not call him crazy to his face. Trillionaires are eccentric, not crazy,

He continued his story.

It seems this BEM was purple with slick oily black hair and a mouth that opened sideways rather than up and down. That is, it was on a vertical line rather than a horizontal one like yours and mine.

(Hope you don't mind my paraphrasing some of this. I do have a photographic memory like I said, but Cowen was rambling pretty badly and I think I can make the story a hell of a lot more coherent than he did.)

Anyway, the thing was slightly smaller than a man and resembled a person in gross detail -- that is, it had two arms, two legs, and a head. The only thing was that all its features were not arranged the same as ours. Its knees folded the wrong way and it had too many fingers on each hand. Worst of all, it had eyes that glowed red in the dark.

Cowen was no fool. He did the sensible thing. He turned and ran. Only problem was, he took only two steps before tripping over his feet and crashing down on the hard rocks. It was then that he knew what real terror was. His system got a jolt of adrenaline that dwarfed the previous two surges. Deep down in his brain, down where the subconscious hangs out, he could feel a sensation he'd never felt before.

The thing had gotten hold of his mind!

"How'd you know that?" I whispered. I don't know why but we had taken to talking in hushed tones. Reminded me of one of those overnight camping trips where you sit around the campfire and tell scary stories.

"How can I describe the sensation?" he asked. "Might as well describe the color blue. I felt like a piano and the BEM was running its mental fingers over my keyboard. First, there was a flash of heat, then clammy cold, and then other sensations in quick succession. I had difficulty breathing, dizziness, extreme joy, and an attack of naked lust, followed instantly by numbing depression. I began to shiver violently while sweat poured from my body and a blazing rainbow of color flashed before my eyes. Those are the words, but they don't describe what I felt any better than a six year old can describe sex."

I was getting interested in this insane story. It was like a fantasy novel. You know it is not real, but you pretend it is for as long as the story lasts. Except this was better. "Care for a beer, Mr. Cowen?" I asked, hoping to get him off the hard stuff.

He nodded and waited for me to draw the brew.

"What happened next?"

"There was this clicking sound," he said.

"Clicking sound?"

"Yeah, like you hear when someone energizes the phone screen on the other end of the line. Except it was not a sound at all. It was inside my head.

"--Ah, there it is," a quiet voice speaking accentless English said deep in Cowen's brain. "I apologize for any discomfort I may have caused, sir. When I noted your predilection for using one of your grasping appendages in preference to the other, I naturally assumed your brain would be most

developed on that side. However, I now see that you are cross-connected and that I've been searching the wrong hemisphere of your cortex for the speech center..."

"--Who are you? --" Cowen asked.

"--Not so much volume, please!" the thing said. "You are an extremely powerful telepath for one who is untrained. You may call me ...*Thing* . As you can see, I am an alien. My ship is destroyed and although uninjured, I require your assistance. If you would be so kind --"

"Look, I'm a little busy right now," Cowen muttered sarcastically, falling into the lifelong habit of speaking his thoughts. "Perhaps I could drop you off at a police station. The authorities will know what to do with you."

"--I am sorry, sir. But that is impossible. This planet is under quarantine. That you know of my presence is bad enough. None other must learn of it. You must hide me until my comrades are able to effect a rescue. --"

"What about your ship?" Cowen asked, pointing a thumb at the blazing fire that was still warming his back uncomfortably.

"--The generators are aflame. In another twentieth of one planetary revolution there will be nothing there but a charred spot of ground. --"

"How long until you are rescued?"

"--No more than a year --"

"A year!" Cowen screamed. "How do you expect me to keep a bug-eyed monster secret for a year?"

"--Perhaps you could hide me in your domicile. --"

"I don't have a domicile. Besides, I have my own life to live. Sorry..."

The burning red points stared at him in silence for a minute. He knew it still had him since he felt no desire to get up and run for his car.

Finally, it spoke. "--I would be willing to pay whatever you wished. --"

"You mean money?"

"--If that is what you desire," Thing said. "Anything in my power as payment for harboring me until I am rescued. --"

Now this was an intriguing turn of events, Cowen decided. That is, if the creature really could pay for his keep. He wondered how a shipwrecked sailor would go about bribing a native of a South Sea island into helping him. Would his promises be anything but empty words?

He decided a test was in order.

"Okay," Cowen said. "Make it so the atom bomb was never invented."

"--Changing that which already exists is beyond my power. --"

"Hmmm, I thought so." It was beginning to look like he had gotten the cheap model of Aladdin's

Lamp. Not only was the genie offering only one wish, but he was choosy about what that wish could be. "I don't suppose you could get rid of all the nuclear power plants in the world, either."

-- I could," Thing said, "but such overt action is forbidden by the quarantine regulations. Pure knowledge is more my specialty. --"

"Oh, peachy," Cowen said disgustedly. "If there is anything the world already had too much of, it was pure knowledge. Look at the automobile. If it had never been invented, there wouldn't be any smog, urban sprawl, ugly parking lots, drunk drivers, etc., ad infinitum. If only we had invested all those billions into something clean, safe and inexhaustible -- solar power, for instance."

The sudden insight took him by surprise. It took him a few moments to order his thoughts. Finally, he said, "I've got another wish."

--Yes? --"

"I want a cheap, efficient means of capturing the sun's rays and turning them into electricity."

--Is that all?" Thing asked. "We have had such a device since the dawn of our history. --"

"It's got to be as close to one hundred percent efficient as possible. I don't want any of these three percent solar collectors we've been fooling around with."

-- Of course," Thing said, making it sound like the easiest trick in the world. "Complete efficiency is not possible in the real universe, you understand. However, the energy absorption screen is so close that you will barely notice the difference. --"

"How about cost? If it isn't dirt cheap to produce, the damned oil companies will get control of it like everything else."

--The cost will be minimal once the factories are tooled up. It should cost less than the material from which your clothes are manufactured. Is that satisfactory? --"

"Right on!" Cowen yelled. Then a dark suspicion crept in to put a damper on his enthusiasm. "How do I know you will keep your part of the bargain?"

--I must construct a signaling device. I will not begin to manufacture the ... you might call it a radio ... until I have demonstrated my good faith." Thing regarded him seriously once more. "Is it a deal? --"

"It's a deal!" Cowen said.

Suddenly the mental restraint that had kept him from using his legs was gone. He probed deeply into his mind. There was no trace of the strange lethargy of a few seconds before. He was once more in control of his body and his fate.

"Or so I thought at the time," he said, burping noisily in my ear.

"What happened then?" I asked.

"I rented a place in Pueblo, Colorado, and fixed up the basement as a small workshop and living quarters for Thing. I wiped out my savings doing it. Luckily, Thing had salvaged a few hundred feet of gold electrical wire from the wreck before it burned, so we had money to spare.

"We holed up for six months and spent every waking moment on the device. Three months after setting up shop, we had our first working model. I imagine you have seen pictures. Old Mark I is in the

Smithsonian now.”

I nodded. “I took Hazel and the kids to Washington the summer before last. I remember it because it had your name on a brass plaque on the display case, Mr. Cowen.”

“I’d gone out to stock up on groceries. Thing did not eat meat, so he went through a lot of lettuce, carrots, and rutabagas. As soon as I got back to the house, I heard his telepathic call to get down to the basement. There in the center of the table we used as a lab bench was a black void. It was as though I was looking through a square window into the blackness of space. The contraption had two sets of wires running from it. One was attached to a nine-volt battery -- the kind you use for a transistor radio. The other pair ran to a hundred-watt incandescent light bulb. The light glowed brightly.”

“That it?” Cowen asked Thing after he’d found his voice again.

Thing rippled his whole body, which was his way of nodding. “--That is it. It absorbs all visible light and everything into the high ultraviolet with ninety-seven percent efficiency. With proper control of our process, we can tune it down to pick up the infrared region as well. --”

“Thus was born the sunscreen,” Cowen said, sighing.

He glossed over the next part of his story. It seems that he and Thing worked sixteen hours a day for three months to perfect the screen. In addition, Thing tried to teach him the theory behind it. Cowen had never been much good at science and it was tough sledding. However, they kept at it. Part of Cowen’s deal with the alien was that he would learn enough about how the device worked so that he could plausibly claim to have invented it. In the end, Thing settled on merely giving his human student the cookbook rudiments, the backyard mechanic’s explanation, the barest smattering of knowledge necessary to put up a good front.

By the end of six months, Cowen’s patent was pending and he had begun negotiations with various companies for the right to manufacture sunscreens under license. While he traveled with his demonstration model, Thing began to construct his “radio” in the house in Pueblo. Cowen had laid in a stock of canned vegetables and did not see the alien for two months. The sales trip proved profitable. By the time he returned home he had made deals with General Electric, RCA, and Matsushita of Japan. Others were pending, but those three were already modifying their factories for sunscreen production.

“That homecoming was a surprisingly emotional one for me,” Cowen said. “Even though Thing was an alien, I’d gotten used to the reassuring feel of his mind touch, the emotional support he gave me when I was feeling low. Moreover, he was as glad to see me as I was to see him. Possibly, he was merely tired of canned vegetables and wanted to get back to fresh. He was an alien, true, but I could not help liking him. I think he felt the same way about me.

“I was feeling a little down the night of my homecoming. The papers were full of news about a big demonstration the Clamshell Alliance had organized against the Seabrook Nuclear Station. It reminded me that others were still on the front lines, getting smacked with police nightsticks, while I was stuck in Pueblo, Colorado, with a bug-eyed monster. Thing noticed my funk and asked me about it. We started to talk and soon, it had turned into a good old fashioned bull session.”

“--A strange puzzle. --” he said.

“What is?” Cowen asked.

“ --The human reaction to a problem. Do you attempt to determine your best course of action? No. Rather your first thought is to climb the nearest hill and bay defiance at the stars. Only later does

reason come over you. Surely, this is not the most efficient means of finding solutions. --”

“I don’t get you,” Cowen said, puzzled.

“--You wish an end to the dangers of nuclear power. But are you happy working quietly toward that end as we are doing? No. You prefer to plot confrontation with your enemies. What is this need of yours to ‘go public’ as the expression goes? --”

“But it’s only been four years since Three Mile Island. How long before the next nuke goes haywire, killing a few thousand people this time? We have to keep the pressure on while the public remembers. How else are we going to win?”

“-- As you are winning. By introducing sunscreens and making all other forms of power generation unattractive. --”

“Do you really think sunscreens will end nukes?”

“--Yes. --”

“How can you be so sure?”

“--Because the companies that generate electricity in your society have fixed expenses they must meet. As sunscreens are introduced, demand for their product will fall and they will be forced to raise rates. As rates increase, demand will drop further. It is obviously a situation wherein positive feedback controls events, a vicious cycle, a diverging series --”

“Then the utilities will go bust?”

“--The utilities will go bust. --”

“He was right, too,” Cowen said, looking at me with tears in his eyes. “Five years after that conversation, the last nuke in America pulled its core and closed down for good. Thing predicted a lot of other things that night -- the end of cities as we knew them, population sprawl, solar farms, the return of cottage industry, the spiraling standard of living. He even predicted the stock market crash of December 1983. Not the date, of course, but the event.

“And with his talk of Depression, I began to have second thoughts about what I had wished into being.”

Cowen looked at Thing with tears in his eyes. “Have I done right?” he asked. “A lot of people are going to be out of work because of me.”

“--Temporarily,” Thing agreed. “But perhaps it will help to think of it this way. Electricity is to your civilization what fire was to your distant ancestors. Only your people have surrendered control of your fires to a few powerful individuals. If you desire to warm yourself on a cold night, you must pay for the privilege. --”

“So?”

“--Sunscreens are going to change that. In effect, you have taken the fires of your civilization and given them back to the common people. As long as energy remains inexpensive and readily available, no man may bar another from his source of heat and light. Isn’t such a world preferable to your current system? --”

Cowen nodded. Put that way it made a lot of sense.

“We talked far into the night, exploring alien concepts of government, religion, and ethics,” Cowen said. “It was the closest we ever came to understanding each other. It turned out to be our last chance to try.

“Thing was rescued at the end of the year. I took him up into the Rockies and a saucer shaped craft floated down from the sky, hovering just off the ground while he boarded, then zoomed off without a sound.”

“Interesting story,” I said. Only then did I realize I had been holding my breath. I picked up my towel and began polishing the bar once more. “Interesting, but I can’t rightly say that I believe it.”

“Don’t blame you, Joe,” he said. He made a face as he tossed off the last of his beer. “The john?”

I pointed back in the corner where the rest rooms are located.

He inched his way off his stool and steadied himself against the bar before staggering in the indicated direction. I bit my lip. What if R. J. Cowen, the richest man in the world, slipped and knocked his brains out against the urinal? I wondered how many lawyers he kept on retainer for just such an eventuality.

I breathed more easily when he reappeared after five minutes. This time he walked with the air of someone who is trying to appear sober. You know the too-too-careful walk. I had a bad premonition that he had just been sick all over my nice clean rest room.

“Doing better?” I asked when he had hoisted himself back onto a stool.

“Better, Joe. Thanks. What have you got back there that’s fit to drink?”

“I think you’ve had enough, Mr. Cowen,” I said, expecting him to explode. He obviously was not the type of man used to having people tell him no. However, he didn’t. He just sat there and nodded sagely.

“I think you’re right, Joe. I just want one to calm my nerves before my chauffeur arrives with the car. Called him from the screen in the hall outside the john. Besides, you want to hear the end of the story, don’t you?”

“You mean there’s more?”

“There’s more,” he said, nodding. “Now what have you got?”

“The owner keeps a bottle of forty year old brandy in the safe. He bought it for an investment, but says he’d open it if the right special occasion came along.”

“I’m about to finish telling you the rather unique story of my life and that brandy will be the last liquor I ever drink. How much more special can an occasion get?”

“I don’t know,” I said, dubious. “Stuff’s pretty expensive.”

Cowen laughed aloud at that. After a few seconds, I had to join in. Considering whom I was talking to, it was pretty funny. I fetched the brandy from the back room and made a ceremony of opening it.

Then I poured him half a beer glass -- the El Dorado not being that high class a bar, we do not stock brandy snifters -- and set one up for me.

“On with the story,” I said.

“On with the story,” he agreed, not touching the drink. His eyes got all misty and he continued talking in a quiet authoritative voice that was somehow different from his earlier speech pattern. Before he had just been a drunken bum in expensive clothes. Now he seemed to have gotten some of the steel back into him. He looked more like the captain of industry he really was.

“Not much of interest happened to me for the next thirty years,” he said. “Not until about three weeks ago, in fact.”

I held my silence. In the last thirty years R. J. Cowen had been married and divorced four times, had half his stomach removed, developed chronically high blood pressure, and had his eldest son killed in a traffic accident. Another child -- a daughter, I think -- had joined a Provincialist commune somewhere in Alaska. Also, in that time his fortune had doubled, tripled, and doubled again. However, if he considered none of that to be of interest, then who was I to argue?

“What happened three weeks ago?” I asked.

“I was lying in bed with a throbbing headache. It was midnight and I lay in the dark, staring up at the ceiling, trying to drift off to sleep. I was just about to succeed after counting my thousandth sheep when a strangely familiar feeling came over me.

“At first I couldn’t identify it. It was like seeing red and suffering from double vision at the same time. Except it was not only my eyes. It was as if my whole body had suddenly twinned. I could feel the cool night breeze on my skin at the same time as I seemed to be submerged in tepid water. I could hear the hoot of an old horned owl that lives out back, and yet there was a strange silence in my mind. My mouth tasted of bile. Yet, somehow, I could taste the metallic bite of sulfur too. My thoughts took on a curiously echoic quality, like a telephone line that is not properly damped at the other end. “In spite of the strangeness of it all, I couldn’t shake the feeling that this had happened to me before.

“Then it hit me,” he said, his voice dropping to a hoarse whisper. “It was Thing. He was back.”

“What’d you do?”

“Do? I screamed ‘*Thing*’ at the top of my lungs -- both mentally and actually. He did not seem to hear me, which was strange. How was it that I could read him and he could not read me? He was the trained telepath, not I.”

“Didn’t he say you were a strong natural telepath?” I asked.

Cowen nodded. “I finally decided that was it. I have had these hunches all my life. Some people would call them intuition. Maybe that is my talent showing through. Anyway, whatever the reason, I found myself with a direct circuit to Thing’s mind. It must have been his subconscious because I could hear what he heard, see what he saw, and he did not seem to notice me. Not that it was very clear, you understand. Mostly I felt sad at something. Only I could not quite figure out what I had to be sad about. I spent the rest of the night trying to contact him.

“By dawn I was exhausted and still hadn’t had any luck. He was oblivious to my presence. However, the effort had not been wasted. My link was stronger than ever. I could feel him tugging at me from somewhere to the west. So, I hopped out of bed at first light and fired up my private plane. If I couldn’t get him to come to me, I decided I would go to him.”

I chuckled. Cowen’s private plane is a converted VTOL airliner that he keeps hangered on his

estate. Every time he revs up those lift fans, you can hear teeth gnashing all over Williamsport, especially around dawn. However, Cowen owns this burg, and nobody complains too loudly about the noise if it is his or her landlord making it.

“How’d you find him?”

“I followed the mind touch,” Cowen said. “I really can’t explain it. It was like having a compass in my head. I would instantly recognize when I drifted off course. Eventually, I found myself headed for the Rockies. It was then that I knew where I was going.”

“Where?”

“As I flew over Kansas I got a brief flash of Thing’s surroundings. I recognized the clearing where the saucer had landed to rescue him. I had been there enough times to recognize it, even after thirty years.

“I landed the plane about a quarter mile away in another, bigger clearing. Thing must have heard me because I felt his questing thought as I was hovering for a landing.

“--Robert! --” Thing said as he recognized Cowen’s mind touch.

“Hello, Thing,” Cowen said. “Didn’t you hear me calling?”

(“He was surprised, Joe. He had not heard me until I was practically on top of him. It was his mind. It was not as fast as it had been. His thoughts were not as sharp either. He was old, Joe. Time had aged him.”)

“You’re an old man now, Thing,” Cowen said as he hiked toward the clearing where the alien sat.

“--Yes, Robert, I am old and nearly past the time when I can be of use to my race. I perceive that you too have aged since last we met. --”

“Why did you come back, Thing?”

“--I am on a pilgrimage. This was the scene of my first great triumph. I have returned to see the effect of my efforts, and perhaps to beg your forgiveness. --”

“Forgiveness, Thing?” Cowen redoubled his speed toward the clearing. Soon he was trotting among tall pines, panting from the unaccustomed exertion and altitude. “Forgiveness for what?”

“--For our terrible ruse. --”

At that moment, Cowen burst into the clearing. There, sitting quietly on a log facing him was a familiar figure. The oily black hair was the same, but the purple skin had a distinct greenish tinge to it. The figure was stooped. All effects of age, Cowen knew without knowing how he knew. The red eyes gazed at him, unblinking as always.

“--Hello, Robert. It is nice to see you again. --”

“Hello, Thing. What ruse?”

“-- Why the sunscreen, of course. --”

“I don’t understand.”

-- It is simple. My race has long dominated this arm of the galaxy. We have done so by denying access to the stars for any race we feel we cannot control. It was decided thirty years ago that humans are such a race. I was the agent assigned to lock you in your cage. That was my mission here. --"

"Locked into our cage?" Cowen asked, "How did you do that?"

-- By giving you the sunscreen. --"

"That's silly, Thing. The sunscreen was my idea. It was the answer to all of humanity's prayers."

-- Can you truly say that something was your idea when your mind was under my control at the time? --"

"Okay, so maybe you planted the idea there. It was still the best thing to happen to us in the last thousand years."

--No, it was not," Thing said, sitting quietly and gazing into Cowen's eyes. "You have been tricked. I find that as I grow older and wiser, I have come to regret my part in the affair. I suppose you might say that I have developed a conscience. --"

"But it has been good!" Cowen insisted. "All the benefits you predicted have come true, and more. We have taken the miracle of fire and placed it in the hands of the common man. There has not been an electric bill paid in the United States in twenty years. The sunscreen has given us economic independence."

--How is your space program, Robert? It was quite a booming thing when last I was here. --"

"It's booming bigger than ever, Thing. We have ion drive spaceships powered by huge sunscreen sails dozens of kilometers on a side. They routinely travel to the scientific outposts on the Jovian moons. That is something no mere rocket could ever do. The radiation shielding to protect the instruments and crew from Jupiter's radiation belts alone masses enough that a rocket couldn't get it out of orbit."

--Have your ships gone farther out than Jupiter?" Thing asked.

"They launched the Uranus expedition two years ago. That's about it. We are concentrating on the inner planets at the moment. Besides..."

--Besides, your existing designs are inefficient at that range from the sun because of power limitations. You are marking time until you can design ships with larger collector sails to operate in the outer solar system. True? --"

"True," Cowen answered. "How did you know that?"

--Because that is the nature of the great ruse. In your own idiom, you were suckers. You were concerned about the shortcomings of your existing energy supplies. You perceived coal as being too dirty, nuclear power as being too dangerous, and oil as being too expensive. What you needed was a source of energy that is clean, safe, cheap and inexhaustible. In effect, Robert, you told me your fondest wish and I made it come true.--"

"So?" Cowen asked.

--So in spite of all their shortcomings, your traditional power sources have evolved along a path of which you are painfully ignorant. Your whole history has been one of developing energy sources of ever-greater density and efficiency. Each time a breakthrough was made, it was in the direction of

packing more kilowatts into each cubic meter. --

--Left to itself that process would have continued to its inevitable conclusion. Animals gave way to steam; first wood fired, later coal and oil fired. Fission was in the process of supplanting the fossil fuels, and fusion would have followed fission. Finally, at the end of the chain you would have developed total mass-energy conversion and won free to the stars. --"

"I don't understand."

--A hyperwave generator gulps many billions of ergs in order to warp space around a starship. It must be powered by a miniature sun. What we have done, Robert, is divert you from the path that culminates in the development of that tiny captive star. Instead, we have sidetracked you into the low-density dead end of solar energy. --

--Getting power for your industry is simple. If you need more, just unroll a few more acres of sunscreen. However, the solar flux is a constant at any given distance from the sun. That is easy to forget unless you are designing a spaceship to explore Pluto. Once you have collected the energy that falls on a given area, there is not any more to harvest. --"

"So we just roll out more sunscreen," Cowen said with more optimism than he felt.

Thing sat there for a moment, his red eyes cast down at the ground beneath his feet. --You quickly reach the point of diminishing returns in space. The extra energy collected is not sufficient to offset the extra mass of the collector. --"

"So, we use sunscreens on Earth and develop mobile sources of power for space."

--No, Robert. You will not be able to interest anyone else in such a plan. The sunscreen is too cheap, too easy. Why would anyone invest in a new power source when you now have all the power you could ever want at one-millionth the cost? Face it, Robert. We have chained you to a single star and here you will remain. One day humanity will destroy itself, and the problem that you represent will be solved. --"

Cowen sat quietly, not sure what to say. Finally, he spoke. "And you did this to us, Thing?"

A great sadness flowed over him as Thing considered his answer. --Alas, old friend, I did. I was young and ... you might say idealistic, I suppose. I was much filled with the greatness of my race and our rightful place as masters of the galaxy. I have seen much since that time. I have come to regret my actions, but as I told you so many years ago, I cannot change that which has already taken place."

"Of course you can," Cowen said.

--No, my ship will return for me shortly after dark. I go home with it, to live out my last days with my guilt. I fear my remaining years will not be many, for it weighs heavily on me. --"

"That was the last word he said to me, Joe," Cowen said, tears once more in his eyes. "We sat in silence all day, just feeling each other's presence, remembering a time when we were both much younger. The saucer came shortly after dark as he said it would, and he was gone."

For some reason, I found I had tears in my own eyes. Must have been something in the air. I wiped them clean as unobtrusively as I could. "Jeez, Mr. Cowen, you sure know how to end a story on the downbeat."

"Why do you think I've been on a three week bender, Joe? I have mortgaged the human race's

future. Thing was right. With the perfect energy source already in hand, who is going to invest in some other technology? Look at the government. They have spent their entire energy research budget for twenty-five years perfecting ever better storage devices to smooth out the day/night cycle of sunscreen power production. The world runs on sunscreen produced electricity or cryogenic hydrogen electrolyzed from sea water by that same sunscreen produced electricity.”

“Maybe you could convince them, Mr. Cowen. Tell them the story like you told it to me.”

He got a little smile on his face. He looked happier than at any time since he came in the place. He glanced down and seemed to see the brandy for the first time in about fifteen minutes. He picked up the brandy, holding it up for a toast. I picked mine up as well.

“To the human race, Joe,” he said. “We’re not licked yet!”

“Right!” I said, letting the forty-year-old brandy slide smoothly across my palate.

There was the crash of two glasses hitting the floor, just like in the movies.

The mood was quickly interrupted by the arrival of a big, black turbo limousine out front. Cowen looked at it through the grimy front window and sighed. “Looks like it’s back to the old grindstone, Joe. How much do I owe you?”

I hit the total button on the computer and his bill for the regular drinks flashed on the screen. I hesitated about the brandy. Finally, I decided to charge him \$2000 for the bottle. He did not even bat an eye, just peeled off three bills and handed them to me. I gave him his change, which he slipped into the right hand pocket of his jacket. Then he reached into his wallet, and extracted a tenner note. He handed it across the bar to me.

“This is for you, Joe,” he said. “For being such a good listener.”

I dropped my hands to my sides and shook my head slowly. “No thanks, Mr. Cowen. It is not that I couldn’t use ten thousand, because I could. That is more than I make tending bar in a couple of months. However, if I took that tip I would just be your bartender again. I would rather think of myself as your friend. If you do not mind, that is.

He nodded and put the bill back into his wallet. “I understand, Joe. And thanks. I could use a friend.” He turned to leave and got halfway to the door before turning back. “I do leave a tip for you, though. A friend’s tip.”

“Friend’s tip?”

“Hot insider news about the stock market. You do play the market don’t you?”

“Sure,” I said. “Doesn’t everybody?”

“It’s not common knowledge yet, Joe. In fact, I just made up my mind in your john back there. Sunscreen Labs is going to start a crash program to develop both a total mass-energy converter and a starship hyperwave generator come Monday morning. Thing forgot something. When I was rummaging around in his mind, I picked up a helluva lot of miscellaneous facts. One of them might be just the clue we need. And you can bet your last dollar on one thing, Joe.”

“What’s that, Mr. Cowen?”

“Sunscreen Labs will be a lot more efficient at finding the answer than the government would. We

will make the Manhattan Project and the Apollo Project look like they were run by anarchists. After all, I know where I am going and I am anxious to get there. I want to get out among the stars while both Thing and I are still alive. I want to see the expression on his face when he discovers how I've outsmarted him."

"Right you are, Mr. Cowen."

And right he was!

Author's note for *Gift* :

As I noted in the note that follows *Scoop* , science fiction stories have a very short shelf life. Even if you are writing about a time four centuries hence, modern technology moves so fast that the farseeing SF author's deathless prose seems hopelessly out of date only one or two decades after it was written. Think back to all of the novels you have read where the starship pilots keep their slide rules next to their consoles for calculations. Another prime example of technological obsolescence is Robert Heinlein's *Starman Jones*. Written in 1954, it is still one of my favorite Heinlein juveniles, but you cannot help noticing that the computer that flies the starship has to be coded in binary. In fact, the function of the astrogators on the ship is to look up the binary codes in a book!

Gift did not suffer from technological obsolescence the way some other stories have. In fact, the original text of the story can stand on its own a decade and a half after it was written. No, *Gift*'s obsolescence is more sociological than technological. It was written in 1979 and is firmly rooted in the events of that time.

As noted in the story, the protagonist is a Vietnam War protester who drifts into the anti-nuclear movement because he is hooked on the camaraderie of protest. In so doing, he is tricked into accepting the sunscreen from Thing, the alien agent provocateur. Since this particular combination of events has not repeated itself (nor will it), *Gift* must remain a story rooted in 1979, the history of an event that never came to pass.

The message of the story is a serious one. For those who are hoping that solar energy will save us, I have bad news for you. It has its uses and for some things - small amounts of remote power, for instance - there is no substitute! However, the fact that you do not instantly burst into flames the moment you step into sunlight means that the energy density is too low for solar energy ever to take over the task of prime energy generation. A solar power plant must, of necessity, be at least 10 times larger (in terms of steel, concrete, glass, etc.) than a comparable-size nuclear or coal fired plant. Since mass costs money, it just is not going to happen. As the Russians found out the hard way, the laws of economics are every bit as unforgiving as the law of gravity.

The most successful form of solar energy yet developed is hydroelectric power. The sun warms the oceans and evaporates the water, which then form clouds that are blown over the land. The clouds get heavier and begin releasing their load of moisture in the form of rain. The rain falls on the mountains and runs downhill, collecting into small streams. The streams combine into rivers, the rivers flow into manmade lakes, and the water eventually passes through the hydroelectric dam to produce electricity before being returned to the ocean. Just your basic thermodynamic cycle, with scenery. For pure solar power to be successful, you not only have to build the dam, you have to build the mountains!

For those of you interested in writing, *Gift* is a sample of what I often refer to as the “obtain trust before inserting knife” school of writing. I set up a garden-variety pro-solar energy story. I take you along a well-traveled path and get you comfortable with the idea that you know precisely where I am going. Then when you have been lulled into a sense of security, I spring my trap. When you are expecting the story to end after Thing helps invent the sunscreen, it does not. It continues for another 4000 words in which I tear down the edifice that I so carefully built up in the first half of the story. Those who are fans of the television show *The X-Files* will recognize the technique. My wife and I have two favorite *X-Files* episodes: the one about the retirement home for circus freaks, and the cockroach episode. In both cases, we (the viewers) were set up, lulled into a false sense of security, and then mugged as the story took a sharp left turn when we expected it to go straight ahead. Not just once, but several times! It is the surprise that human beings feel when events do not go as expected that makes the technique so effective. If you appreciate such things, you may just have what it takes to be a science fiction writer.

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THE SHROUD

The Shroud of Turin is thought by many to be the burial cloth of Jesus Christ. As such, it could represent the greatest danger Christianity has yet faced ...

John Frakes was jolted awake by the screech of tires on wet asphalt as the twenty-year-old airplane touched down at *Aeroporto di Torino*. He groaned and straightened up in his seat. The catnap on the forty-minute flight from Rome had been his first rest in thirty hours. Ever since the final lab results had been verified, his sleep had been marred by the same recurring nightmare. He would barely doze off when the stern face of his father scowled forth from his deep subconscious, tugging him forcefully back to reality.

The Reverend Lester Frakes had been a fire breathing Episcopalian minister while he lived. Even five years after the old man's death, Frakes still occasionally woke in the middle of the night covered with nervous sweat, his hands shaking in a fit of filial guilt. His father had never really forgiven him for changing his major from Religious Studies to Chemistry during his junior year of college.

“I’ve raised me a damned atheist, have I?” the Reverend Frakes had screamed at him that fateful Christmas Eve when he had broken the news.

“No, sir, an agnostic.”

“I will pray for you, lad,” Lester Frakes had said, casting his eyes heavenward. “Perhaps the Lord will someday tear this veil of foolishness from your eyes so that you may see the path of righteousness once more.”

Even then, Frakes had had to smile inwardly as his father slipped easily into the old fire-and-brimstone sermon mode. As they had done so many times before, the words washed over him as though from a scalding sea, their sting intended to bend his will to that of the old man.

Only that time he had refused to bend, and in the end, it had killed the Reverend Frakes as surely as a knife.

“*What would say now, Father, if you knew what I know?*”

He knew the answer even as he asked the question. Lester Frakes had always chosen a single sermon on those infrequent occasions afterward when his son had come to hear him preach.

“Never let your mind overpower your faith, my flock! Without faith we are little better than the poor guinea pigs these would-be-prophets slice open in furtherance of their evil experiments...”

“You may unbuckle your seat belt, *Signore* .”

Frakes looked up with a start. The pretty, black haired, black-eyed stewardess who had welcomed him aboard in Rome was standing over him. He looked around, surprised to see the last of the passengers crowding towards the exit at the front of the plane.

“Sorry,” he said, reaching for the buckle. “I guess I was daydreaming.”

“Are you well?”

“Uh, *Mi sento molto bene, grazie* . Just a little tired is all.”

“You speak *Italiano* well for an American, *Signore* . Perhaps this is not your first visit?”

“I was here last summer for two months. I picked up a few useful phrases then.”

“Well, have a nice stay this time.”

Frakes levered himself out of his seat, pulling his briefcase with its precious cargo from under the seat in front of him, thankful for the chance to stretch his legs after so many hours in the air.

Sardinian Customs was almost peaceful after the organized chaos he had encountered at Rome City State. There were none of the hundreds of soldiers and *Carabinieri* that the Rome city fathers seemed to think necessary. Of course, the Sardinians had no need to guard against agents of the Peoples’ Republic of Naples, either.

Within half an hour, he was out of the airport and headed north in a cab towards the gray smudge on the horizon that was Torino.

“You are in Sardinia on business, yes?” the taxi driver asked over his shoulder as he weaved nonchalantly between an oncoming Fiat and a cryogen tanker stopped half on/half off the road.

“Yes,” Frakes said, staring blankly at the glistening wetness of the highway. The static crackle of the windshield rain repulsors and the low-throated hum of the turbine made him want to go back to sleep.

“*Ingegnere* ... engineer?”

Frakes shook his head. “*Scenziato*.”

“Ah. Here to visit our mills for making of the plastics?”

“No, to visit the Cathedral.”

“You come to see the Sacred Shroud?”

Frakes nodded.

“Signore, this is your lucky day! Mi brother, he is tourist guide. He would be most content to guide you personally. Perhaps, if you wish, he will arrange a most private tour for you, Signore. The cost will be not great. No more than a million New Lira. He will speak with the Guardians and perhaps you will even be allowed to touch the Relic.”

In spite of the sandpaper on the insides of his eyelids, John Frakes had to smile. “The payment will be in advances of course; and to you, not your brother.”

The driver’s brown eyes looked expressively at him in the rearview mirror as his whole body underwent a huge shrug. “It is the way things are done in Sardinia these days, Signore.”

“You wouldn’t disappear with the money the moment I handed it over, would you?”

“Signore, you wound me!”

“What would you say if I told you the Shroud hasn’t been on public display more than fifty times in the last eight hundred years?”

The taxi driver grinned, seemingly unbothered for having been caught red handed. “I see I am in the presence of one knowledgeable about such things.”

Frakes laughed. “You might say that. I have spent the better part of the last two years studying the Shroud. I know far more than I ever wanted to.” Frakes felt a pang of guilt as he realized the statement held far more truth than he had intended.

#

The Shroud of Turin is a piece of linen dating back to the First Century, AD. Physically, it is quite large, measuring 4.3 meters long by 1.4 meters wide. However, it is not the mere fact of the age of the material that causes the Shroud to be venerated so.

For on the surface of the Shroud, clearly visible to the naked eye, there is miraculously imprinted the image of a man. Actually there are two images, one frontal, and one dorsal; each nearly joined to the other at the head, as though the cloth had been folded lengthwise over a corpse and then removed before the process of decay set in.

The two images are so detailed that it is possible to know a great deal about the man who once lay in the shroud. He stood 172 centimeters tall in life, was possessed of a handsome face, a beard, and long flowing locks. He lies naked in death with his legs extended to their full length beneath him. His arms are crossed left over right, obviously tied together to combat the effects of *rigor mortis* .

More intriguing than his physical appearance is the manner of his death.

On the surface of the Shroud, there are a number of bloodstains arranged in a meaningful pattern. Near the hands are marks of wounds that could only have come from having spikes driven through each wrist. Similar marks show up on the feet, as though they were pinioned together with a single large nail. Clearly, the original owner of the shroud was a victim of the cross.

A series of marks on the dorsal image indicate that He of the Shroud had been severely flogged by two men before being nailed to the cross. A large bloodstain at the abdomen shows that he was pierced through the right side by a short spear, probably as *acoup de grace* administered after death. Most suggestive of all are the small spots of blood in the region of the head, the pattern of which suggests a

Crown of Thorns worn like a cap and tied under the chin for maximum torment,

Tradition has it that the Shroud is the burial cloth of Jesus Christ, given to Simon Peter for safe keeping following the Resurrection. As to the subject of what became of the burial garment in the years that followed, the Gospels are unfortunately silent.

The first independent historical reference to Christ's burial shroud comes from Saint Nino in the Third Century. Then, in the year 570, an anonymous pilgrim from Piacenza reported that it was being kept in a convent in a cave by the River Jordan. Again, during the Seventh Century, a French bishop named Arculf told a tale of having seen the Shroud in Jerusalem.

For six hundred years, there were no further reliable reports of the sacred cloth until 1204, when Robert de Clari, a chronicler of the Fourth Crusade, reported its presence in Constantinople. After the Crusaders plundered that great city, however, "no one, neither Greek or Frenchman, ever knew what became of it..."

The Shroud surfaced again in 1356 in Lirey, France. Then on December 4, 1532, the Shroud was involved in a fire in the sacristy of the Sainte Chapelle of Chambery. Its silver casket overheated and drops of molten metal fell on the folded linen, burning a series of deep black scars into its surface, luckily leaving most of the image unharmed.

In 1578, it was moved from Chambery to Turin on orders of the Duke of Savoy. In Turin, it rested for the next five hundred years.

For most of its history after 1356, the Shroud was believed to be a fake or a clever painting done by some unknown Michelangelo for the greater glory of God. Only in the nineteenth -- and later the twentieth -- centuries, with the invention of ever better photographic methods, did the true nature of the Shroud become clear. Quite simply, the Shroud was exactly what it appeared to be, the burial cloth of a First Century martyr. Even a cursory study of the image's anatomical detail showed that no medieval artist, no matter how much a genius, could possibly have been so precise.

As ever more powerful scientific tools were brought to bear on the Shroud's "authenticity", the question of whether or not it was truly Christ's image on the linen became ever more important. As in the case of most questions of religion, opinions were varied ... and heated!

#

The Cathedral of Saint John, the Baptist, showed few indications that it had witnessed nearly a thousand years of turbulent history. Its great double doors stood agape, as if welcoming everyone to enter and take refuge within the dimly lit interior. Here and there across the stately face of the Cathedral were the pockmarks of machine gun fire, some dating back to the Second World War. Other, smaller caliber pockmarks were less than thirty years old, stark evidence of the Breakup that accompanied the Second Reformation.

John Frakes wearily climbed the flight of steps to the cathedral's entrance, and crossed the threshold into the stately interior, glad to be out of the wet drizzle that fell from a gray sky. As he did so, he was acutely conscious of the warm glow that washed over him both inside and out. The outer warmth came from the cathedral's efficient central heating system, installed by the Guardians when they carved the Shroud's resting place from solid rock beneath the foundation during the Time of Troubles. The inner warmth came from the knowledge that untold generations of men had trod this floor before him. Agnostic or not, Frakes couldn't help feeling a certain reverence whenever he thought of the lives so intimately entwined with this building and its Sacred Treasure.

There had been Secondo Pia, the first man to photograph the Shroud. It had been he in 1898 that had first clearly seen The Face in the Shroud as it appeared so starkly in one of his old-fashioned glass negatives. Later the photographer had described that instant as an intensely personal religious experience.

Then there had been Filippo Lambert and Guglielmo Pussod, who risked their lives rescuing the Shroud's silver casket from the flames at Chambery. And later, Princess Clotilde of Italy, who knelt on rough stone floors and laboriously attached the backing cloth that protects the Shroud stitch by stitch, refusing all help until the job was finished.

Frakes was suddenly conscious of standing inside the Cathedral with chills running up his spine. He flinched visibly as he remembered where he was and what he must do in the next few minutes.

His reverie was further interrupted by the hollow clatter of leather soles on the stone floor. A man dressed in a business tunic and neck collar came into view from between two of the giant pillars and made straight for him. Frakes shivered a little and waited for the other to reach him.

"Doctor Frakes?" the Reverend asked as he reached the waiting scientist and extended his hand.

"Yes," Frakes said, taking the hand. The other's grip was firm, but not bone crushing.

"The First Primate regrets he will be delayed a few minutes. I am his assistant, Giuseppe Calle. He has asked me to entertain you until he can arrive."

"You speak English very well, Signore Calle. No trace of an accent at all."

Calle smiled. "Don't let my name fool you, Doctor. I'm from Cleveland."

"What happened to Bartol?"

The Guardian lifted his hands. "He is on a religious retreat in the mountains."

"Sorry to have missed him. He was indispensable to me last summer."

"Ah, yes. The Great Inquiry. I have been meaning to ask you. What were all those immense tanks the news people kept taking photographs of?"

"Helium. Your Primate refused to break the seal on the casket of the Shroud until we had flooded the whole underground vault with helium. I worked for nearly a week in breathing gear. You may have seen me in the newsfaxes. I was the one who looked like a drunken spaceman home on leave."

"Ah yes, I remember," Calle said, nodding. "Have you been shown around our Great Cathedral?"

"I was given a very extensive tour while I was here earlier this year."

"Then you are familiar with our Order's history and works?"

"Only what I read in the fax, I'm afraid. My work, you know."

"Yes, we all have our work. You explore the natural universe while I do the same for the spiritual. Perhaps we two are more alike than you know. May I give you the nickel lecture while we wait?"

"By all means."

"A bit of background first, then. You know, of course, that our Order is not associated with any

formally established religion. We make no claims of new insights into the nature of God, or of a private channel direct to His ears. We were founded in 2009 by a man named Bartolo Vasquez, a simple layman whose sole purpose was to protect the Holy Shroud from the exploitation so common in those days. We are an ecumenical organization. We care not if one of our members is Methodist, or Catholic, or Anglican, or Coptic. We ask only that he be a good Christian and to believe in the Shroud as the burial cloth of the Savior.

“Beyond that, we ask him to go forth and do good works.”

Frakes nodded. “I’m familiar with your medical center in Denver. A really marvelous place.”

“And then there are our missions to feed the poor and starving of the world,” Calle continued. “Last year we spent over ten billion decadolars on our public charities. But then what is money for if we can’t help others with it?”

“Your order has grown mightily in the last couple of decades,” Frakes agreed.

“Do you know why?” Calle asked.

“Because of the Shroud.”

“Yes, of course. Unlike the various established Christian religions, our order has absolute physical proof that our Savior died for our sins. The others have their faith, a faith that we share I might add. But we have absolute proof! Is it any wonder that we attract so many supplicants each year?”

“Only the good Doctor doesn’t think our proof is genuine, Calle. Do you, Doctor?” The new voice echoed through the sitting room that Calle had directed Frakes to as they talked. Frakes turned to face the source of the sound.

Standing behind them was the First Primate of the Guardians of the Shroud of Turin -- next to the Pope, the most powerful man in all of Christendom.

The First Primate was a tall, wizened man whose strongly lined face still managed to convey the feeling of complete inner peace. At the moment, his features were contorted by a wry grin.

“‘Absolutely no proof that the Shroud is that of Jesus Christ.’ Wasn’t that what you told me at our first meeting, Doctor Frakes?”

“I fear I am being quoted out of context, Primate. What I said was that absolute proof is not possible. We know that the Shroud is a burial cloth, but it was my opinion last summer that the identity of the man in the image could never be proven with utter certainty.”

“Does your curious phrasing of that answer mean that you have changed your mind and absolute proof is now possible?” Calle asked, excitement creeping into his voice.

“Well, I...”

The Primate held up his hand. “Just a moment, Doctor. Perhaps we should get one thing clear. Do you know why I granted your request last year and allowed you to scan the Shroud with your miraculous machine?”

“Frankly, Excellency, I truly don’t. I was both surprised and pleased when I received your letter.”

The First Primate nodded. “I understand you were turned down by quite a number of others.”

“Yes, Excellency. You must understand that I am not a religious man. My father was a man of the cloth and hoped I would follow his example. I am afraid that it was not to be. Instead, I have spent my professional career working on the genetic structure of human blood and how it has or has not changed with the centuries.

“The basic problem in my field, of course, is getting samples of ancient human blood to perform tests on. Unfortunately, the only part of our bodies that remains after death are the bones. Theoretically, we could run a chromosome map on them, but in practice their calcified structure is unsuitable for the basic tests that are required.”

“Which brought you to us,” the Primate said.

“Yes. The two places where I could obtain material for my experiments were the mummies of Egyptian pharaohs and, of course, the blood stains on the Shroud. The tests are nondestructive, so I hoped there would be no objections to the procedure.”

“And the Egyptians turned you down while I accepted,” the First Primate said.

“Yes, Excellency.”

“But why are you so surprised?”

“I told you, Excellency. I am not a believer.”

“In this case, Doctor, that factor worked in your favor.”

“I don’t understand.”

“Do you know what the Achilles Heel of Christianity was before the Shroud was authenticated, Doctor?”

Frakes shook his head.

“The lack of validation by nonbelievers, of course. Are you aware that there are no eyewitness accounts of Christ except for those in the Bible?” Frakes opened his mouth to object, but the First Primate stopped him with an impatient gesture. “No, it’s true. Oh, no one doubts that He existed. There are historical references to His existence from the First Century, commentaries written by men who lived shortly after His time and who do not contest the fact of His existence. A few scholars have suggested that He did not exist, but mostly, they have been laughed into silence.

“But think, Doctor. How much better it would have been if we had even a single scrap of evidence that was not basically Christian in origin. Would it not be nice to have a pagan’s account of the Sermon on the Mount? Or perhaps a Roman soldier’s letter home telling of the crucifixion of another Hebrew troublemaker? Some corroborating evidence, as it were, from a source other than our own holiest of books?”

“I guess I never looked at it that way, Excellency.”

“So for two thousand years the world’s Christians took their religion on faith alone. Now faith is a wonderful thing, but is it not so much better to have proof? That, at least, is the cornerstone on which our Order was built. It is, I am afraid, the main source of friction between ourselves and the old established religions. Many of them still believe faith is enough.

“Whatever your side in that argument, however, it still remains that a number of sophisticated tests

on the Shroud -- the extensive analyses of the 1980s and 1990s -- could not prove it a fraud. To those of us in the Order, they went much farther than the negative finding that shows up in the final reports. We have pondered the evidence and find it sufficient to prove our case beyond any reasonable doubt. It is on those results that our beloved Bartolo built this Order.”

John Frakes licked dry lips and wondered why it was suddenly so cold in the sitting room. He chose his next words carefully, wishing that the buzzing in his ears would subside long enough for him to concentrate on the business at hand.

“I do not wish to disagree with someone as learned as yourself, Excellency, but all those original tests proved was that the Shroud is truly the burial cloth of a man who was crucified. There was no proof whatever that he was the Son of God.”

The First Primate smiled. “Which brings us to why you are here Doctor. We are an Order that has no fear of science. As I have explained, our founding was the direct result of those earlier test results. However, those discoveries were somewhat limited in scope, as you have pointed out. The earliest researchers into the Shroud used nothing but their naked eyes. Later cameras, microscopes, and Carbon-14 dating techniques were used in conjunction with computer analysis. These studies yielded many valuable results, but were still limited by the fact that -- except for a few small samples taken during 1973 -- all tests have had to be nondestructive in nature. Those early Keepers of the Shroud were quite correct in refusing to allow additional pieces of the sacred cloth to be removed. If every scientist who wanted samples from the Shroud had been accommodated there would be little more than a handkerchief sized piece left today.”

“So you granted my request to examine the Shroud because my investigations are completely harmless?” Frakes asked.

“Of course,” the Primate said. “Even so, I had a hard night of it before making the decision to grant your request. If you had been one of us, if you truly believed that the Shroud was Our Savior’s burial garment, I would probably have turned you down.”

“I still don’t understand, Excellency.”

“It is quite simple, Doctor Frakes. You will be my pagan at the Sermon on the Mount, my Roman soldier writing his family of the Crucifixion. You have no connection with this Order and a worldwide reputation for honesty and scholarship. You will go forth and publish your findings, and we will use those findings for the further Glory of God. Now, sir, pardon my excitement but I have waited most of my adult life for this moment. What can you tell us of our Holy Relic?”

“Have you the proof positive that we seek?” Calle asked, his eyes shining with excitement no less than the Primate’s.

Frakes cleared his throat and averted his eyes, keenly aware that the decisive moment was upon him.

“I have proof, but I fear you will be disappointed.”

“Come now, Doctor, out with it! What have you discovered?”

“As we discussed, Excellency, I first concentrated my instruments on the body images and not the blood stains. It has been a mystery for centuries just how the image came to be on the cloth of the Shroud. Well, the mystery is mysterious no longer. The body image is the result of a complex, but perfectly understandable chemical reaction. I have a report in my briefcase that you can study at your

leisure.”

“Go on.”

“Our next objective was to determine the chromosome structure of the individual whose blood is on the Shroud. This is what took the better part of four months. You understand, Excellency, that there is much we do not know concerning chromosome structure. We have another millennium of study in front of us before we understand the underlying principles. However, in our initial, groping way, we have scanned the cloth and developed sufficient data to identify his chromosome pattern with a ninety-five percent probability. We then analyzed the pattern extensively. The man whose shroud that is in your underground vault was almost surely a Semite. With one exception the chromosome pattern correlates well with that of a modern man of Semitic extraction.”

“Exception?” the First Primate asked, his manner suddenly intense. “You have found evidence that this was no mortal man?”

“Not exactly, Excellency.”

“Out with it man! Was it Our Lord or not?”

“No, Excellency, it couldn’t possibly have been. The very idea is grotesque, unthinkable.”

“You let me worry about what can be thought or not thought, Doctor. What have you discovered?”

“The chromosome pattern, Excellency. It had a strange structure in some of the peptide chains. It took us quite a while to identify it and even longer to check our conclusions. In fact, the implications are so far reaching for your order, that I had the work completely rerun six separate times. There can be no mistake.

“The man who lay in the Shroud had a genetic defect. He suffered from a condition known as Kurusoku Syndrome.”

“We are not medical people, Doctor Frakes,” the First Primate said, an edge developing in his voice. “What does that mean in English?”

“Kurusoku Syndrome was first identified around the turn of the last century. It is a genetic disease characterized by a progressive reduction of the afflicted person’s mental capacity, an ever-increasing sense of disorientation with respect to reality, and if allowed to go untreated, can lead to delusions of grandeur. If it were proved that the Shroud were the true burial cloth of Jesus Christ ... well, I think you’ll agree that the consequences for Christianity would be catastrophic.”

#

It was twenty minutes after the alarm went out that the first ambulance arrived on the scene. For the better part of an hour, the doctors worked on the First Primate before they dared send him to the coronary unit of Our Lady of Fatima Hospital on the outskirts of Turin. He was given only a fifty-fifty chance of surviving the night. As John Frakes descended the Cathedral steps to the waiting cab, he shivered in the cold drizzle. He sat inside the vehicle in a daze. All he could remember was the memory of the old man’s eyes just before the heart attack took him. The look of betrayal was one that would stay with him all the rest of his life.

The same look had been frozen on his father’s face on that fateful Christmas Eve so many years before. The look now haunted his very dreams. Somehow, he knew that it would haunt his dreams for a long time to come.

#

Author's notes for *The Shroud* :

You do not see many science fiction stories with religious themes, and even fewer with pro-religious themes. The reason for this is not that SF people are anti-religious. Rather, it has to do with the basic nature of fiction. Generally, a pro-religious story will only appeal to the adherents of that religion. Everyone else's eyes will glaze over.

The basis of fiction is conflict and one of the techniques of the art is to place the characters and readers on the horns of a dilemma for which there is no solution. In *The Shroud*, I present the reader with a series of facts that add up to the conclusion that *the Shroud* of Turin cannot possibly be the burial cloth of Jesus Christ. However, throughout the story the reader is presented with another series of facts that convinces he or she that the shroud is very genuine! The reader's belief in the shroud is especially strong because most of the convincing has been subliminal. Then, when the scientist announces his discovery at the end of the story, the reader is presented with a conundrum for which there is no satisfactory solution. The result -- a strong piece of fiction.

The Shroud was an idea that came to me in a single moment. I was in the middle of a religious argument with other members of my carpool at the time. We were driving down the Superstition Freeway in Tempe one hot summer afternoon with the windows rolled down because my car's air conditioning did not work. Whether the Arizona summer reminded me of Hell, I do not know. The idea just popped into my head fully formed.

My idea was to write the story, submit it to Stan Schmidt at Analog, get it rejected, and then send it to Omni because they paid really big bucks in those days. I did not want to bypass Stan Schmidt because he was buying most of my fiction at the time, but I knew that it was not an Analog kind of story. Guess what? He bought it and it appeared in the 2 March 1981 issue of the magazine. What did the poet say about "the best laid plans of mice and men...?"

Following its publication, I expected (actually, I hoped for) a storm of controversy in the magazine's letters column. Again, my plans went awry. Not a single person complained. *The Shroud* won an honorable mention in the Locus Reader Poll for 1981. Not bad for a story that I thought would not be salable due to its subject matter.

For those who are disturbed by this story, The Shroud of Turin's age was confirmed by radiocarbon dating in 1990. Three different laboratories determined that the cotton that went into the weaving of the cloth was grown between the years 1260 and 1390 AD. In other words, the shroud is a medieval fake! As the story suggests, perhaps that is just as well.

Some may have noticed that John Frakes' name is strikingly similar to that of Jonathan Frakes, the actor who plays Commander Ryker on *Star Trek, The Next Generation*. This is a coincidence. I wrote *The Shroud* long before I had heard of the actor.

WHO WILL GUARD THE GUARDIANS?

With

Catherine McCollum

Immortality must be purchased for a price.

Perhaps that price is too high.

The dream came again, once more full of greens and reds, and children's faces. There were hundreds of them! Some wore ugly, teasing, taunting, hating faces. Others were beautiful. Their peaches-and-cream complexions were split by broad smiles as the faces' tiny owners laughed and shouted with joy. Others were indistinct faces, while still others stared at her with sad, longing eyes...

Fria opened her eyes with a start, frightened to discover that she had not been sleeping after all. She was lying in a large meadow of yellow wild flowers that had somehow escaped her goats and sheep. She had been staring up at the cloud-strewn sky when she had drifted off to ... where? She shivered at the thought. The doctors of so long ago had warned her about hallucinating. Hallucinations, they had told her, would be the first sign of the impending end. When she began to see things that were not there, that would be hard evidence that all human beings are mortal, even Fria and those like her.

Nothing, it seemed, is forever.

She sat up and then quickly got to her feet. For the first time in many minutes, she could again hear the faint hum of wild bees and the quiet whisper of the wind blowing across the hillside. Exasperated, she bent down to brush the yellow pollen from her long woolen skirt, before turning and starting up the trail that led toward the top of her mountain. As she left the meadow, a dark shape burst from the underbrush to trot beside her.

Her dog was a nameless mongrel of uncertain parentage, one of the periodic houseguests who drifted into her life, stayed awhile, and then drifted out again. She sighed, and spoke for the first time in several hours. The dog pricked up its ears at the sound.

"Hopefully it is too late for her to come tonight," Fria mused. "Help me gather in my sheep and I'll share my supper with you!"

By the time she had penned the sheep, milked her two goats, and shooed the chickens back into the old shed, there were three new dogs sitting in front of her stoop. They were thin and scraggly. One had half its ear gone and was marked by the diagonal line of a long healed scar across its muzzle. The scar gave the animal a mean look that the wagging of its tail belied.

Ever since the Destruction, dogs had not been kept much as pets. That unhappy time had apparently severed the age-old bond forever. Any stray canine that wandered into the village at the foot of her mountain was more likely than not to end up in the community stew pot. Save for the few relics like herself, no one now alive remembered the time when dogs had been "man's best friend."

Fria noted with a pang that the collie mix among the strays was a pregnant bitch. She shivered beneath her woolen shirt, hoping that they would be gone before the bitch's time came.

Inside the stone house, it was cold. It was *always* cold. She did not mind, for the cold was her preservative. She could barely remember when being warm had been one of the natural conditions of life. The house was also dark as the light of day faded outside. She cured that problem by lighting an oil lamp. As usual, what few furnishings she had were well hidden by the clutter - tattered and yellowing books, scattered sheets of foolscap with scrawls of lumpy, homemade ink on them, her lounging cats. At the thought of her cats, her eyes sought out Pounce's customary position.

The cat's tail could be seen protruding from beneath an impromptu tent of old magazines. Pounce was the one constant in Fria's life, and she loved the animal dearly despite the cat's lazy, ungrateful attitude toward life. Pounce was also the last link she had to the long departed world of her youth.

"Here, Pounce!"

The tabby's head lifted slowly from the pile of magazines, as though to reproach Fria for disturbing her sleep. Pounce yawned, seemed to debate with herself on whether rising to her feet was worth the effort, and then arched her back as only a cat can. She walked to the edge of Fria's ancient desk and waited. Fria reached out to scratch behind the cat's ears. After a short pause, she was rewarded by the deep rumble of Pounce's purring.

"You're slowing down, cat. Can you finally be getting old after only 400 years?"

Fria chuckled at her feeble joke and wondered what the villagers would say if they had overheard it. At the thought of the village and its inhabitants, the smile faded from her lips.

Fria did not tolerate people and allowed herself very little contact with others. She deemed the villagers to be irritating fools, and had little reason to believe the rest of humanity was any better. Occasionally they would send pilgrims up the long trail to the top of the mountain. They would bring offerings that she would grudgingly bless. Once, long ago, she had tried to help them. However, the effort had been fruitless.

Like the houses of the village, her home was without electricity. This had not bothered her for a long time. One large room held a fireplace where she cooked and spent most of her time. A small bedroom in the rear was separated from the main room by a ragged woolen blanket hung from the ceiling. A sleeping loft completed her domicile.

Fria ate her meal sparingly and gave most of it to the dogs that waited patiently outside. After the collie mix had gulped down a bowl of curdled goat's milk, Fria found herself scratching the base of the bitch's ears. She could not figure out why she cared. Maybe it was because she remembered what dogs had been like before...

She brought her thoughts back to the present with a start. She'd let her grasp on reality slip again. She knelt over the bitch, running her hand over its distended belly. A tiny lump moved beneath her fingers. She pulled her hand away as though it had rested on a hot stove. The sudden movement caused the collie to yelp and run for its companions.

"Sorry," Fria said, sighing. She turned to go inside and then glanced back at the dogs, tears welling in her eyes. "At least you have each other."

#

Fria's evenings were long and restless and sleep was hard to find. Sometimes at night, she would sit by the fire and stir the coals, staring at the burning brightness until her eyes hurt. Fria's need for sleep had declined over the years and what little rest she did get was increasingly filled with nightmares. She

would often toss and struggle on her small straw bed until she was covered in cold, clammy perspiration.

Tonight she lay half-asleep on her bed. The long dead faces were just beginning to form as the cold fear began to build inside. A dull thudding seemed to burst inside her head. She forced herself awake, then bolted into a sitting position. The sudden movement made her dizzy. Fria sat at the edge of the bed, her hands pressed tightly to her head. The pounding noise refused to end. The barking of the dogs was undercut by a muffled voice that floated to her above the din.

Fria found the candle by her bed with trembling hands. She stumbled to the fireplace where a red glow of dying embers still lingered. She doubled over, touched the candle tip to the embers, and was rewarded by a pale, yellow flame. The pounding at the door had become more insistent. Her heart thumped almost as loudly as the noise. She could feel her pulse in her throat as she pulled the door open. In the faint light, she saw a frail little creature pushing awkwardly at the surrounding dogs.

“Get these animals away from me!” The wraith screamed as it kicked at the dogs.

Fria hesitated. Before she could respond, the figure pushed past her and deposited itself in front of the fireplace. Fria fought the wind and forced the door closed before turning. The figure removed its wet cloak, revealing a young girl with wet blond curls, a pale pinched face, and fair coloring. The girl dropped her cloak in a heap at her feet, turned, and returned Fria’s stare. The girl took a step closer, disbelief on her face, as she lifted her hand to touch Fria’s face.

“You’re not old at all,” she said before emitting a short, sharp bark of a laugh. “Why you aren’t even as old as my mother!”

Fria pulled away and brushed quickly past the girl. She placed the candle on the table and threw a log on the fire. In seconds, it had burst into yellow flame. She turned to the girl and pointed toward the fire.

“Stand in front of the hearth and remove your clothes.”

The girl hesitated, her eyes wide with fear.

“Now!”

The girl walked across the room, past the clutter, moving in concert with the emerald cats’ eyes that stared unblinking from the shadows. “This is where you live?”

Fria ignored the question and watched intently as the girl, her fingers numb with cold, struggled with her laces.

“What is your name, girl?”

“Amber,” the girl said as she halted the struggle with her wet clothes and smiled shyly at Fria. “I’ve come a long way. I am cold and hungry. Do you have anything to eat?”

“Later!”

“I’m awfully hungry. I stopped in the village. When I told them I was looking for you, they turned away.” She hesitated as she noticed the flare of anger in Fria’s eyes. She gulped loudly before continuing. “You were expecting me, weren’t you? I mean, you knew I was coming? The elders said you knew!”

Fria nodded angrily. “I knew all about it. Stop dawdling and disrobe!”

Amber had removed her sodden dress and stood before Fria in a loose fitting camisole. Her lower lip quivered and she shook her head in a curt negative. Fria lifted the candle to where it was even with Amber's eyes and leaned forward until their noses were mere inches apart.

"Now that you are here there can be no refusals. I must be sure. Your life depends on it."

The girl whimpered as she lifted the soaked camisole over her head. The firelight reflected off her body in flickering shadows. Fria grabbed the girl by the shoulders and spun her around. The tattoo was precisely where it should have been. The number bore the crisp, machine-produced look of an Examiner. No human hand could have forged it. And if that wasn't sufficient, the number tallied with the simple, unbreakable code that Fria had used when she gave out the chrome and steel Examiner boxes a dozen years earlier.

The girl had been rightfully chosen, rightfully marked.

After the verification was over, Fria stepped back and let her eyes rove over the rest of Amber's body. What she saw was a young girl on the verge of womanhood. The signs of incipient puberty were everywhere, from the slight swelling of the hips, to a hint of breasts to be. Fria let her eyes drop to the bare triangle between Amber's legs. She was reminded of another girl four centuries earlier who had shyly covered herself as other hard eyes had surveyed her.

She was reminded of what she had lost.

"Don't get dressed. Lay your clothing on the hearth to dry. You will find a blanket to wrap yourself up in the loft. After that, I'll give you food."

With that, she turned her back as the girl followed her instructions. It was not until she heard the soft scrabbling of bare feet on straw in the loft that Fria began to shake.

#

Fria recognized that her mood would allow her no further sleep. She waited silently for Amber to eat her fill, and then saw her bedded down. She waited until a quiet, regular breathing could be heard from the loft before wrapping a wool blanket tightly around her shoulders and stepping out into the moonlit night. The mountain air was cold - uncomfortably so, even for her - yet the tiny stabbing pain that accompanied each inhalation seemed to clear her head and calm her emotions.

She did not walk far. Four centuries of residence among the high crags had taught her feet the path to the outcropping of granite that overlooked her meadow of flowers. She was barely conscious of her progress, or of the dark shadows of the dogs that followed closely behind.

Fria found her perch and pulled her knees to her chest, drawing the blanket about her. Below, the field of flowers rippled eerily in the moonlight, as though it was some far sea whipped by storm winds. She lifted her eyes to the sky. The stars seemed steel hard points of radiance, as chilly as the wind around her. She was filled with sadness as she caught sight of a star that moved slowly from west to east in violation of nature's order.

There had been a time long ago when fathers held their children aloft and pointed out the moving lights that were the great space stations, the jumping off places for the far planets. No longer. Now the sight of the sky derelicts only served to remind people of The Destruction. Few stargazed as a result.

Fria was different. She had long ago ceased to fear the sky. Now it held only a pleasant sadness for her, a wistfulness for that which might have been. The old memories spilled forth in abundance. In

many ways, they were clearer than those of the year just past. She shuddered at the thought. The ability to recall your childhood (but not your morning) was one of the first symptoms of creeping senility.

Her clearest early memories were of her father telling her stories of the time before The Troubles; the time when man's future had seemed unlimited, the time before the aliens came. In those days, it had seemed as though humans had finally tamed their warlike nature as they spread throughout the solar system. Their settlements dotted the surface of Mars, the Asteroid Belt, and the moons of Jupiter and Saturn. Their mines scarred the surfaces of fiery Mercury and frigid Pluto. Their orbital cities grew rich and prosperous. Only the far stars were left for conquest and humanity was thinking about mounting the effort.

Then the aliens came.

Their interstellar ships were wolves among Earth's interplanetary sheep. Only when they came up against fixed planetary defenses did they show any vulnerability. Even then, however, humanity was able to achieve little better than a standoff. The best computers Earth possessed gave space-going civilization less than two centuries to live if nothing were done to change the odds.

Something *was* done. Human weapons research was easily on a par with that of the aliens. Only in the development of interstellar craft was humanity behind its tormentors. The solar system's leaders decreed a punitive expedition be launched to carry the battle to the aliens' home star. The expedition would take nearly a century to cross the black gulf of space, far too long for anyone then alive to survive the voyage. To provide the expedition with crewmembers, a crash program of research into drastically extending human life span was begun.

The scientists worked for twenty years while *Starship Vengeance* was slowly assembled in orbit. A decade after Fria's birth, they found their answer. It was not a perfect answer by any means - more than a million laboratory animals had died in the experiments - but it was an answer, of sorts

If the subject was female and on the verge of sexual maturity ... if she possessed a rare factor in her blood ... if these and a hundred other parameters were exactly right, then it was sometimes possible to extend the human life span to half a thousand years or more. The first success had been Pounce, the cat, for a few years the most famous "person" on Earth.

Then had come the human volunteers. Grisly experiments established that the chances of success were less than one in a hundred. In the end, however, fifty little girls emerged from the treatment tanks after more than two years of therapy, each ready to take the war to the enemy.

The enemy never gave them that chance.

Fria fidgeted uncomfortably on the rocky ground. The dogs had wandered off to scavenge food for their hungry bellies. A dim light in the east hinted at dawn. She would have to face the girl soon. She shut her eyes and tried to keep the memories from washing over her. The mere thought of Amber triggered a mental picture of herself at the same age. She had been so happy, so blissfully ignorant of the consequences of The Treatment. She had long since forgiven her parents. After all, how could they have known what immortality would be like? She could not very well blame the twelve year old Fria, either. That little girl had been far too young to have any real opinion in the matter. If only...

"No!" screamed aloud as she forced herself to her feet. What was done was done, and wishing would not change it. She turned in the first, gray light of dawn and started back up the hill to her house. Amber would be waking shortly, and if her appetite of the previous evening were any indication, she would want breakfast.

#

Fria stirred a boiling pot of corn meal and listened to the sounds of the various animal inhabitants of her mountain greeting the new day. Two blue jays fluttered through the trees in front of her house, chirping and scolding each other while an irrepressible rooster crowed from the roof of the shed out back. The porridge bubbled slowly in its kettle while flames crackled upwards against its black bottom. Beside the kettle, an old, dirty teapot simmered with scalding brew.

Behind her, Fria heard the sounds of stirring from the loft.

She straightened from her cooking and looked around for Pounce. Lately, the cat spent more time than usual sleeping and she had taken to curling up in unusual places. She hadn't eaten well the previous evening either, which was unlike her. In nearly forty decades of living together, Fria had never known Pounce to willingly miss a meal.

Fria heard a creaking behind her. She turned and met Amber's gaze as the girl descended the ladder from the loft. Her pale bare feet descended each rung quickly. The corners of the girl's mouth curled upward in an eager smile framed in tight blonde ringlets where her hair was disheveled by the rain. Fria looked quickly away.

"Good morning," said Amber.

Fria lifted the kettle from its hook over the fire, using a heavy rag to protect her hand. She placed it on the table and handed the girl a wooden bowl and spoon. "Eat your fill and feed the rest to the dogs." She did not wait for an answer, but turned and walked brusquely outside. She stood for a moment and breathed deeply of the clear mountain air. The warmth of the sun's rays started to displace the chill from her body. She wondered what it would take to melt the chill in her heart.

She started walking slowly toward the goats' pens and was joined almost simultaneously by Amber and the dogs. Amber did not speak and Fria was surprised by the girl's frightened expression as the dogs leaped and whined in joy around her. Fria bent and picked up a small rock, throwing it into a clump of bushes. The dogs ran like puppies to investigate. Fria turned to Amber, who was walking a step behind her. "The dogs are nothing to fear."

The girl shook her head. "I'm not afraid. However, we never kept dogs. In fact I didn't think anybody kept them anymore, except maybe to eat."

"There will be no eating of my dogs while I am alive. But enough of this foolishness. If you are not going to finish breakfast, you can begin your work. The goats need milking, and after that, there are other chores to do."

The two of them worked side-by-side until late morning. The sun showed it to be after ten o'clock when Fria gave Amber a basket and explained how to find the blueberry patch higher up the mountain. Two hours later, she was just finishing up her noon meal of reheated corn meal porridge, bread and cheese, when she heard the girl returning.

"What kept you?"

"I went for a walk after finishing with the berries."

"Don't make a habit of running off without telling me. You could be hurt and I would not know where to look. Are you hungry?"

"I would rather talk. I have many questions."

“The elders told you all you need know.”

“Please, there is so much more.”

“There is, indeed,” Fria said. “But what can I tell you that you are capable of understanding? Can one who has lived a mere dozen years truly understand what it is like to live centuries? Perhaps you think yourself able to comprehend the feelings of someone who has outlived everyone they ever loved?”

“I can try!”

“You will fail. Look at yourself! You have the capacity within you to attain near immortality and the prospect excites you more than you can say. You hunger for The Treatment, not even caring that it will subject you to nearly two years of torment.”

“There will be pain?”

“Considerable. However, the pain is transitory. You have something of far greater significance to fear.”

“What could be worse than pain?”

“I suggest you spend the rest of the day thinking on that very question. If you wish to speak to me, I will be with my sheep.”

#

The sky was a dull smoky color, full of heavy dark clouds. This and the cold stinging wind convinced Fria she could delay her return no longer. She had spent most of the afternoon trying not to think about Amber at all. Sometimes she had succeeded, but more often, she had not.

Fria was barely conscious of walking the path to her home, or penning the goats and sheep, or closing the chickens into their coop. She moved through her nightly routine as though in a daze. She was roused from her stupor as a violent gust of wind pushed the door from her grasp and slammed it loudly against the wall. The fire in the fireplace shuddered and threatened to go out. A startled Amber dropped the spoon she had been using to stir the kettle. Ignoring the girl’s fright, Fria pushed the door closed, and secured it with a wooden bar. She lingered by the latch for a few moments before turning to face the still frightened girl.

Amber had returned to stirring the pot, and was avoiding Fria’s gaze.

Irritated at the smell emanating from the pot, Fria spoke sharply. “What is it you’re cooking?”

Amber’s voice was barely audible when she answered: “Chicken stew.”

Fria froze in place and did not speak. For some reason, Amber’s trembling angered her.

“Are you upset about the chicken?” Amber asked.

“No, not about the chicken. But from now on I’ll decide the menu.”

Amber laid the spoon down and turned with trembling lips to face Fria. In spite of her fear, her eyes held a spark of defiance in them. “You don’t expect me to live on vegetables and cheese all the rest of my life, do you? I must have meat if I’m to receive The Treatment.”

Fria turned her back on Amber, and grasped her hands tightly together to control their shaking.

Treatment. God, how she hated that word! She was frightened now. She was afraid that if she turned around, she would not see Amber standing before the crackling fire; but rather that poor, sad little girl of four centuries earlier.

She fought to conquer the terrifying images that raced through her mind. Finally, when the old ghosts had receded a bit, she turned back to the sobbing girl. Fria gasped as she caught sight of Amber. The girl was seated on the hearthstone with Pounce's fur protruding from her enveloping arms. She was rocking back and forth, stroking the cat beneath its whiskery chin.

Amber glanced up, misinterpreted Fria's look, and smiled. "We made friends this afternoon when I was alone and frightened."

In that instant, the pent-up anger of decades exploded within Fria. She found herself jealously grabbing Pounce. Not used to such mauling, the cat squalled, clawed and twisted frantically in Fria's arms. Unmindful of Pounce's struggles, Fria clung to the animal tightly. "Pounce is my cat! You are never to touch her again. Do you understand me?"

"You are the meanest person in the world!" Amber screamed. "They must have cut out your heart in order for you to live so long."

Fria took a step backward, surprised at the girl's outburst. Then she blinked, and as the words began to sink in, she laughed. It started as a deep-down, quiet chuckle and then built to a harsh cackle. Even to Fria, the laugh seemed to contain more than a touch of insanity. Finally, she collapsed onto a chair with tears streaming down her cheeks and got control of herself.

"Cut out my heart? Why, little girl, you will find that is the least of what will happen to you when The Treatment begins. When I get through with you, you will be just like me. You'll be an empty, barren, embittered old mule."

No!" Amber screamed. She held her hands over her ears and bent her head almost to her lap. "I'll never be like you!"

Fria's hysteria stopped as quickly as it had come. She wiped the laugh-tears from her eyes and sat straight in her chair, regarding Amber with a new compassion. When she spoke, it was so softly that she was not even sure that Amber could hear her:

"Then you'd better leave now, before it's too late."

In one single motion, Amber was up and at the door. She tugged at the latch bar, pulled the door open, and ran sobbing out into the cold drizzle of the storm. After the girl had gone, Fria stood and walked to the open doorway. She stood and gently rocked the protesting cat in her arms for several minutes while she gazed out into the blackness of the night.

#

Slowly Fria became aware of her surroundings.

She shook herself to come fully awake; suddenly realizing that she had never truly been asleep. Even so, she did not remember descending the winding stairs that led from the trap door in her bedroom to the cavern buried deep inside her mountain. Nor did she remember seating herself at the main control console and energizing her ever-faithful machines.

The room was dimly lighted by blue electric lamps. The walls around her were lined with blinking, humming machines that talked to the giant computers buried deeper in the mountain. Directly in front of

her, neatly displayed on her console, were a dozen tiny lights representing the Earth, the Moon, and the giant defense batteries that waited patiently for the command that would hurl destructive energies a million kilometers out into space.

Fria looked around at Command Center, truly seeing it in a way she had not in a long time. She remembered how it had been at first. In the first few decades of her stewardship, she had enjoyed coming down to look at the lights, the counterparts of which had gone out in the rest of the world. And, of course, she had come down frequently to check the screens for any sign that the aliens had returned. Not that it was truly necessary. The computers had suitable means for alerting her in the house above should they make new contact with humanity's foes.

Then as the empty years passed, as mankind sank ever farther into the abyss of superstition and savagery; Command Center had become merely another harsh reminder of the past and Fria had stopped coming.

She ran her hands absently over the cool surface of the screen before her, resting the tips of her fingers over the blinking, blue symbol that represented the Earth. She sat there for a few moments, her mind numb. Strangely, she began to feel that this tiny pulsating light represented the beating hearts of all the people on the planet. She felt her face twist into a bitter smile as she realized how easy it would be to turn that pulsing light off forever.

Long ago, when the aliens had beaten humanity back from the depths of space, the great defense network in which she now sat had been all that stood between her people and destruction. The alien starships had massed for the last battle and thrown themselves against the ring of iron that surrounded the Earth. They had broken against that ring. Later, when the world began to come apart at the seams, a few remaining defenders recognized that the threat was not over. Nowhere was it written that the aliens might not return someday.

To guard against such a possibility, the world's last rulers decreed that fifty young girls would become the Earth's guardians. They who would never go into space would stand guard from hidden control centers buried deeply within and scattered widely across the face of the planet. Should the aliens return, the defense network would again be used to repel them. However, should the battle go badly, if it looked as though mankind would lose at last, the planners provided that the aliens' victory would be a Pyrrhic one.

Any Guardian had the capability to destroy the prize in order to deny it to humanity's enemies.

"So you thought of everything, did you?" Fria asked aloud, speaking to those long dead men who had built the machines around her. As always, she was struck by the fact that Command Center allowed no echoes, but instead swallowed up her words. "You forgot that your immortals are only human, too. If only you knew how it feels to yearn for something you can never have, *and continue yearning for four hundred years!*"

When she volunteered for the Treatment, they had explained to her that there would be a minor side effect, a mere inconvenience. It would affect her glands, and consequently, would render her infertile. Really, it was a minor consequence when one considered that she was exchanging motherhood for "immortality." And she had accepted their words without a second thought. However, as the long empty years passed, she found her desire for a child grew until it devoured her. She wanted to feel the rush of life within, to undergo the glorious pain of childbirth. She wanted to wash, and powder, and diaper a baby that came from her own loins. She wished to feel that small child's hand trustingly encircled by her own, to watch it grow year by year.

She had made good progress in conquering the obsession over the last thirty or forty decades. Yet, the girl's arrival had stirred up the old urges stronger than ever.

"*Damn!*" She spoke aloud once more, slamming her hand hard against the monitor screen. "If only Amber had never come."

She buried her head in her arms, and felt hot tears rolling down her cheeks. Slowly she became aware that the little blinking light she had been monitoring all these centuries was no longer there. For a moment, she sat and stared at the dark space where Earth should be.

Panic gripped her and she raced across the room to the small back-up system behind the main console. Suddenly she was laughing and crying at the same time. She fell to her knees and did something she had not done in nearly three hundred years. She found herself mouthing a long forgotten prayer of thanksgiving. The tears continued to roll freely down her cheeks.

For the blinking blue symbol with the tiny "E" inside it was still there. Now that her conscious mind was in control again, she realized that it could not have been otherwise. After all, if the Domsday Device had been set off, she would have had considerably more indication of that fact than the lack of the Earth symbol on the monitoring screen. Its absence had been the result of a minor malfunction brought about by her blow to the screen. The repair circuits were already working on it. There had never been any need for concern.

Yet, it was her sudden concern that surprised her. She really did care! What happened to this muddy ball of squabbling savages *did* matter to her. She felt an exhilarating feeling of relief. After all these empty years, she had a reminder that there was purpose to her life. Humanity was down, but not out. They would rise again. True, not in her lifetime. Perhaps in Amber's.

The stars were still out there, waiting. They would not have to wait forever.

#

Fria did not know how long she stayed down below after her revelation, but when she finally pushed back the trap door and climbed into her own bedroom, she was surprised to see daylight softly shining in the window. For the first time in a long time she felt refreshed, as if she had finally achieved a long needed sleep. She pulled the blanket partition aside and stood quietly. She was pleased to see Amber had returned and was apparently no worse for having spent the night in the storm. The girl was sitting in the middle of the main room with her back to Fria, holding something in her arms.

Fria hesitated, unsure of how to approach the girl. Finally, she walked forward and sank to her knees.

Amber had been crying. Her face was puffy and red. She looked up from the wet ball of fur that she cradled in her arms and began to sob again.

"When I came back this morning, I found Pounce lying all stiff in the doorway ... I'm so sorry."

Fria gently took the cat from the girl's arms and placed it lovingly on the floor.

"It's all right. Don't cry. Please don't cry."

Amber sniffed back her tears and stared up at Fria with uncertainty and fear in her eyes. After a moment of hesitation, Fria reached out and took Amber's small hand in her own. She smiled reassuringly. Amber leaned forward and rested her head against Fria's shoulder. She felt the child's hand squeeze her own and she gently stroked the girl's soft curls. A smile played across her lips. Maybe

her prayers had been finally answered.

Maybe, after all these years, she had a child of her own.

#

Author's note for *Who Will Guard the Guardians ?*:

You may have noticed a strong feminine flavor to *Who Will Guard the Guardians ?* that is missing from my other work. That is because I did not write it. My wife, Catherine, did. I polished it and we jointly published it in the 14 October 1982 issue of Analog Science Fiction.

One of the things that drives new authors to take up writing is meeting the old writers. For some reason, people have an inflated opinion of the craft of writing. It is as though they expect a writer to be somehow better than everyone else. Therefore, when they finally meet a real live writer for the first time, the most common reaction is one of ... disappointment. That is because writers are almost exclusively introverts - you have to be an introvert if you are going to spend hundreds of hours alone working at your craft.

(If you would like a boring experience, try attending a party attended solely of writers. Mostly people sit around and stare at one another, not knowing what to talk about. So we talk shop. Every writers' party should have at least a few non-writer extroverts to liven up the mix.)

Having finally met a writer, people generally are not particularly impressed. That leads them to the inevitable thought, "If he can do it, anyone can!" New writers, then, are born out of disdain as much as any other emotion. The interesting thing about this phenomenon is that people are right. Just about anyone can become a successful writer. All they need is perseverance and the desire to write.

My wife caught the writing bug in the early 1980's. She had been proof reading my stuff for years and obviously had decided that if I could do it, so could she. *Who Will Guard the Guardians ?* was her first attempt. One of the problems with writing is that while you can clearly see the story in your head, it takes practice to get it down on paper. The rule is that you have to write a million words before you write the first one that sells.

This rule does not necessarily hold if you live with a professional writer and can make his life miserable if he doesn't help you polish your story. Therefore, after Catherine finished her story, I read it over and grudgingly admitted that it was, indeed, a good idea. I then went over it and polished it where I thought it was a little rough. We agreed on the changes, stuck it in an envelope (along with a self addressed, stamped return envelope) and sent it off to Stan Schmidt. And, wonder of wonders, he bought it.

Catherine was now one for one in the writing game! Those of you who have pursued careers in writing will recognize that to be an amazing statistic. Most of us have to collect a hundred rejection letters before we get our first acceptance. Not knowing this, my wife embarked on her second story. I polished it up, as before, and we sent it in to the magazines. This time, they rejected it, and Catherine was pissed!

Which only goes to show, no matter how successful a person is in this life, they are never really satisfied. Which, if you think about it, is the theme of the story you just read. Our never-ending quest for becoming better than we are is probably what makes us all human! It

is our most endearing quality.

LIFE PROBE

If an alien spacecraft searching for intelligent life in the universe encountered Earth, would it think that it had found any?

I wake...

...in quick stages...

... of jumbled impressions...

... and stray memories.

The attack of integration vertigo lasts a dozen nanoseconds while my brain assembles itself back into a functioning whole. Finally, the fuzziness is gone and I am once more awake and aware.

I “look” around.

As expected, I am in deep interstellar space. The stars are cold, hard points of radiance etched against the fathomless black of the cosmos. My chronometer informs me that I have been in flight for more than ten thousand years. It has been a long journey. Jurul warned me that it might.

The thought of Jurul brings a sudden flood of long dormant memories to my main processing units. Jurul was my mentor and the Maker whose personality I carry imprinted on my circuits. It is his influence that allows me to look upon the stars and see beauty, or listen to the monotonous thrum of the pulsars and hear music.

And it was Jurul’s voice that bade me goodbye just before launch:

“How are you doing, Nine-three-five?”

“A little nervous, Jurul.”

“Not to worry. I have yet to see a life probe that was calm at this point in the countdown.”

“Truly?”

“Yes. Remember what you’re supposed to do?”

“How could I forget? I’m a computer.”

“Humor us. Repeat your mission objectives.”

I accessed the record containing my mission objectives and output it verbatim: “I am to seek out and observe intelligent lifeforms among the stars. If possible I will learn all I am able of their scientific knowledge, obtain their help in my overhaul and refit, and then return home to report.”

“And if you should happen to discover a civilization that has developed a means of traveling faster than light?”

“Not much chance of that.”

Jurul chuckled. *“How did a computer energized so recently get to be so cynical? Answer the question, Nine-three-five.”*

“In the event that I observe a civilization with an FTL drive, I will ensure that it is safe to do so before directing them here to the home world to bargain for the secret of faster than light travel.”

“Very good. How long to boost?”

“Coming up on eight-to-the-second-power seconds.”

“Luck, Nine-three-five.”

“Luck to you as well, Jurul.”

I remained in communication with the Makers for nearly a full year following launch, but that was the last time Jurul’s voice ever rode the laser beam. Shortly after reaching cruising velocity, even that tenuous link with home was broken-- and with it, all hope of ever speaking to Jurul again.

For when I return to point of launch (if I return), Jurul will be ancient dust and it will fall to one of his descendants to take my report.

To report I must first return home and that is proving no easy task. I accepted the same gamble every life probe takes when it boosts into the unknown. It is a gamble five of six eventually lose. It is beginning to look as though I may become another grim statistic.

A life probe is the ultimate of the Makers’ many creations. Powered by the complete conversion of matter into energy, we climb to nearly one-eighth light speed in less than a single year. But in so doing, we leave ourselves nearly crippled. For after attaining cruising velocity, we find ourselves with barely sufficient fuel reserves to slow our headlong rush at journey’s end.

Thus, necessity has doomed me to spend most of my life in transit. I plod slowly outbound toward the galactic rim, with the eternity between stars my greatest danger. What intelligent being, organic or machine, could maintain its sanity on such a journey? My memory banks would overflow with data long before the first waypoint sun if nothing were done to protect me.

It is for this reason that the Makers created CARETAKER and the Long Sleep.

CARETAKER is my alter ego. His brain is my brain. Only the arrangement of our basic circuitry is different. CARETAKER is an entity with no real sentience, a mere computer that comes awake after I give the command to switch all circuit modules to temporary data storage. It is his function to watch the sky, ever vigilant for that one stray bit of energy that betrays its creators as intelligent beings.

When he finds one, he signals me awake. He has done so four times now.

That first time I was less than two hundred years out, barely within my area of search. Excitement welled in me like a nova sun as CARETAKER signaled me awake. I scanned the star in question, noting unmistakable signs of an advanced civilization. However, a quick check of the star’s position showed it to be outside my ability to maneuver. To attempt rendezvous would have drained my fuel stocks without halting my rush through the void.

That was my first great disappointment.

The next two contacts were no better. One was with a race on its way back to savagery, no longer able to repair the few machines that still operated. The other was sketchy and far outside my range.

I returned to the Long Sleep each time with a feeling of increasing disappointment resonating through my circuitry.

Now it is time to turn my attention to Contact Number Four.

#

I call up the signal from where CARETAKER has stored it in memory. It is weak, splotchy, and very nearly unreadable. I study the parameters of the contact with growing excitement: Amplitude modulated electromagnetic radiation ... midcommunications band ... a raster pattern of parallel lines ... high and low intensities that form a two dimensional array when arranged in proper sequence...

Clearly, CARETAKER has intercepted someone's teletext signal.

Simultaneously with contact confirmation, I set two subroutines in motion within my logic units. One has the purpose of determining if rendezvous with the signal source is physically possible. The other is concerned with a far more difficult question.

A yellow star leaps toward me as I focus my telescope on the source of the signal. With mounting tension, I begin the delicate operation of plotting the position of the star. I am in luck.

A first approximation shows the yellow sun to be almost directly on my course. A few more hours of careful measurement confirms it. I will pass within a thousand stellar diameters of the star at closest approach-- almost a glancing blow on the scale of the galaxy.

Now comes the difficult part. Before I can commit myself and my precious fuel to a rendezvous attempt, I will have to decide whether the creatures that originated the teletext signals are civilized. To a life probe, such things are defined by very narrow parameters.

A civilized species is one that possesses a knowledge of matter-antimatter reactions, a working grasp of the principles of mass conversion, and a large enough industrial base to support the massive reconstruction efforts I will require if I am to return home. A sizable space fleet able to ferry a large work force into orbit is also helpful, but not absolutely necessary. Within my memory banks, I carry complete plans for literally hundreds of different spacecraft designs. I can teach a technologically literate race what they must know if need be, but it will significantly slow the process of returning home. All depends on the character of the beings I choose for my helpers.

I turn my detectors to high gain and focus my attention on the yellow sun. There is much to learn.

#

The star is closer now. Closer and brighter. I have detected two of the system's planets-- gas giants to judge by the interference lobes they cast on the star's diffraction pattern. As the image of the yellow sun has grown in intensity, so too the intensity of the intercepted teletext signals.

It is a hopeful sign.

My data banks now contain hundreds of hours of teletext signals and I avidly collect more. I wait patiently for the knowledge stored within me to build to critical mass, the point at which I can begin to

learn the language of those from whom the signals originate.

My study has taken far longer than expected. The creatures do not appear to possess a single language. Rather, their signals arrive coded in dozens of different linguistic variations. The wide diversity suggests a planet of many competing cultures. That part of me dedicated to the collection of pure knowledge is ecstatic. The opportunity is unparalleled. Never before has a life probe chanced upon such an infant culture.

However, the rest of me is worried.

For interesting or not, the creatures do not yet possess any of the attributes of civilization. My only hope is that they can be taught the skills they will need to assist in my overhaul. But can they learn? Do they have the intelligence, the ability, and the desire to absorb a thousand years of technological advancement overnight?

It is a question for which I have no answer.

I settle down to collect more data and eventually I speak several of their languages. Very quickly afterwards, however, I learn that the signals mean little more to me than they did before. That is hardly surprising. I know nothing of the cultural referents the creatures take for granted when they speak to one another. I know not the backdrop against which they live their everyday lives. In many ways, the gulf between us is as great as that between stars.

I ponder the problem for a few million nanoseconds and decide to approach it in a less direct manner. I begin preparations to split my brain in two in order to establish an independent intelligence that will help me understand the strange creatures on which I eavesdrop.

The mechanics of such a division are relatively simple. I split off one of my logic modules and isolate it from the rest of my circuitry. The vertigo associated with the split is a dozen times worse than any I have ever experienced in waking. As the new intelligence forms, I find myself growing more stupid by the instant. At the same time, my thoughts develop a disturbing echo.

As Jurul drilled into me so very long ago, forming a secondary mind is a dangerous step. It affects my coordination, my speed of thought, even that tenuous quality that is self-awareness. If my mind loses too much of its internal synchronization, I will become another CARETAKER, although I will not realize it should it happen. To cleave one's mind in two is dangerous for any thinking entity. The detrimental effects are so great that it is a move normally reserved for dire emergencies.

My current situation is desperate enough to be classified as such.

My dilemma is clear. If I choose to decelerate as I close on the yellow sun and the inhabitants prove intractable, I will end my quest with dry tanks, trapped in orbit about a planet of savages, with no hope of ever returning to my point of launch. To stop is a risk, but possibly less so than going on.

My life span is long, but far from infinite. A constant rain of interstellar dust scours my leading edges as I hurtle through space. Even the minor quantity of matter found in deep space will eventually erode my shields to uselessness. Should I continue my journey, my shields will be gone before another ten thousand years have passed. When that happens, cosmic radiation will slowly wreak havoc on my circuits. Once I lose my shielding, a slow, creeping insanity will be my future, and eventually, death.

How am I to choose my fate? How can I get inside the minds of creatures with which I have nothing in common, not even the mutual bond of being fellow organic beings? I cannot.

That job will fall to the secondary mind I have created.

At the instant of birth, my stepchild is little more than a grouping of circuits from which I have wiped all knowledge. Nothing remains except a few billion memory modules waiting to take on a new form. And a new form they shall have. With luck, they will become a reflection of the essence of a human being ... a *Homo sapiens* ... a man.

When this new creature takes shape, this *Surrogate human being*, I will explore its mind. If what I find is positive for my purposes, I will use the last of my precious fuel to stop at the human world. Once there, I will negotiate with the strange bipeds of that world to obtain their assistance. For my part, I will give them access to all the scientific knowledge with which the Makers filled my memory modules. For their part, they will provide me with willing hands and whatever materiel my reconditioning requires.

#

The yellow star has grown large enough to show a disk at maximum magnification as I move ever closer to my decision point-- where I must decide to decelerate for rendezvous or not. I am troubled, perhaps more so than at any other time in my quest. Every hour brings new data to feed SURROGATE. With each additional byte, I find myself with greater doubts about the wisdom of ending my long journey among the creatures known as men.

Very quickly after I first encountered the televid signals I learned the humans' name for their planet and their convention for numbering the years. The planet is 'Urth' or 'Earth' in the predominant language of the signals, other things in other tongues. The humans number to the base ten, making it natural for them to divide their history into decades. Seeing that it is the proper tool for my study, I quickly adopted the system and rearranged my data to conform. I feed SURROGATE in decade-sized packets, always stopping to observe the effect of each feeding before going on to the next.

I begin with the one-hundred-ninety-fifth decade, the span in which I first encountered the signals in space. I enter the data and test SURROGATE's attitudes on subjects scientific and technological. I care little for the creatures' mating rituals, their problems in raising their offspring, or the catalog of injustices that makes up the bulk of my data. It is their interest in the stars and the atom that will decide their usefulness to me. I probe SURROGATE for his knowledge of such things.

He has none.

I ruminate over my results. Surely, the signals must have said something! I collate my data and scan for the references. Sure enough, an occasional mention of space travel floats out of memory every few microseconds. References to the atom are far more plentiful, although most deal with the fear that one rival group or another will start a war and blow everyone up.

I am puzzled. It is the same information SURROGATE has. Yet, he failed to assign powerful positive values to these very important facts. Rather, he merely noted them as background details, not overly important in the scheme of things.

It is more insight than logic that brings the answer to me. I scan the data hierarchy within SURROGATE. As I suspect, since he has no idea of my purpose in creating him, he weights the data as a human would. His file on space travel is barely more than a collection of inaccurate fictionalizations about alien monsters. Far more memory is filled with references to a silver furred goddess by the name of Marilyn Monroe.

Feeding SURROGATE the same information to which the average human was exposed in the period 1950-1959 has produced a technical illiterate. Even the concern about a rival power group, the

Russians, launching a planetary satellite late in the period could not overcome the inertia of that which went before.

I begin to get discouraged.

However, a life probe is nothing if not persistent. I call up the one-hundred-ninety-sixth decade and input it. SURROGATE shows an immediate positive response. I read out references to something called the Space Race-- the result of the Russian satellite-- with growing excitement.

Obviously, I have misjudged the humans by not gathering sufficient data to form a true picture of their character.

The sight of their puny rockets belching fire and lifting ponderously toward the sky makes my entire journey seem worthwhile. SURROGATE has suddenly been transformed from a technological illiterate to a lay expert. He has even developed a rudimentary knowledge of orbital mechanics. If he truly reflects the interests of humanity, I am headed for a planet populated chiefly by technicians and engineers.

The crowning glory comes when two spacesuited bipeds cavort on the surface of the Earth's single satellite. Considering the primitive state of their equipment, it is an accomplishment to equal anything the Makers ever attempted. I begin to develop a liking for these creatures. The Makers explore by proxy while humans brave the rigors of space themselves. There is something in my makeup that applauds such audacity.

It is with high hopes that I input the final three decades in memory, the one-hundred-and-ninety-seventh; the one-hundred-ninety-eighth; and that part of the one-hundred-ninety-ninth that brings me abreast of real time. Such is my confidence in the final answer that I fail to notice the change in SURROGATE immediately.

I begin the search program that will judge his reaction to the new data. As each test question is absorbed, I begin to note a pattern. Where before he was enthusiastic about all forms of technological progress, SURROGATE has suddenly developed responses shaded with a subtle pessimism. At the end of the 1960s data, SURROGATE looked forward to a bright future.

However, the 1970s-1990s data has wrought a dramatic change in his outlook. Where once the key word 'machine' brought forth images of sleek ground vehicles moving at high speed over wide superhighways; the same stimulus now triggers the specter of clogged highways and a dense layer of opaque gas. Where 'nuclear energy' elicited pictures of quiet power plants sitting in the green countryside, the response has turned to angry crowds waving signs while milling about half constructed reactors. Most damning of all, 'space travel', once the focus of a plethora of prideful images, no longer seems associated with any dominant image at all.

It is as though all knowledge of the moment when humans walked upon their satellite has been wiped from memory.

Confused and unsure, I begin to sort through the mass of impressions. After nearly an hour of correlation, a single scene remains dominant in my alien cultures subroutine. It is all that is left after everything else has been canceled out. It is the essence of all that SURROGATE has learned and the answer to my problem.

The picture is one of the most recent bits of data received. It features a group of humans attempting to persuade their leaders of the wisdom of a particular course of action. They do this by the curious expedient of forming what is known as a 'picket line' outside the place of government.

It is a strange, incomprehensible scene:

A young biped female, gravid with child, carries two other children maternally close in her arms. Behind her is a placard attached to a small stick. It has been placed on the ground to free both her arms for her offspring. On the sign are printed several words in neat block script:

PEOPLE PROGRAMS

BEFORE

SPACE PROGRAMS!

I rerun the frozen frame several times through my battery of sophisticated logic programs. Each looping inspection only serves to increase my confusion. There is a dichotomy expressed in the placard message that I fail to grasp. SURROGATE believes he understands the reference and tries to explain it to me, but to no avail.

I ponder my problem. What does it mean and how does it affect me? I do not know for I am only a computer, no matter how like a sentient creature Jurul would have had me be.

I am only a computer and I do not know. That is the worst of all possible universes.

#

The yellow sun is very large and bright now, large enough for the Earth-Moon system to show as an elongated teardrop of light. It hardly matters anymore since my attention is focused on another star, a red-orange dwarf sixty light-years beyond.

Forgotten are the humans and their queer mercurial attitudes. They were only a marginal choice at best and no choice at all after my astounding discovery. For I have discovered evidence of a true civilization, one that has succeeded where the Makers have failed. A strong, strangely linear x-ray source centered on the red-orange sun can be nothing less than the wake of a ship traveling faster than light!

I suppress the excitement I feel at the discovery. Instead, I go immediately to work pinpointing the exact location of the x-ray source. As seen from my vantage point, it is only a few degrees of arc distant from the yellow sun of the humans. Nevertheless, those few degrees concern me greatly. The new target lies on the edge of my maneuvering reserves and I am fast approaching my deceleration window for Earth. Should a direct journey prove impossible, I will have to reconsider my decision to pass the humans by. For there is one way to arrive at the new star with plenty of fuel to spare. I can stop among the humans, obtain their assistance, and then launch outbound on any vector I choose.

If it were not for my doubts about their reliability as partners, I would prefer such a choice. A two-stage journey presents the least risk of failure. My discovery has given my mission new importance. No longer does failure mean just the loss of my accumulated data. It is now within my power to bring the ancient dream of the Makers to fruition. In a game of such high stakes, failure is unthinkable.

My triangulation subroutine finishes its job and the news is bad. The red-orange star is nearly three percent beyond my ability to change course.

I review my options in light of this new data. It appears that I have none. With only enough fuel left to

decelerate and rendezvous with Earth, all other courses of action seem closed to me.

Yet, the obvious solution does not feel right. I rethink my data. It is my distrust of the humans that worries me, of course. Their actions appear totally alien to me. How can I base a rational decision on data that makes no sense? Logically, they need me as badly as I need them. My knowledge will catapult them a thousand years into the future. Thirty plus years of observation have taught me a great deal. For instance, I long ago learned that the culture that controls the televid signals represents only a few hundred million of the most advanced individuals on the planet. Underrepresented are another four billion, people who still starve for lack of food, die from curable diseases, and are killed in preventable wars. My knowledge will raise all of humanity to the heights, not just the lucky few who control the planet's limited resources,

How could anyone refuse such a gift of knowledge? Yet, **SURROGATE** is of the opinion that they might. Should they reject me, my mission will end in failure. The FTL civilization may remain forever ignorant of the makers and their plight. Do I have the right to gamble so much on the good will of savages? Do I have any choice?

Suddenly I know there is another way. I consider my new option carefully. I do not like it. It seems as dangerous as being eternally trapped in orbit about the Earth.

For all the time I have studied human culture, I have also studied their yellow sun. Consequently, I know it better than any other star in the galaxy. On my present course, I will pass very close to it in my transit of the solar system. I consider the effect of such a close approach on my path through space.

The Makers call it a gravity well maneuver. By swinging close in and letting gravity and the solar wind have their way with me, my orbit will be deflected. A tiny course correction while still beyond the Solar System will enable me to shape this curving orbit to my own purposes. If properly computed and executed, I will find myself aimed directly for the star of the FTL civilization following conjunction. In effect, I can use the yellow star to change course without wasting a drop of precious fuel.

But are the savings worth the risk?

I am a denizen of deepest interstellar space. My shields would be destroyed in an instant in the gas and dust that surrounds a star. The best I can expect is to have most of my sensors burned out by the whipping gas. At worst, I will be totally disintegrated.

Not exactly an optimum solution...

And what of the journey across sixty light-years of space should I survive the storm? With so much damage, I would be unable to return to the Long Sleep. I would have to be awake and alert during the entire journey. What stage of senility would I be in by the time I arrived?

I now know what the humans mean when they speak of being between "a rock and a hard place." I evaluate all the factors one last time and come to a conclusion.

The risks of solar passage are just too great. The Makers have waited a long time for the secret of FTL; they can wait a bit longer. Humans are stubborn, not stupid. They can learn if they have to, and I would make it my job to see that they do. Like it or not, humanity was going to find itself pulled out of its mud wallow and placed on the road to civilization. I will elevate the squabbling near-apes to unbounded prosperity whether they wish it or not.

I turn once more to **SURROGATE**. Since my discovery of the FTL civilization, I have ignored him shamefully. Since I will need his help in understanding the humans, I update his memory banks

concerning our situation and my decision to make contact.

Unbidden, SURROGATE reminds me of the human female clutching her children to her breasts. I focus my attention once more on the strange sign lying on the ground beside her. I puzzle over the meaning of the message so carefully lettered on its face.

I hesitate as doubt again floods my circuits...

... I weigh all my data one last time...

... I make my decision.

#

INTER-AGENCY COMMUNICATION

TO: Dr. William Bagley, Presidential Science Advisor, The White House, Washington, DC (bagleyw@whitehouse.gov)

FROM: Joseph P. Rogers, NASA, SETI Program Director (rogersj@nasa.hq.gov)

Dear Bill,

Just a quick email to let you know what I have found here at Goldstone. The reports were essentially correct. At 20:12 hours GMT, 12 June 1998, the Big Ear was monitoring transmissions from the Mercury orbiter spacecraft when suddenly all telemetry was knocked out by a powerful broadcast of unknown origin (a transcript of which is Attachment I hereto). You will note that the transmission was received uncoded and in American English.

Attachment II is a photograph taken by an automatic camera at Kitt Peak Observatory at approximately the same time, Note the streak of light just above the upper left quadrant of the sun. The astronomers tell me that this is due to a material object moving at very high speed through the solar corona. The streak does not reappear after moving behind the sun. Whether this means the object burned up or is merely due to a bad viewing angle is unknown.

No signals were detected after the object passed behind the sun.

Official report to follow.

Joe,

PS: I wonder if it made it?

#

Author's notes for *Life Probe* :

When I go out on lecture tours, people constantly ask me where I get my ideas for stories. In fact, "Where do you get your crazy ideas?" is probably the most common question asked of any science fiction writer. Sometimes the ideas percolate so slowly that we really cannot tell where or when they come to us. Other times, ideas spring forth fully formed and ready for action. Such was the case for me with *The Shroud* , which you read earlier.

In the case of *Life Probe* , I remember very clearly where I first got the idea. I was lying on the floor in my living room watching *Mork and Mindy* , Robin Williams's first television series, when a thought suddenly occurred to me: "If aliens came to Earth looking for intelligent life, would they think they had found any?"

Unfortunately, a writer's job is not finished at the moment of inspiration. That is merely the starting point for the perspiration phase of writing. *Life Probe* had a long gestation period. Initially, the story was written as pro-nuclear propaganda. (If you have glanced at my biography in the back of the book, you will see that I minored in nuclear engineering. That should tell you where I stand on the subject. If you have a different opinion, more power to you. It is, after all, a free country!)

Now propaganda of any kind is tricky to write. Most of it is too heavy handed - the good guys are too good and the bad guys; well, they are evil incarnate. Such comic book writing may make the writer feel good, but it is ineffective. I was trying to be subtler. *Life Probe* was written in the days of the great nuclear debate, about the time of the Three Mile Island accident. It turned out that editors were not enthusiastic about buying pro-nuclear propaganda at the time. So, after making the rounds of all the science fiction magazines and being rejected half a dozen times, I retired the story and went on to other things.

Shortly afterwards, I found myself an agent and asked him to peddle *A Greater Infinity* to a publisher. This he did admirably, placing me with Ballantine-Del Rey, with Owen Lock as my editor, and Judy-Lynn Del Rey as senior editor. To go along with the new sale I needed a proposal for my next book. In thinking about what I should write, I decided to do a longer, more complex "first contact" story based on my short story *Life Probe* .

During negotiations, my work required me to go to Long Island and I took the day off, riding the Long Island Railroad into New York City to have lunch with my new agent and publisher. At this point in the story, I must digress. At the time, Judy-Lynn Del Rey was the powerhouse in science fiction publishing and the Del Rey imprint at Ballantine Books was probably the most influential of all the SF lines. So, I felt very fortunate in being accepted as one of their writers.

For those who do not know, Judy-Lynn Del Rey was a dwarf, what the more politically correct among us today refer to as “a little person.” My agent did not mention this fact to me before our meeting. I think he wanted to see how the hayseed from Arizona would react when he met her. She arrived for lunch, I did not make a fool of myself by saying anything gauche, and she told me that she liked my proposal, but wanted a sequel. That is how *Life Probe* and *Procyon's Promise* were born. As for those who may think that physical appearances are important, Judy-Lynn Del Rey was somewhere between 3-4 feet tall, while I am 6 feet 5 inches. At that table that day, there was no doubt who the dominant personality was - and I am not talking about myself.

To make the novel work, I moved the period from the twentieth to the twenty-first century. This allowed me to be less constrained by real world events and gave science time to catch up with where I needed it to be. For a background, I used the universe of my first published story: *Duty, Honor, Planet*. This gave the story a certain reality that it might not have had otherwise. The novel was published by Ballantine in 1983 and was very successful (having gone through several printings and foreign editions).

Having sold the novel, Russell Galen suggested that we try again to market the short story. The anti/pro-nuclear argument had cooled somewhat in the years since the initial round of sales, editors had changed job, and a forthcoming novel is always a good marketing tool. Unfortunately, pro-nuclear propaganda was even less in vogue than it had been when I first tried to sell the story. Therefore, I changed it to pro-space propaganda and sent it out again. This time, *Life Probe* (the short story) was bought by *Amazing Stories*. It was published in the January 1983, issue of the magazine.

The moral of this story is that a writer should never throw anything out. Plot ideas, like plastic pop bottles, can always be recycled.

Life Probe, the novel, is available on Sci Fi - Arizona. If you have not read it already, you may want to in order to see how the idea evolved. Besides, it is a very good book!

MAN OF THE RENAISSANCE

If you think nuclear weapons are difficult to build, ask yourself the following question: How successful would the Manhattan Project have been at inventing the VCR?

Darol Beckwith guided his steed over rocky ground, carefully threading his way among scrubby Palo Verde trees and yellow stands of cholla cactus until he gained the summit of the small hill that had been his goal for the previous quarter hour. Once on top, he reined in his horse. Behind him, two heavily laden pack mules stopped in their tracks, each taking quick advantage of the opportunity to crop at the few patches of wiry, yellow grass that poked through the carpet of fist sized stones.

Beckwith removed his salt-stained hat and wiped perspiration from his forehead onto the sleeve of his threadbare, cotton shirt. Around him, the yellows, greens, and browns of the Great Sonoran Desert stretched as far as the eye could see. Replacing his hat, he rummaged in his saddlebags for his pipe, lighter, and tobacco pouch. He soon had the pipe alight and the other implements repacked. Only then did he lean forward to retrieve a pair of 'tronic binoculars from their case. He pointed them at the

brown pillar of dust that rose lazily into the cloudless blue sky halfway to the horizon. The dust cloud leaped forward at the press of a control, resolving itself into a column of mounted men. He studied the image for several minutes before restoring the glasses to their protective sheath.

“They’re Sonoran cavalry, all right,” he muttered as he leaned forward to stroke his horse’s neck. “Vargas’s report was right about that. Wonder what they’re doing this far north?”

The horse’s answer was a short whinny as Beckwith urged it forward with his spurs and began picking his way toward the level ground of the plain below. He made no effort to avoid the patrol, but rather rode straight for it, reining in when the file of horsemen was less than a kilometer distant.

It did not take long for them to spot him. He puffed on his pipe and watched the Sonoran envelopment unfold with professional efficiency. He counted thirteen in all -- an officer and a dozen enlisted men -- as he became the center of a cloud of roiling dust, milling horses, and men with rifles drawn and ready.

He bit down on his pipe and lifted his hands well away from his body. The officer, a captain of cavalry by his collar insignia, stopped directly before him and aimed a needle gun at his midsection. Beckwith could see by the thumbwheel that the weapon was selected to full automatic. He tried not to let that knowledge bother him as he carefully broke into a practiced smile.

“*Buenos Dias, Capitan,*” he said, bowing his head slightly in respect to what was obviously a nobleman, and probably a younger son or bastard willed into the duke’s service by a father determined to keep him out of trouble. “To what do I owe this singular honor?”

“Who are you, *Senõr*? Where from and where bound?”

“Beckwith’s the name. Darol Beckwith. I am the circuit doctor for these parts. Most recently out of California Free Republic, bound for the village of Nuevo Tubac on my yearly rounds ... and damned if I expected to see Sonorans this far north.”

“When were you last in the Republic, *Senõr Medico* ?”

Beckwith reached up to pull the pipe from his mouth and then lazily scratched at his week old growth of beard. “Let’s see now. I stopped for a week in New Refuge before crossing the river at Blythe, six ... no, seven ... yeah, seven days ago.”

“Did you see any soldiers there?”

Beckwith let his smile degenerate into a sheepish grin. “Now, Captain, you know that my service doesn’t take sides in local politics. It would be a violation of my oath to answer such a question.”

“Perhaps you would prefer walking to Nuevo Tubac without your boots?”

Beckwith raised one eyebrow. “Has His Imperial Majesty, Moctezuma VII, decided to abrogate his sworn oath given in the Second Treaty of Hermosillo? Or is this the Duke of Sonora’s idea? Is it now the policy of the Empire to harass doctors of the service wherever found?”

“His Majesty does what he wishes, *Senõr* , and My Lord, the Duke, is his strong right arm.”

“Then I guess I’d better give you my boots and start walking, for I will not answer. I assure you, by the way, that my response will be the same when the California border guards ask me about you when I cross back over next fall. I am but a harmless medic trying to get on with his job.”

At this last, the captain's eyes dropped to the polished-by-use wooden stock of the automatic rifle in its scabbard beneath Beckwith's right knee. Beckwith followed his gaze, and shrugged.

"Even a doctor must oftentimes defend himself in the wilds. All my instruments are on my pack animals, and would bring a goodly price on the black market in Mexico City."

At the mention of the pack animals, the captain holstered his needle gun and gave orders to a burly noncom. The *sargento* leaned forward and took Beckwith's lead rope from him. A few more quick orders in the local patois -- a corrupt version of Spanglish -- and the doctor found himself disarmed. The patrol formed around him and the whole party clattered off in a southeasterly direction.

Beckwith took the opportunity to study the men around him as he rode among them. Everything about them -- their lean, watchful look; their dusty, sweat stained uniforms and dirty sombreros; the straight-backed way they sat their horses -- told him that they were regulars. That, too, confirmed Vargas's initial report. The insignia they wore identified them as the Second Hermosillo Dragoons, one of the Duke of Sonora's best regiments.

The men themselves were a varied lot. As Beckwith had already noted, the captain was a mustachioed young dandy of nearly pure Hidalgo stock. His troops, however, ran the gamut of humanity. Several pairs of blue eyes stared from out of reddened, sunburned faces above blond beards; indicating that their owners were descended from the vast wave of refugees that had swept down from the north eighty years before. Other members of the patrol sported Indio and Negroid features, and one was Caucasian-Oriental mix. All looked as though they knew their business.

It was late afternoon when they entered the pueblo of Nuevo Tubac in the Gila River valley. The town sat on one bank of the stream whose position was marked by a darker-green swath cut through the yellow-green of the desert vegetation. He took in the signs of the Sonoran occupation with experienced eyes, while appearing to have no interest beyond finishing the long dirty joke that he had been spinning for his companions. He did not like what he saw. If the main street of this little hamlet contained a representative sampling of the Imperials' strength, they must number at least four troops of cavalry and an unknown number of support personnel. That was a big chunk of manpower for Juan Pablo Andros, the Duke of Sonora, to send this far north -- especially considering the other claimants-of-the-moment for his throne.

Obviously, the fact that he *had* sent them north was convincing evidence that he had some overwhelming reason for doing so. Beckwith cursed the fates that had prevented Vargas from finishing his report. Whatever had happened, it had been no mechanical failure. A clear carrier wave had ridden the satellite channels for almost three minutes after Vargas's voice link had been silenced.

The patrol did not stop at the village square as Beckwith had expected, but rode through the inner defense wall and into the courtyard of the hacienda belonging to Don Ynicente Galway, *Patron de la Pueblo*. Beckwith had spent many an enjoyable evening in that great rambling structure, playing chess and arguing philosophy with his host. He hoped the old pepperpot had not objected too strenuously to Juan Pablo's henchmen taking over his home. Beckwith had too few true friends in this world as it was. He would hate to lose two in the same month.

The captain led him through the fortified outer door and into the gloomy interior of the hacienda, stopping only when he arrived at the door of Galway's study. He knocked briskly and waited for a muffled order to enter. Inside, sitting behind Galway's desk -- a prized pre-war antique -- was a General of the Imperial Mexican Army in full regalia. His chest was covered with more medals than Beckwith had ever seen before in one spot. More important was the fact that the general was Moctezuma's man (not Juan Pablo's), and that he was commanding Sonoran troops.

After the Captain had finished his report, the general, a rotund, mustachioed man with hard eyes, waved dismissal and the Sonoran officer spun briskly on his heel and marched out.

The general leaned back in the squeaky swivel chair and regarded Beckwith for a moment in silence. The doctor stood his ground, coolly returning the stare.

“I am General Miguel Stefan Trujillo of the *Militar de Mexico*,” he said, finally, leaning forward to rest his elbows on the polished surface of the desk. “You are the traveling doctor for this village?”

“*Si, Senōr General.*”

“I would have expected an older man.”

Beckwith shrugged. “Riding circuit requires the stamina of youth, General. Do not fear. I began my training at age twelve. That was twenty-five years ago. I assure you that I am highly skilled in my craft.”

“Why is it that none of your patients informed us that you were due at this time?”

Beckwith shrugged. “Probably because none of them knew it themselves. I am late this year. Got hung up fighting an outbreak of blue plague up in the Navajo Nation last fall and I’ve been rushing to catch up ever since.”

“*La peste!*” The general crossed himself with his right hand and made the sign of the Mushroom Cloud with his left. Beckwith wondered what the Archbishop of Mexico City would think of such an overt appeal to paganism in one of His Majesty’s highest-ranking officers, a comment he carefully refrained from making aloud.

“There is no danger, General. I’ve been vaccinated and if it hadn’t taken, I would have been dead six months ago.”

Trujillo’s expression quickly turned to anger, obviously fueled by the thought that he had made a fool of himself before this stranger.

“Be that as it may, *Senōr Medico*, I find myself wondering at the timing of your current visit.”

“If you will pardon me for saying so, General Trujillo, it is I who should be wondering at your presence, not vice versa.”

“My presence here does not concern you.”

“It concerns me if it interferes with my work. I got the impression from Captain Rodriguez that I am to consider myself your prisoner.”

“His Imperial Majesty would never imprison a representative of the Public Health Service, Doctor. You are our honored guest.”

“Will I be allowed to practice my craft freely?”

“Certainly. I will even assign an officer to assist you.”

“Will I be allowed to leave when I am finished in this village?”

“I’m afraid not,” Trujillo said. “You will to remain as our guest until we complete our work here.”

“How long will that take?”

“As long as it takes.”

“I was forced to lecture your junior officer concerning Mexico’s obligations under the treaty. Must I do the same for you, General?”

“His Majesty has authorized me to take special measures on my current mission, Doctor. If you are inconvenienced, your service may petition His Majesty for compensation. Now, then, if you will excuse me, I have much to do.”

Beckwith turned to leave.

Trujillo glanced up from his paperwork. “One thing more, Doctor. I would be honored to have you for my guest at dinner this evening. Senora Galway sets an excellent table and I am always interested in tales of far-off places.”

Beckwith blinked, seemed about to refuse, and then relented. “I would be delighted.”

He turned to leave once more, his expression dour. He was well out in the hall, following a uniformed flunky toward the stairs that led to the hacienda living quarters, before he allowed himself the barest hint of a smile.

Phase One had gone as planned!

#

Beckwith followed the aide to the upper part of the house and found himself in the same bedroom he had occupied on his last visit. He busied himself unpacking the leather satchel he found in the room. He noted signs of a hurried search of his belongings as he did so. A few quick glances inside the case assured him that the seals on the false bottom that hid his “special equipment” were unbroken. He placed his clothes on the pegs set into the adobe walls for the purpose. He had just finished laying out his shaving kit when there came a quiet knock on his door.

He opened it to find Esperanza Galway standing in the hall with a load of linen. She curtsied politely and brushed past him, all the while keeping her eyes averted as was considered prim and proper for a young lady hereabouts. She placed the linen on the feather bed and turned to face him as he closed the door.

“It is good to see you again, Doctor Darol.”

“And you, too, Espe. By the Great Gods of Fission, you are sprouting up like a weed! It won’t be long before the young grandees will be beating the doors down.”

Espe blushed as Beckwith nodded approvingly. Gone was the gangly little girl whose arm he had set five years ago. In her place was a blossoming young woman of nearly fifteen summers. Espe was one of those lucky people who seemed to have extracted just the right characteristics from her mixed bag of ancestors. She was fast becoming a beautiful young woman.

“How is your father?” Beckwith asked.

“Safe, as far as I know,” Espe said. “He left for Taos to buy breeding stock last month and has not returned.”

“And your mother?”

“Very angry at the *Mexicanos* for tracking mud all through her house.”

“Did that potion I left help her tuberculosis?”

“She is much improved.”

“What of my other patients?”

“Carmen had her baby, a strong, young boy with healthy lungs that can be heard all over the pueblo. And Aldo Finessa’s arm has regenerated as good as new. Other than that, not much has happened except for the Sonorans.”

“What of old Manuel Vargas? Does he still suffer from shortness of breath?”

“You haven’t heard?”

“Heard what?” Beckwith asked. “I just got here, remember?”

“The Sonorans killed Manuel Vargas. They say he was a spy. They found him with a machine. Some say that it was a radio.”

“Radio? Where would old Manuel get a radio? And for whom would he spy? And what would he spy on out here in the middle of all this desolation?”

“I do not know. All I do know is that the fat Generalissimo was most unhappy. It is said in the village that he had two of his own men shot when he learned that they had killed Vargas.”

“Nice people,” Beckwith muttered. “Why’d they come to the Gila Valley, Espe? This is poor land, barely able to support the people who live on it. Surely old Moctezuma can’t want to add this place to his Empire.”

“I do not know, Doctor Darol. They have four horse troops and *los ingenieros* with them.”

“Engineers? Any power machinery?”

Espe nodded. Two large steam wagons with drilling attachments. Also, things like a prospector’s metal detector.”

“Metal detectors, huh? Did you see any radiation counters?”

Espe nodded. “Yes, a few. In the twenty days since they arrived, they have set off many explosions near the old charcoal ovens east of town. What does it mean?”

Beckwith shrugged. “That they’re on a treasure hunt, I suppose. I wonder what they are looking for. Maybe I’ll ask the General at dinner tonight.”

#

“The ancients were a pack of god damned fools!”

General Trujillo wiped at his plate with a crust of coarse bread, soaking up the last of the pinto beans while daring his double handful of assembled subordinates and unwilling guests to disagree with his comment. He was not disappointed when a priest across from Beckwith crossed himself and muttered a silent prayer.

“Ah, our padre thinks otherwise,” the General growled, his speech slurred by too much wine.

“Our Lord looks not well on those who blaspheme the dead, Miguel Trujillo.”

The general turned to Beckwith. “What say you, Medico? Our ancestors blew up the world in a fit of pique. Should we regard them as near demigods on that account?”

Beckwith wiped his mouth on his sleeve and belched politely before answering. Esperanza Galway peered at him with alert eyes from the chair next to the priest’s. Her mother, La Donna Alicia Galway, maintained a stony silence from the foot of the table.

“The ancients were neither fools nor demigods, General. They were men like us, with all the weaknesses and strengths to which mere mortal flesh is heir. If they had a fatal flaw, it was that they weren’t wise enough to extricate themselves when they fell into one of the universe’s traps.”

“Trap?” the General muttered. “What are you talking about, Medico?”

“Why, the trap of nuclear weapons, General. What else would I be talking about?”

The priest folded his hands in a prayerful gesture, “It is refreshing to meet a medical man who is also an adherent of the teachings of the church, Doctor Beckwith.”

“You misunderstand, Padre. Whether nuclear weapons are the spawn of the devil is a point that I happily leave to you clerics. No, the trap to which I refer is the obvious fact that they are too damned easy to build.”

“You’re crazy!” the captain of ordnance who was Trujillo’s second in command said from Beckwith’s right. “The Manhattan Project was one of the most complex ever undertaken. How can you call what they did easy?”

“I do so, Capitan Villela, because the men who invented the bomb accomplished their feat with the aid of mechanical calculators and vacuum tube technology. They knew nothing of semiconductors, lasers, magnetic containment devices, or dozens of other machines available to pre-Catastrophe civilization. In outlook, they were closer to the engineers of Queen Victoria’s time than they were to the hi-tech warriors of The Catastrophe. That they were able to succeed with their relatively primitive technology is an indication of the ease of their task.”

“Your point, Medico?”

“Why, that nuclear weapons were invented too early. Humanity was not ready for them. Had the task been significantly more difficult, it would have taken longer. That would have given us more time to mature as a species and to develop countervailing technologies. As it was, the weapons of mass destruction were introduced into a world woefully unprepared to deal with their consequences.”

“They were more prepared than are we,” the priest argued.

“Not necessarily, Padre.”

Captain Villela blinked. “Surely, Senõr Doctor, you are not suggesting that we are more advanced than the ancients?”

Beckwith shrugged. “Not in all ways, certainly. Not even in most. But in some.”

“What ways, Doctor Darol?” Espe asked.

“Many ways, Espe. If Aldo Finessa had been mauled by that javelina boar a hundred years ago, the most advanced hospital the ancients possessed could have done little more than amputate his arm. Yet, it was not a difficult matter for me to achieve full regeneration. Or cancer, the most dread disease of the ancient world. I can cure it as easily as the common cold. We have come a long way since the days of The Catastrophe, and not only in the field of medicine. Of course, we have an advantage that previous generations did not.”

“Advantage?”

“A very great advantage if you think about it. Post-Catastrophe civilization is the first ever blessed with the sure knowledge of what was once possible. Sometimes, while searching for the old secrets, we uncover new ones.

“Our ancestors built a civilization of factories and assembly lines, of massive industries and even larger bureaucracies to control them. We, on the other hand, are a world of cottage industries and master craftsmen, where each machine is the work of a single individual or a few dozen people at most. We are a society that specializes in prototypes rather than mass production.

“We are also more efficient than they were ... of necessity. They left us too poor to do things their way. In the long run, who is to say which is the better road to travel?”

“Then you are not one who believes the race is in its twilight, Medico?” the General asked.

“Not at all. As I see it, our situation is somewhat akin to that of Europe after the fall of the Roman Empire.”

“Roman Empire?”

“You might say an earlier *Estados Unidos*, General. A culture that in its time ruled much of the world.”

“The city of Romulus and Remus, Julius Caesar, and Benito Mussolini,” Espe said, nodding.

Beckwith beamed like a proud parent. “You’ve seen the collection of ancient books in your office, General? Ynicente Galway was a scholar of some renown in his youth. I am predicting that his daughter will surpass even his accomplishments someday.”

“Most unusual,” the General said, his tone betraying his opinion of the usefulness of teaching women to read. “You were saying...”

“Oh, yes, the First Dark Ages! They were a time in history with parallels to our own situation. Then, as now, the world was a collection of warring fiefdoms, with no nation strong enough to enforce its will on its neighbors. The result -- as now -- was a growth of feudalism and a certain lack of stability. Yet, the human race continued its technological advance right through the Middle Ages. Those years saw the invention of the horse collar, the stirrup, the lateen sail, and the first truly efficient plow -- all significant advances over Roman technology.”

The dinner conversation continued for more than an hour. Beckwith had hoped that the wide-ranging discussion he had started would cause one of the Sonorans to slip and make a remark that would be a clue to their purpose here. No such luck. The conversation had never risen above the level of a polite debate comparing the present with the “good old days.”

Eventually, Beckwith concluded that most of his dinner mates really didn’t know what was going on -- not surprising if the powers-that-be back home were right in their suspicions. So, just when the

conversation was beginning to lag, he reached into his repertoire of anecdotes and told a funny story. One advantage of the current state of world communications was that jokes did not age as quickly as they once had. He had his listeners chuckling in a matter of moments.

The great crackling log in the fireplace had burned low when he finally asked to be excused and started toward the rear of the hacienda. His demeanor showed no sign of the adrenaline storm that raged in his bloodstream. For if his probing had stirred the General to suspect that he was more than the traveling medic/storyteller/troubadour he pretended to be, this was the moment of greatest danger.

No lurking guards stepped out to bar his way, no shots rang out of the darkness, not even the hacienda dogs bothered him as he crunched along the graveled pathway at the rear of the house. He quickly finished taking care of necessities in the hacienda outhouse, and stepped back into the cold night air of the desert.

He paused to light his pipe. The lighter was a flare of blue against the yellow lights emanating from the hacienda windows. He puffed quickly, and was rewarded with the bitter taste of tobacco smoke on his tongue. He drew in a lung full of the smoke, and then exhaled slowly. As he did so, a bright light just above the northern horizon caught his attention. He stepped out of the shade of the trees to get a clear view as the familiar star began to climb the sky.

#

Beckwith's internal alarm clock woke him two hours before dawn to a pitch-black world lit only by star shine. In spite of the heat of the previous day, the night air was brisk against his bare skin, causing him to shiver at the thought of throwing back the covers and leaving the warmth of his soft bed. He stalled the inevitable for a few moments by remembering the bright star he had watched cross the heavens the previous evening.

By rights, the Catastrophe should have ended all life on Earth. That it had not was a tribute to the overlapping layers of orbital fortresses and satellites the two pre-Catastrophe superpowers had built with such laborious care over a thirty-year period. When finally the world had gone insane and the missiles began to fly, fewer than one in fifty warheads survived to explode against their intended targets. The other forty-nine had either been destroyed with their carrier missiles, in transit through the vacuum of space, or in the final seconds of their terminal maneuvers.

Coordinating the defenses had been the great manned battle stations. The greatest of these was *High Citadel*, the prime command-and-control facility for the western alliance. First constructed in the early years of the twenty-first century, *High Citadel* had been constantly enlarged, strengthened, and improved. In addition to being the nerve center for all western orbital defenses, *High Citadel*'s computers had been used to archive all manner of scientific and technological data.

During the six weeks the war lasted, *High Citadel* had defeated everything the eastern bloc could throw against it. It had destroyed the east's own system of orbital fortresses in a duel that had turned night into day across the entire face of the planet. Finally, it had directed the strikes that destroyed the eastern bloc's surviving missile fields, and thereby brought about a cessation of hostilities.

The end came too late to save technological civilization. For, although the orbiting satellites and defense stations had saved the human race from extinction, sufficient megatonnage had gotten through to smash the industrial base on which civilization was built. In less than a year, Earth was swept by successive waves of famine and plague. Those men and women still in orbit watched as their world disintegrated into ever-smaller warring groups. These orbiting warriors were finally forced to abandon their posts as food, water, and air ran low. One by one, their emergency craft departed *High Citadel* to

slip below the roiling clouds of Earth, never to return. For eighty years, the deserted battle station's anti-laser armor had reflected the rays of the sun with mirror brightness, making *High Citadel* one of the brightest stars in the terrestrial sky.

The sound of a distant catfight brought Beckwith back to the problem at hand. Unable to postpone it any longer, he slipped out of bed and groped in darkness for his leather case. His fingers quickly found the hidden catches that freed the false bottom from the valise. He withdrew a garment from the secret compartment. What little radiance fell through his open window was sufficient to show the darksuit to be a pool of deeper black against the near stygian dark around him.

Beckwith carefully climbed inside, zipping the light amplifier hood over his face as a last step. He was now encased in shadow, able to see, but not be seen.

He turned back to the case, working more quickly now that the world was lit in a bright, greenish glow. The hidden compartment yielded up a holster and needle gun that he belted around his middle. Two small rectangles the size of dominoes went into his breast pocket. He visually inventoried the half dozen tiny vials in the bottom of the case, checking them for any telltale signs of breakage before carefully resealing the hidden compartment. The floorboards creaked slightly as he moved to the open window.

There were two guards roaming more or less at random through the courtyard below. Both were fairly distant from the hacienda and Beckwith took advantage of this good fortune to lever himself up onto the tiled roof of the hacienda. Once there, he catfooted his way to the far side of the building, the side closest to the Sonoran bivouac. After a moment's hesitation at the edge of the roof, he concluded that his best avenue of approach was atop the village wall. Better to be silhouetted against the black sky than the whitewashed walls of the town -- assuming that he did not break his neck in the process.

He thanked the Gods of Fission that this village was too poor to top their wall with metal spikes or barbed wire as he moved in a balancing act *cum* hundred-meter dash along the narrow, impromptu footpath. In a matter of seconds, he found himself overlooking a small sea of tents.

The Sonoran encampment was a sturdy little fortress with an air of permanence about it. On one side, the conquerors had used the village wall -- the same wall where Beckwith now squatted. Everywhere else, they were building new walls from native rock cemented together with adobe. By the progress they had already made, Beckwith judged their annexation of Nuevo Tubac would be complete within another month.

The thought left a sour taste in his mouth. He liked Ynicente Galway and the people of this village. It would be a tragedy to see them fall under Juan Pablo's iron heel. The real tragedy, of course, would be losing Esperanza Galway. He had watched that precocious little girl for nearly ten years now with an interest far from avuncular. The Public Health Service's greatest need was for good people and Darol Beckwith had planned to recruit Espe Galway for the training academy on his next visit. Now there was a good chance that would never happen. Keeping this one pueblo out of Sonoran hands was not his concern at the moment. Nor was securing Espe for the service. His current mission went far beyond the mere delivery of a few hundred likable people from the bonds of slavery.

Beckwith slid down from the wall, chiding himself for the nasty tendency towards morose thoughts he had developed lately. Then he hadn't time for such thoughts as he padded quietly between rows of tents, slowly making his way toward two large machines parked at the center of the encampment. A tall antenna mast rose between them.

He hid among the tents, acutely conscious of the snores around him, and gauged the moment when the two guards pacing in front of the silent machines would be at the farthest reaches of their circuits.

Then it was a swift, crouching run through a dark gap between watch fires, and a rolling dive into the shadows beyond.

The steam wagons were nothing like the pictures of the ancients' sleek machines he had seen. They were both large flatbeds, with their alcohol-powered engines mounted toward the back near the drilling fixtures. The whole of the wagon bodies in front of the main tiller was covered with canvas. Beckwith pulled himself aboard one, being careful not to dislodge the loose equipment scattered haphazardly around the floorboards. Once inside, even his light amplifiers were of limited use as he found himself groping in murky surroundings.

His first stop was at the ancient radio set that was perched on a built-in shelf on one side of the steamer. As expected, the radio was a pre-Catastrophe model, its black plastic case cracked and its battery pack trailing an unsightly cluster of wires. Beckwith removed a screwdriver from his pocket and quickly opened the back of the transmitter to reveal the integrated circuitry inside. He removed one of the dominoes from his pocket and wedged it into the radio's power supply. He then hurriedly replaced the back of the case.

Sometime tomorrow, after the radio had worked for several hours, there would be a quick crackling noise and a puff of smoke from inside the circuit enclosure. When the Sonoran operators opened the case, they would find fused and twisted circuitry, the apparent victim of a massive short circuit. With any luck, they would mark the failure as one of old age. Whether they did so or not, however, it was vital to the success of Beckwith's mission that contact between the Mexican expeditionary force and their emperor be severed.

After replacing the radio on its shelf, Beckwith quickly searched the steamer for spare transmitter parts. He poked into various boxes with the beam of a tiny flashlamp, cataloging items by sight and feel as he went. He quickly found the metal detectors and radiation counters of which Espe had spoken. He also found what appeared to be a jury-rigged seismograph from pre-Catastrophe days in one corner. Next to it lay a pile of recordings. Apparently, someone was very interested in the geological formations in this area. Maybe the Sonorans were prospecting for oil!

He considered the possibility. True, the ancients had pretty well drained the planet of the legendary stuff, but who knew? There might still be a pool or two around for the taking.

He photographed everything and slipped outside, intending to give the other steam wagon a thorough going over. He changed his plans as he caught sight of the burgeoning glow on the eastern horizon. It would be light enough for naked eye seeing in another half-hour, and by that time, he planned to be safely back in his room.

#

"All right, Espe, what *istinea*?"

"Tinea refers to a group of common fungus infections, Dr. Darol; also known as ringworm. The fungi involved are *Microspora*, *Trichophyton*, and ... uh, ... *Epidermophyton*. *Tinea capitis* is ringworm of the scalp; *tinea cruris*, of the crotch; *tinea pedis*, of the feet."

"And how does one treat these very itchy problems, Espe?"

"By direct application of any one of several anti-fungal agents, including..."

Beckwith smiled. "Never mind. I should have known that you would keep up with your studies. You'll make a fine doctor someday."

“Do you really think so, Dr. Darol?”

“I would not have said it if I didn’t,” he replied gruffly. “Now go get me a bucket of hot water so we can get this place cleaned up.”

Beckwith and Espe Galway had spent the morning preparing one room of Nuevo Tubac’s small church for the traveling doctor’s use. One of Ynicente Galway’s large mahogany tables had been moved there from the hacienda, and draped in cloth that had been boiled in disinfectant. A similar cloth covered another table on top of which several of Beckwith’s instruments were neatly arranged. Battered instrument cases marked with a caduceus were piled in a corner. On their covers were stenciled the words:

PUBLIC HEALTH SERVICE

In Service to Humanity.

Beckwith and Espe had worked through the morning and were ready to begin the sterilization process as time for the noon meal approached. It was the third year that Espe had acted as Beckwith’s nurse, and she went about the preliminaries with the practiced touch of a veteran. As Espe left the church to retrieve an iron kettle filled with steaming water, Captain Villela entered the examination room and gazed around in interest.

“Good morning, Doctor Beckwith,” the Captain of Ordnance said. “The general sent me over to see how you are getting along. I trust you have all that you need.”

“Thank you, yes,” Beckwith replied. “We’re about to disinfect the examination room.”

“So I see. I am surprised that you go to the trouble of individual diagnoses. I always thought that you public health people were interested in water supplies and hygiene, and left the actual laying on of hands to others.”

Beckwith shrugged. “We circuit doctors tend to be jacks of all trade, Capitan. And while our primary duty is to insure the health of a community through public hygiene, we also dabble in individual cures.”

At that moment, Espe returned with a kettle full of boiling water from the fire where Beckwith had sterilized his instruments.

“Will that be all, Captain Villela?” Beckwith asked as he prepared the water by measuring out a few drops of disinfectant into the kettle.

“Yes, Doctor. Let me know if you need anything.”

“Thank you, I will.”

Beckwith watched the officer stride out into the bright sunshine before turning to Espe. “Shall we begin scrubbing?”

After twenty minutes of hard labor, Beckwith called a halt. The two of them sprawled on the floor and examined their handiwork.

Espe looked at Beckwith, her black eyes regarding him seriously, and said, "Doctor Darol."

"Yes, Espe?"

"I've been meaning to talk to you about Manuel Vargas."

"What about him?"

She leaned close and lowered her voice to a whisper. "Sometimes when he would get drunk, Old Manuel would say things."

"What sort of things?"

"He would hint that you and he were the only two who knew a great secret."

"Oh?" Beckwith asked, his eyebrows rising in inquiry.

"He would never tell anyone anything, you understand. He would just keep muttering that you were the only one who appreciated him. I didn't think anything of it until they caught him with that radio."

"You said yesterday that it might have been a radio. Now you're sure?"

She nodded. "The fat Generalissimo had it on my father's desk, looking at it, when I took him his lunch one day. It was a radio all right, although unlike any I have ever seen. There was a black box with LED's on its face and a keypad. It was attached by a coiled cord to something that looked like an umbrella frame with a pistol grip."

"Sounds like some sort of communications gear," Beckwith said, nodding, "but why do you think I know anything about it?"

"My room is across the hall from yours."

"So?"

"This morning I heard you moving about before dawn. I figured to tell you about Manuel Vargas then, so I tiptoed across the hall to your room. I knocked twice before opening the door. You weren't there."

"Maybe I went down to the outhouse."

Espe shook her head. "I would have heard you on the stairs."

"So, if I wasn't in my room, where was I?"

"I think you were spying on the Sonorans."

"And if I was?"

"Then I want to help you."

Beckwith did not answer for a full minute. Finally, he said, "Perhaps you *can* help. I would like to look over the Sonoran excavation. I need a way to slip out of the village without being seen. Have any ideas?"

She grinned and was again a little girl. "I will come to your room after dinner and show you the way."

#

“Watch your head.”

Espe’s warning echoed hollowly from the walls of the small tunnel through which they crawled on their hands and knees. Beckwith glanced up at the sound, wondering how much further they would have to travel in this cramped style. Espe was a black silhouette framed in the dim light of the flash she carried.

The two of them had spent the day treating the people of the village. Night had begun to fall when they finished with their last patient and returned to the hacienda. At dinner, General Trujillo had seemed distracted, as though his mind were on something more important than making conversation with his guests. Beckwith told another of his stories and swapped lies with some of the Sonoran officers before going upstairs to bed. An hour later, Espe had knocked softly on his door and the two of them had slipped down into Ynicente Galway’s wine cellar. There Espe had shown him the entrance to an escape tunnel concealed behind one of the wine casks.

They had crawled some two hundred meters, and Beckwith was about to ask Espe how much farther it would be, when a round metal hatch appeared at the end of his restricted field of view. In another few seconds, he found himself half crawling/half dragged out into the frigid night air. It was still an hour or so before midnight and a quarter moon hovered in the sky overhead, casting a soft silver glow across the landscape.

Beckwith glanced back at the tunnel entrance. The escape hole was well camouflaged. If it had not been standing agape, it would have been invisible. He doubted that he could have spotted it in broad daylight, even had he known where to look. Espe did something to a section of the rock wall through which they had emerged and the camouflaged opening swung shut on well-oiled hinges.

“Which way?” he asked.

She pointed a direction and they started off, keeping to the cover of the arroyo into which they had emerged. Both were dressed head to toe in black, although not in darksuits. Since Espe had none such, the protection offered by Beckwith’s darksuit would have been useless.

Espe led him across the desert and up a rise that Beckwith knew from previous visits was actually the rim of a broad depression in the midst of rolling hills. They carefully worked their way to the crest of the rise, moving the last hundred meters on their bellies. When they reached the top and were able to look into the bowl-shaped valley beyond, they found a large detachment of men working around a wooden derrick. The derrick covered a vertical shaft that had been sunk into the dry desert soil. The scene was lit by numerous lanterns strung between rough-hewn poles. A steam engine puffed away beside a ramshackle building, emitting a column of black smoke into the moonlit sky. As they watched, a lift platform surfaced in the midst of the sturdy looking derrick and was immediately manhandled to solid ground.

“Recognize anyone?” Beckwith asked Espe, relying on her younger eyes to substitute for the binoculars the Sonorans had confiscated.

Espe rose up on her elbows and squinted at the activity for a few moments. “There is Capitan Rodriguez talking to a soldier. And over there...” she gestured to the shaft. “... is a *Coronel of Ingenieros* who has been absent from dinner for the last three nights. The man he is talking to, the one with his back to us, is General Trujillo, I think.”

“I want to get closer,” Beckwith said. “You stay here.”

He picked a tentative route that would take him close to the excavation. The floor of the small valley was covered with mesquite bushes and a few scrubby Palo Verde trees. Even without his amplifier hood, he could see well enough by moonlight to spot the sentries posted around the rim. There seemed to be quite a few of them. They would make any approach difficult, but the ground cover was such that if he were careful, he should be able to get into position without being spotted.

“There is an old drainage ditch of the ancients a hundred meters from here, Doctor Darol. I will show you.” Espe did not wait for an answer, but moved forward with a catlike speed that Beckwith knew he would be hard put to match silently.

The drainage ditch was a concrete lined culvert that had been stained and broken by age until it was open to the sky. Beckwith studied the workmanship. There was no mistaking the product of the pre-Catastrophe machine culture.

“Why didn’t anyone ever tell me about this, Espe?”

She looked at the jutting, broken concrete and shrugged. “You never asked, Doctor Darol. Father says that this ditch paralleled an old railroad spur before someone ripped up the tracks.”

“A railroad? Here? The maps don’t show any railroad.”

“Maybe father was mistaken.”

“Where does this lead?” Beckwith asked, gesturing along the length of the ditch.

“Almost to the Sonoran diggings. We should be able to see everything from the other end. Just be sure to stay down.”

This time Beckwith took the lead after debating whether he should send Espe back to the pueblo. He decided against it, primarily because he knew he could not find the tunnel exit again in the dark. A cautious half-hour later, they were less than two hundred meters from the Sonoran shaft.

“Stay here,” Beckwith said. “I’m going to get closer to see if I can hear anything.”

“I’ll come, too,” Espe replied as she prepared to follow him.

“No, you won’t!” he hissed as he grabbed her wrist. He swallowed, regained control, and continued in a softer voice. “Look, the chance of getting caught goes up with the square of the number of people blundering around out there. You stay here. If I am spotted, you try to make your way back on your own. I have told you how to find my radio in the church. Get it and report what happened.”

“I will, Doctor Darol,” she whispered.

He slid out of the ditch on his belly and began the long crawl toward where a clump of Sonorans, including General Trujillo, were discussing something in voices too low to understand. He took his time, relying on years of experience to find every possible concealing shadow. When he had closed the range to less than a hundred meters, he rose on his hands and knees and scurried across an open gap in the mesquite. The toe of his boot caught on a half buried, dry branch. The crack of its breaking was like the blast from a rifle. He froze as he hoped the excavation and steam engine noises would cover the sound. Then he saw a man’s silhouette against the light of a distant lantern as a sentry moved cautiously through the brush to investigate. A flash beam moved in his direction. He got to his feet and set off in a broken country, stooped over run.

There were sudden shouts behind him and a bullet zipped past his ear with an angry wasp sound.

Up on the depression rim, other flashlamps were coming alive. Two such were directly in front of him. He changed direction quickly, heading away from Espe's hiding place. He hazarded a backwards glance over his shoulder to see how close his pursuer was. As a result, he did not see the dark shape rise from the brush and lunge for him. Two bodies collided with a bone-jarring *thud*, and Darol Beckwith slipped unwillingly into unconsciousness.

#

Beckwith opened his eyes and tried to focus them, but the small red crested woodpecker inside his skull seemed determined to prevent it. He attempted to lift his head and gave it up as a bad job. His body was one giant ache. Even his teeth hurt.

At the thought of his teeth, he quickly tongued the false molar he'd so carefully fitted into place back in his room at the hacienda. His questing tongue found the tiny container intact, for which he said a silent prayer. He reopened his eyes. A flesh colored blur quickly filled his field of view and someone's smelly breath was hot on his face. After a few seconds' concentration, he managed to make out the features of General Trujillo.

"Welcome back to the living, Medico. Are you well?"

Beckwith heard his own voice respond in a croak. "My head is killing me. Where am I?"

"In our storehouse. Why were you spying on us?"

Beckwith took a deep breath and hoped the racking pain in his chest did not signify a broken rib. "I wasn't spying. I was curious about whatever it is you are doing out here."

"You were spying."

"What's to spy on in this godforsaken wilderness?"

"Who sent you? The Californians?"

"I don't know what you're talking about," Beckwith said as he struggled to a sitting position.

"And I suppose you know nothing of the failure of our transmitter this afternoon."

"Nothing."

The general opened his mouth to reply, but closed it again when one of his troopers entered the storehouse and began conferring with him in hurried whispers.

Trujillo turned to leave. He spoke to Beckwith's guards as he swept out of the hut. "Bring in the girl and leave the lantern. We will give Doctor Beckwith a few hours to consider his fate. Perhaps he will be more forthcoming."

Moments later, a small figure sailed through the air and sprawled face down on the packed earthen floor. The Imperials left, and there was the rattle of a heavy beam being braced against the door. Beckwith crawled to where Espe lay, not heeding his own contusions. He gently turned her over as pangs of guilt stabbed at the conscience he had long thought armor plated against such feelings. Some Sonoran soldier's fists had left one eye nearly swollen shut and a dried trickle of blood emanating from a bruised and split lip.

Espe moaned and opened her eyes. "I'm sorry, Doctor Darol. They got me."

“So I see,” he said, his voice gentle. “Anything feel broken?”

She shook her head, and then sat up with considerably more ease than he had managed. The nascent tears that had welled briefly in her eyes were gone as quickly as they had come, and only concern showed on her face as she reached out to touch his cheek. “They beat you, too!”

He managed a lopsided grin. “Just clumsy. I tripped over my own feet.”

She shivered. “I was almost away. One of them caught me in his light just as I left the drainage ditch. I tried to fight. I got in a good kick. I may have broken one man’s kneecap.”

“Good for you! That’s one for our side.”

“What are we going to do now?” Espe asked.

“I guess we wait,” Beckwith said as he climbed unsteadily to his feet and wobbled to the door. He placed one eye to a crack and gazed past the broad back of the guard outside. From somewhere nearby came the *chuff, chuff, chuff* of the steam engine and the acrid smell of mesquite smoke.

The scene outside was lighted by the same lanterns he had observed previously. Rather than being spread out across the work site as they had been, however, the Sonoran soldiers were gathered in a small clump around the head of the shaft they had sunk into the floor of the desert. They grew excited as the lift car was hoisted out of the shaft via the rough-hewn derrick. Beckwith watched as General Trujillo and another man stepped onto the platform of timbers and then disappeared below ground.

“What do you see, Doctor Darol?” the girl asked.

He turned from the wall and hobbled back to where Espe sat cross-legged on the floor. He slid down beside her and quickly described the scene outside.

“What are they looking for?” Espe asked.

Beckwith hesitated, wrestled briefly with his conscience, and then came to a decision. “Do you really want to know?”

Espe nodded, her expression grave.

“I think they’ve found an old nuclear fuel depository.”

She frowned. “I don’t understand.”

“It’s simple, really,” Beckwith said with a humorless smile. “Our ancestors needed a place to dump the spent fuel from their nuclear reactors. They built a series of underground depositories for the purpose. For reasons of security, and also to keep the public outcry to a minimum, they kept the location of those depositories secret.”

“And one of them was near Nuevo Tubac?”

Beckwith shrugged. “We don’t know. Too many records were lost during The Catastrophe. There *was* a depository somewhere in the southwestern desert. This may well be it.”

“Why would General Trujillo go to all of this trouble? Surely Moctezuma isn’t attempting to refurbish one of the old Mexican reactors.”

“I only wish he were, Espe. No, the Imperials are after spent reactor fuel because of the plutonium

it contains. My bosses in San Francisco think Moctezuma is trying to build his own nuclear weapons.”

Espe crossed herself and grimaced at the pain the gesture caused. “By the blessed Virgin, it can’t be true!”

“That’s the reason I came here, Espe, to see for myself whether it’s true or not.” Beckwith slipped a thumb and forefinger inside his belt and came up with a small cylindrical object. “Here, let me take care of your pain.”

“What’s that?”

“Field syringe,” he replied as he stripped the cover from the short, sharp needle. “It contains a mild pain killer.”

“I don’t need it.”

“You’ll take it anyhow. I feel guilty about bringing you along, and it hurts me to watch you move. Give me your arm.”

Perplexed, she offered him her bare arm. Beckwith searched for a spot that looked cleaner than the rest, then slipped the needle beneath the skin. Espe started at the sudden prick, but was otherwise stoic about the process. When the golden fluid had disappeared into the girl’s bloodstream, Beckwith removed the syringe, snapped it in two, and then tossed it into one corner of the shed. “Now, if they’ll only leave us alone for a few hours...”

“What did you say?” Espe asked as she rubbed at the needle mark on her arm.

“Nothing,” Beckwith replied. “Let’s try to get some sleep.”

#

It was nearly dawn before anyone bothered them. Beckwith sat with his back to the rough lumber of one wall, dozing fitfully with Espe cradled in his arms. He was awakened by the sound of heavy wooden beams being lifted from in front of the door. Espe stirred and the two of them climbed to their feet as Captain Villela ducked through the low doorway.

“The General wants to see you two!”

Two guards pushed their way past Villela, grabbed Beckwith and roughly thrust his wrists together behind him. Sharp pains shot up his arms as they tied his wrists together with rawhide cord. They did not bother restraining Espe. One of the guards merely grabbed her hair and dragged her yelling out into the cold night air. Another sent Beckwith reeling after her with a blow from his rifle butt.

When they reached the derrick, Captain Villela gestured to the rickety structure suspended over the mouth of the shaft. “Onto the car, Doctor!”

“No need for the girl to come along.”

“Sorry, I have my orders. The General wants both of you below. Get onto the car.”

The platform shifted under Beckwith’s weight as the doctor climbed aboard. The movement nearly caused him to lose his balance. He was followed by Espe Galway and the two guards. Villela remained on solid ground. A quick order from the captain sent the lift car on a jerky descent into the shaft.

The car dropped for nearly a minute while Beckwith and Espe studied the varied strata through

which they were descending by lantern light. The rock walls finally fell away on all four sides, marking their entry into an underground chamber. The lift platform dropped another ten meters before it grounded.

Beckwith blinked as he took in the details of his surroundings.

The chamber was long, hemispherical, and sloping. A single set of railroad tracks ran along its center. Uphill, lantern light reflected off a jumbled barrier of rocks that marked the location of an ancient cave-in; while downhill, the tunnel disappeared around a curve. One of the guards nudged Beckwith with his rifle butt. As he stepped down, the doctor fell to one knee amid the rubble that littered the tunnel floor from the spot overhead where the Sonorans had pierced the concrete lining of the tunnel. Espe hurried to his side to help him to his feet.

The small party moved along the length of the railroad track. As they did so, they passed smaller side tunnels. Flickering lanterns betrayed the presence of Imperial work crews in several of these. They passed men in the main tunnel that appeared to be tracing cable runs. Finally, they came to a huge vault-like door with a man-size portal set in its face. The guards ushered them through the smaller opening and into the chamber beyond.

Beckwith found himself in an artificial cave roughly spherical in shape and some fifty meters in diameter. The cave's equator was girdled by a catwalk of steel meshwork on which they stood. The cavern was filled with massive machinery the likes of which Beckwith had never seen before. At its center was an object he recognized after a moment's glance. In that moment, Beckwith knew that his superiors were wrong in thinking the Mexicans were after the old fuel depository. Whatever else this underground installation had been, it had never been used to store spent reactor fuel. However, that revelation brought no comfort. For directly in front of Darol Beckwith, suspended from the roof by an intricate system of cables, was a small winged spacecraft!

#

"Ah, Medico, glad you could join us!" General Trujillo's voice echoed through the underground chamber as he hailed them from within the delta-winged craft's airlock. Trujillo stepped onto the meshwork bridge that connected ship to catwalk and clumped to where the prisoners were standing. He grinned toothily. "What do you think of my little toy?"

"Impressive," Beckwith replied. "What is it?"

"A single-stage-to-orbit, scramjet powered command craft," Trujillo replied. "Or so my experts tell me. But then, you already knew that, didn't you?"

"How could I have known?" Beckwith asked.

"Because your bosses, the Californians, told you what it was that we were after."

"I work for the Public Health Service, General. Our allegiance is to humanity, not to any sovereign state."

"Now why don't I believe you?" Trujillo asked. He turned to the guards who were gawking in awe at the ship. "Leave the girl. Go outside and close the entry. I have something confidential to discuss with the doctor."

"Si, Mi General!"

The two guards returned to the tunnel beyond and closed the man-size door behind them. "What I

have to say is not for the ears of common troopers, Medico,” Trujillo said.

“Nor for those of a fifteen year old girl,” Beckwith replied.

Trujillo moved to where Espe stood, took her chin in one hand, and tilted her face upwards to catch the light of the overhead lanterns. “If you refuse to name your employers, Doctor Beckwith, I will give Esperanza to my troopers for their pleasure. These are hard men. I doubt she will survive even a few hours of their ... shall we say, attentions?” He released Espe, who shrank back in horror, stopping only when she encountered the safety railing at the edge of the catwalk. “Will you speak, or shall I call the guards back?”

“No one sent me.”

Trujillo stared for a long moment at Beckwith, then threw his head back and laughed aloud. The sound of his laughter echoed eerily in the dimly lit cavern. “You almost convinced me that time, Medico. You had just the right mix of indignation and earnest fervor in your voice. But then, anyone the Californians would send would have to be a consummate actor.”

Beckwith did not answer.

Trujillo frowned. “Come now, Medico. I am truly interested in your opinion of our find. Is it worth your death and that of the girl to protect the traitors in Mexico City who told you of my mission?”

Beckwith made a show of studying the winged spacecraft. Finally, he said, “Why the hell would anyone want this museum piece? After eighty years in storage, it cannot possibly be flown. And even if it could, you’ll never get it out of this hole.”

Trujillo gestured at the series of large rams that surrounded the ship and the heavy steel cylinder suspended in the gloom overhead. “Penetration equipment, Doctor Beckwith. Getting it to the surface is the easiest part of the task ahead of us. As soon as we trace down the emergency generators, we will let the ancients’ own equipment do the job.

“As for the airworthiness of the craft, you are wrong when you say it cannot be flown. I have just finished a tour of the interior; which, by the way, was filled with an inert gas until just a few hours ago. These command ships were designed for indefinite periods of storage. His majesty’s archivists believe the reconditioning task to be well within the current capabilities of the empire. And if they are wrong...” Trujillo gave an expansive shrug, “I won’t be the man flying it.”

“Even if you’re right, what use is it? Where can you fly it to?”

The general smiled. The shadows on his face turned the expression ugly. “*ToHigh Citadel*, of course. The orbital fortress is rumored to possess large stocks of nuclear weapons. If Mexico can obtain those stocks, we will put an end to the Californians’ arrogance! But enough of this. Are you going to tell me your mission, or do I have my guards escort Esperanza down a side passage to begin the festivities?”

“You are as big a bastard as your emperor,” Beckwith cursed.

Trujillo took one long stride forward, whipped back his arm, and slapped Beckwith full across the face. “You will keep a civil tongue in your head, Medico. Now quit wasting my time. The name of your employer!”

Beckwith clenched his teeth together. The gritting sound was loud inside his skull as Trujillo moved in for a second blow. The second slap was more painful than the first. Half of Beckwith’s face was

aflame as he concentrated on his tormentor through blurry eyes. Trujillo grinned evilly and moved in for another attack. Beckwith waited until the general was less than thirty centimeters distant, then spat full in his face. Trujillo staggered backwards, his features frozen in a look of shocked amazement. He slowly and carefully wiped the dripping saliva from his chin. As he did so, his expression turned to one of animal rage.

This time when he advanced on Beckwith, Trujillo's hands were balled into white knuckled fists. The general's first blow landed on the doctor's right temple, sending him backwards against the safety railing. The second smashed into his nose. The third doubled him over and drove the breath from his lungs. The pummeling continued for nearly a minute before Darol Beckwith slipped thankfully into the black comfort of unconsciousness.

#

Again, Beckwith struggled back from oblivion to a myriad of aches and pains. A fire seemed centered in his nose, and his breathing was accompanied by a recurring pain in his chest. Of more immediate concern was the arm that he could not feel at all, and the low placed ache that signaled at least one sharp-toed kick to the groin. A single cough welled up unbidden. He waited for the pain to subside before opening his single uninjured eye to survey his surroundings.

To his surprise, he found himself in his own room in the hacienda. Judging by the light streaming through the window, the time was early afternoon. Precisely *which* early afternoon was impossible to determine since the sky was the same pale blue it had been for the past several days. As he scanned his field of view, he noted a number of changes. Someone had gone to the expense of equipping the window with an iron grille. The pegs on which he had hung his clothes were bare and his valise was not in the corner where he had left it.

Beckwith carefully turned over in bed. The sudden torrent of pain that accompanied the movement left him with tears in his eyes. He let a sudden dizzy spell pass and gazed in the direction of the door leading out into the hall. He noted with interest that a ten-centimeter square hole had been messily chopped in the oak door to form a peephole of the sort guards use to periodically check their prisoners.

At the thought that a guard might be nearby, Beckwith croaked out the single word, "*Agua!*" He waited a few seconds and then repeated it in a voice that sounded like a nail being scraped across concrete. After a dozen seconds, a blond bearded face appeared at the peephole.

"Get me water," Beckwith cried out. The face disappeared and he lay back, panting from his exertions. Another minute passed before a rattling on the other side of the door signaled the unlocking of a padlock. The door opened and Espe Galway entered the room. Her face still showed the marks of her beating, but she had washed and changed into clean clothes. She smiled when she saw him awake.

"Get me a drink!" he gasped.

"Right away, Doctor Darol," Espe replied. She moved to the rough table beside his bed and poured from the pitcher sitting there. She then cradled his head aloft and let him sip the cool liquid from a ceramic cup. After two painful swallows, he signaled that he was through. She lowered him gently to the pillow.

"Thank you. How long have I been out of it?"

"Two days. I was very worried. I thought the fat general had killed you!"

"To judge from the way I feel, he came close. What are my injuries?"

He listened quietly as she cataloged the damage that Trujillo had inflicted on him. He had already deduced that he had suffered broken ribs from the fact that his chest was wrapped tightly in bandages, and every breath felt like a lung full of fire. The swollen eye was accompanied by facial lacerations; and the dizziness, coupled with the length of time he had been unconscious, confirmed Espe's tentative diagnosis of a mild concussion.

He waited until she finished her list of his ills, and then smiled painfully. "You have remembered your lessons well. What is your prognosis, Doctor Esperanza?"

"That you will live to face a Sonoran firing squad, Doctor Darol, as will I."

"Is that what they have decided to do with us?" he asked.

She nodded. "Those were the orders General Trujillo gave his men when he finally stopped kicking you. He told them to bring you here, and ordered me to care for you so that you would be awake and aware when the bullets tore into you."

"What about the ship? Have they raised it yet?"

Espe shook her head. "All work has stopped. General Trujillo gave orders that he must be present during the attempt. He was directing the salvage yesterday when he collapsed in the ship cavern. They have him in my parents' room."

"What is his condition?" Beckwith asked.

"His fever is very high. Forty-one degrees the last time I checked. He has developed convulsions and is raving. He has had numerous diarrhea attacks. I have tried to care for him, but he does not respond. *Capitan* Villela is very worried."

Beckwith grunted his understanding, and then struggled to sit up. He tried to ignore the pain as he swung his feet over the side of the bed.

"What are you doing?" Espe asked.

"I'm going to see the patient," he replied through clenched teeth. "Now bring me my pants."

"But he tried to kill you, Doctor Darol, and will have both of us shot as soon as he regains consciousness."

"No one ever said the practice of medicine was easy. Now do as I say, girl!"

Beckwith dressed with Espe's help, and then rose unsteadily to his feet. He hobbled out into the hallway with Espe supporting him under one arm. The dozen meters of hallway was the longest Beckwith had ever walked in his life. They were met at the door to the master bedroom by Captain Villela. From the bags under his eyes and the deep worry lines in his face, Beckwith knew that the Mexican officer hadn't slept in several days.

"Doctor Beckwith, you are awake!"

"No thanks to your chief. I understand that he is ill."

"*Si*," Villela said, his head bobbing rapidly. "It is most mysterious. He was whole yesterday morning, but by afternoon had lapsed into a deep coma."

"What are the symptoms?"

“Before he lost consciousness he complained of a severe headache and pain in his chest. Do you have any thought as to what the problem could be?”

Beckwith started to shrug, remembered his ribs, and thought better of it. “From your description, Captain, it could be a number of things. I will have to examine him.”

Villela snapped out a series of orders and Beckwith quickly found himself ushered into the sickroom. The expedition’s priest stood at the edge of the bed and watched as the guards helped Beckwith into a chair at General Trujillo’s bedside. He found a position that was less uncomfortable than any other, and quickly examined the ill man while letting Villela handle the manual labor involved. When he was finished, he asked, “Where is my luggage?”

“Your equipment cases are down in the church where you left them. Your personal bag is in the study downstairs. General Trujillo was inspecting it before he fell ill.”

“Fetch the bag. I need to consult my library.”

Beckwith’s leather case was brought to him. He noted that the false bottom was still sealed, and concluded that Trujillo’s inspection had been a cursory one. He had probably planned to return to it after organizing the salvage operation. Beckwith fished a small pre-Catastrophe computer from its carrying case. He opened it up to reveal a small, calculator size keyboard and an LCD screen. He carefully typed in an inquiry, and then let his eyes scan the scrolling words. He did this a number of times before he looked up and nodded.

“What is it?” Villela asked.

“I can’t be completely sure, Captain, without tests I’m not equipped to make. However, I think your commander is suffering from septicemic plague. If that is the case, I’m afraid there is nothing I can do for him.”

“*Madre de Dios!*” the priest said from the foot of the bed as he crossed himself.

“But how can this be?”

“Who besides General Trujillo entered the spacecraft?” Beckwith asked.

“No one, Medico,” Villela replied. “The General’s orders were quite strict on that point. He alone was to enter the ship. He didn’t wish to risk one of the common soldiers damaging the equipment.”

“Then from the fact that he was the only one struck down, I can only conclude that he ran into an old war germ inside the ship. Both sides are known to have used mutated *Pasteurella pestis*, the plague bacteria, in their germ warfare laboratories. The war germs were bred for quick action and deadly effect.”

“Surely there must be something we can do,” Villela replied.

“For the General, no,” Beckwith said. “Not if it’s truly modified septicemic plague. We have ourselves to think about.”

“What do you mean?”

“I mean the damned stuff is contagious, you idiot! Why else would they call it The Plague?”

The priest crossed himself once more, while Villela merely gulped as his complexion lightened

several shades. Finally, he said, "What must we do, Medico?"

"The first thing is to seal up that devil's spawn in the cave where you found it. If the original source ever gets loose, it could decimate every town and village between San Francisco and Mexico City. The next thing is to call for help."

"But we have no radio!" the priest exclaimed. "It failed several days ago and the technicians have been unable to fix it."

"In that case, we must get you and your men to a Public Health Service station, Padre. The nearest is in Blythe, but you can't very well use that one, can you?"

"There is such a station in Hermosillo, Doctor," Villela said.

"So there is. You will have to go there, Captain."

"But there isn't time. General Trujillo was struck down within twelve hours of first entering the ship. If we too are infected, we will be dead before we reach the imperial border."

"I admit that I don't know how it hit him so quickly," Beckwith replied. "Perhaps he cut his finger while he was in the ship and the bacteria went directly into his bloodstream. You will have to pray that it does not attack you that quickly. However, if any of your men have been infected, they have no more than a week to reach adequate medical care. Perhaps you can send a small party ahead with remounts and alert the doctors at Hermosillo Station. The Duke can loan them one of his aircraft to fly out to meet you on your line of march."

"What of the village, Doctor Darol?" Espe asked, terror in her voice.

"We'll have to do the same. We will send riders as quickly as possible to Blythe. Perhaps they too can get an aircraft to bring serum here. In any event, as soon as General Trujillo dies, we will burn his body and all of the bedding in this room. I am sorry, Espe, but it is all we can do."

#

Darol Beckwith stood on the balcony of *Hacienda Galway* and gazed toward the south where a cloud of brown dust hung low on the horizon. It had been long minutes since even his electronic binoculars had been able to pick out the retreating Sonoran column. Even so, he continued to watch until the cloud of dust kicked up by their passage had begun to dissipate on a gentle easterly wind.

Despite their obvious fear of the plague, the Sonorans had retreated in good order. Captain Villela had waited for the moon to rise the previous evening before dispatching a group of his best riders toward Hermosillo. The main column had followed at dawn. Judging by the swiftness with which the men and horses disappeared from sight, Beckwith estimated that they would make at least sixty kilometers their first day.

He lowered his gaze to the remains of the Sonoran encampment just beyond the village wall. The two steam wagons were parked where he had first seen them. Like the rest of the heavy equipment, they had been judged too cumbersome to take along on the forced march and had been abandoned. The cavalrymen had been gone only a few minutes when the first villagers ventured forth to salvage what they could. Since then, practically the entire population of Nuevo Tubac had joined in the excitement. The abandoned equipment would go a long way toward repaying the people of the village for the occupation.

On a small rise beyond the abandoned encampment lay a mound of blackened wood and gray ash from which a thin wisp of oily smoke rose lazily into the air. The smoke marked all that remained of

General Miguel Stefan Trujillo's funeral pyre. The Sonoran commander had stopped breathing at 04:16 that morning, and had been cremated shortly thereafter. The expedition priest had prayed for the soul of the departed even as soldiers doused the body and bedding with alcohol. Immediately following the funeral, Nuevo Tubac had been rocked by a series of distant thunderclaps from the excavation site. It had taken all of the expedition's remaining stocks of explosives to reseal the entrance to the underground base, but reseal it they had.

Beckwith was jolted from his reverie by the sound of footsteps. He turned in time to see Espe Galway join him on the balcony. "Did you get through?"

She nodded. "They said to tell you that they were sending a team via aircraft, and that it will be here this afternoon."

"And the troops?"

"The first party of California dragoons will arrive in three days. The rest will follow a week later."

"Very good," he said, smiling. Espe had been in contact with Public Health Service Headquarters in San Francisco via Beckwith's hidden radio.

"Are they gone?" she asked, gesturing after the departed column.

Beckwith nodded.

"Good riddance! Now maybe you will explain all of this to me."

"Nothing to explain," he said. "General Trujillo ran into an old war germ, got sick, and died."

"I don't think so," Espe replied.

"Oh?" Beckwith responded, his single arched eyebrow asking far more than that simple monosyllable ever could.

"General Trujillo told us that the ship had been filled with inert gas until just a few hours before we arrived. Remember?"

Beckwith nodded.

"As you taught me, "*Pasteurella pestis* carried by the fleas on rats. I hardly think the rats, the fleas, or the bacteria could have survived eighty years in a ship without oxygen."

Beckwith shrugged. "How else could he have been infected?"

"I think your saliva was filled with *Pasteurella pestis* when you spat on him."

"Then I should be dead, too."

She shook her head. "Not if you've been vaccinated against the plague. That was what that injection you gave me in the equipment shed was for, wasn't it?"

"Are you saying that I, a medical man, would intentionally infect another human being with a deadly bacteria?"

Espe slowly nodded her head.

“Do you have any proof to back up such an allegation?”

She nodded again. “I checked your teeth while looking over your injuries. I thought the fat Generalissimo might have loosened one with his blows. I found an artificial molar broken off at the root. That is where you kept the bacteria culture until you were ready to release it.”

Beckwith sighed and put his arm around Espe’s shoulder. “My ribs are beginning to ache. Why don’t we go inside and we’ll talk about this.”

Espe assisted Beckwith to one of Ynicente Galway’s softer chairs. Beckwith gestured for her to sit on the floor in front of him. She did so in a manner that made him envy the recuperative powers of the young. He reached into the pocket of his robe, fished out his pipe, and made a production of lighting it. Only when he was surrounded by a blue haze of tobacco smoke did he continue: “You seem to have some very definite ideas, Esperanza. Why don’t you tell me what you think you know.”

“I know your superiors sent you here to stop the Mexican Empire from establishing a plutonium mine. I imagine you were quite relieved when you realized that what they had found was not a nuclear fuel depository after all. Then you discovered General Trujillo planned to salvage the command ship in order to raid *High Citadel*’s nuclear arsenal, and you killed him. Did I get that right?”

“Sorry, no,” Beckwith replied. He watched his star pupil as her smile of triumph turned to a look of confusion. For a brief instant during the transformation, he caught sight of the beautiful young woman she would soon become. “The truth, Espe, is that there aren’t any nuclear weapons aboard the battle station. *High Citadel* was a command-and-control facility, and as such, was prohibited from stocking nuclear devices. True, it commanded such weapons during The Catastrophe, but those were ground and space based systems long since expended.

“And while I’m clearing things up,” he continued, “I’m afraid that I owe you an apology. That story about my coming here to stop the Sonorans from looting a nuclear depository was not the truth. Actually, the last of the fuel depositories was discovered and neutralized thirty years ago.”

“But if there wasn’t any fuel depository, and *High Citadel* doesn’t stock nuclear weapons, *why* did you kill General Trujillo?”

Beckwith sighed. “That is difficult to explain. To begin, what caused The Catastrophe?”

Espe blinked at Beckwith’s sudden change of subject. “The Sevastopol Incident, of course.”

“Sorry, but you’re wrong.”

“That’s what all the history books say!”

“Then they confuse the incident that touched off the conflagration with its root cause. It is true that the nuclear exchange was triggered by the sinking of two American destroyers off Sevastopol. The *reasons* the bombs began to fly were far more complex and spring ultimately from a single source. The underlying *cause* of The Catastrophe was due to our ancestors tarrying too long in an era.”

“What era?”

“That of unbridled offense, the period that began with the mating of nuclear warheads to intercontinental ballistic missiles and ended with the lofting of the first orbital defense systems. Nuclear tipped ICBMs were weapons of irresistible power. They so overwhelmed all other military technology that for decades no defense was possible. That unpalatable truth drove our ancestors slightly insane.

“You see, Espe, once the option for self protection is taken away, all that’s left is for one side to threaten the other with extermination should they launch an attack. The analogy that was often used was that of two men standing in waist deep gasoline, each holding an unlit match, and each ready to strike a spark at the first sign of his opponent’s doing likewise. The only recourse to having one’s own citizens incinerated was to incinerate the other side’s citizens. Is it any wonder that they were a bit paranoid?”

“But what else could they do?” Espe asked.

“Nothing,” Beckwith replied. “And that’s the point. So long as there was no defense against nuclear tipped ICBM’s, the strange logic of mutual destruction made sense. However, that logic carried with it a terrible price. Throughout history, the race has become more unified as its level of technology has risen. Nothing mysterious about that, of course. The effect is mostly a function of the ease of travel and long distance communications.

“The invention of nuclear weapons halted that process. In a world of such destructive power and half-hour flight times, a nation’s first mistake could well have been its last. No one dared take the risk that always accompanies trusting one’s enemies. So, the world divided into two hostile camps and hunkered down to glare at each other across their respective battlements.

“To give credit where it’s due, they *did* manage to control the stalemate for an admirably long time. Still, the situation was unstable. It could not endure forever. Sooner or later, one of the men in the pool of gasoline had to strike a spark with his match. So long as warfare was all offense and no defense, disaster was inevitable.”

“But warfare wasn’t all offense, Doctor Darol! They had *High Citadel* and all of the other battle stations to defend them.”

“True,” Beckwith said, nodding. “But there is always a time lag of about a generation between the time a new technology is introduced and when societies come fully to grips with that technology’s consequences. At the time of The Catastrophe, the orbiting battle stations were still too new to have put to rest a century of paranoia. Had the nuclear exchange been delayed another thirty years, things would have been different. By that time the defenses would surely have been good enough to hold the damage to a level civilization could have tolerated. Who knows? Had the consequences of making a mistake not been so grave, the various leaders might have risked trusting one another enough that they could have avoided The Catastrophe altogether.”

“What has all of this to do with you killing General Trujillo?” Espe asked.

“It has everything to do with it. As you surmised, I killed the General to stop that ship from being raised. My service keeps its ears open. One of our operatives in Mexico City picked up rumors about a discovery in the royal archives, and of an archeological expedition that was being dispatched to check it out. I was sent here as soon as we received Manuel Vargas’s report. My orders were to evaluate whatever it was that they had discovered, and to act as I thought appropriate. That is precisely what I did.”

“But why take any action at all? What could it have harmed if the Mexicans had raised that ship?”

“Do you remember what we spoke about at dinner that first night I came to Nuevo Tubac?”

“You said that nuclear weapons were too easy to build.”

“And after that?”

“You explained how we’ve managed to surpass the ancients in some fields.”

“That we have! Not many, I will admit. Nevertheless, we have had our moments. The truth is that we are recovering much faster than anyone predicted. In many ways, our current state of development is reminiscent of that of the Late Middle Ages in Europe. We too live in a world of postage stamp fiefdoms where rulers spend their time plotting the overthrow of their neighbors, or else scheming to prevent their own overthrow. As in the Middle Ages, this state of anarchy is a necessary precursor to the formation of continent spanning nation-states. Also, like the Middle Ages, we see definite signs of a renaissance emerging from the chaos of our present age. Out of this rebirth will come many things. There will be advances in the arts, in science, in mathematics. As our duchies and despotisms are consolidated, trade will increase and the grinding poverty in which we have lived these past eighty years will begin to lift. Roads will be rebuilt, oceans spanned; there will be a rebirth of intellectual vigor unmatched since before The Catastrophe.

“Unfortunately, that vigor will bring with it a much less welcome development. If there is one thing we can predict with full confidence, it is that humanity will soon attain the level of development necessary to produce nuclear weapons. Knowing human nature, we have no doubt that such weapons will be produced as soon as we regain the capacity. Once we reach that particular plateau, we will face the dilemma that nearly destroyed our ancestors.”

“Whether we survive the Second Age of Nuclear Weapons will depend on two factors: How long can we delay the inevitable conflict, and how quickly can we rebuild our orbital defenses? When the time comes, we are going to need every bit of technology that *High Citadel* represents, as well as the information stored in the battle station’s computers. If we allow that technology and information to be vandalized or squandered, we will delay by decades the time when the human race will be safely past the crisis. If, on the other hand, we conserve those assets for future generations, we may well shorten the epoch of overwhelming offense to a manageable period. Once through it, the race will reach an era of stability that could well ensure its immortality.

“Helping humanity survive the coming crisis is the true goal of the Public Health Service. We advance that goal any way we can. In this particular case, we advanced it by safeguarding *High Citadel*. In another place and time, we may choose to make certain that a king never produces a legitimate heir. In another, we may give an aged philosopher a new heart in order that he can live a few more years to complete his work. By so doing, we perform more good for humanity than with all the potions and nostrums ever peddled. That is the organization that I am giving you a chance to join, Espe. I await your decision.”

There was a long silence while Espe digested all that Beckwith had told her. Finally, she asked, “Do you truly think that I would make a good doctor of the service?”

He laughed, unmindful of the pain it caused him. “If I didn’t, I wouldn’t have spent so much time training you. I must warn you, though. The work is hard and dangerous, the food is poor, and you spend entirely too much time sleeping on the hard, cold ground. It will mean years of separation from your friends and family, and you could end up in a ravine somewhere with your throat slit or a bullet through your head. Still interested?”

“I have never wanted anything other than to be just like you, Doctor Darol.”

He nodded. “In that case, we’ll see about arranging passage to San Francisco for you when the plane comes this afternoon. I think you will find it an interesting life. I know I have!”

#

Author's notes for *Man of the Renaissance* :

Along with the passing of slide rules and massive mainframes, one of the events that has dated more science fiction stories than anything else I can think of is the fall of the Soviet Union. Having made a comfortable living most of my life building things to shoot Russians out of the sky, I rather miss their competition. Nor is the world much like the one I was born into. As I was coming of age, the nation needed an unending supply of engineers with whom to man the defense industry. I was one of them. I have happily toiled my whole life in the vineyards of aerospace, both because it is what interests me and because my nation once told me that it was my duty. Today, the engineers have been relegated to the back seat of the bus and the MBA's are in the driver's seat. It is suddenly a strange new world, one that no SF writer managed to predict. Would I like to go back to the old comfortable world in which the Earth was divided into two armed camps where everyone knew which side they were on?

Not in a million years!

However, the passing of the "Evil Empire" has wreaked havoc in all manner of literary genres. What will Tom Clancy write about now? (As I pen this, his latest 800-page behemoth sits unread on my headboard, waiting for me to get my INTERNET site online). What about Jerry Pournelle's CoDominion series or the hundreds of science fiction novels where the Cold War continued for centuries?

Man of the Renaissance is a post-holocaust story, a world in which the Russians did not go broke and where the Cold War went hot one day. Unlike *Scoop* or *The Shroud*, *Man of the Renaissance* did not just pop into my head. It languished in my idea file under the name Pluton Cavalry for more than a decade. I first attempted to write it before I made my first professional sale, and over the years, I polished that first scene dozens of times. The only problem was that I could not come up with the end of the story.

Some writers work on a dozen different stories simultaneously. I envy them that ability. I tend to concentrate on a single project until I get it done. Thus, when I graduated to novels, I stopped writing short stories. It was not that I don't like shorter fiction; I just did not want to be distracted from the books. Therefore, I was absent from the magazines for five long years.

In 1987, the end of the Soviet Union was still not in sight, but the argument over the Strategic Defense Initiative was in full bloom. As you have already learned, SDI was my idea before it was Ronald Reagan's. *Man of the Renaissance* seemed the perfect vehicle to add my opinion to the controversy. The central point of the story is that nuclear weapons have now been around for over 50 years, and that the technology that initially produced them was primitive by today's standards. Sure, the Manhattan Project built the atom bomb, but how successful would they have been if they had been ordered to build something difficult - like a Video Cassette Recorder (VCR)?

Man of the Renaissance was published in the April 1988, issue of Analog Science Fiction/Science Fact magazine.

GRIDLOCK

Where would you go if you had invented a time machine, but could not steer it?

John Thurman Smith stood on the balcony and gazed into the night. Manhattan was ablaze with lights as people went about their business in the city's multitude of kilometer-tall residence towers. He faced outward, letting the cold wind ruffle his hair while it cleared his head. The drink he had brought with him sat untouched on the stainless steel guardrail that encircled the balcony.

The party inside had been going on for the better part of two days, long enough that most of the original guests had long since departed. If anything, it had grown larger as the first group had been replaced by a second (and in some cases, a third) wave of arrivals. Smith would have liked to go home, as well. He couldn't. Not only was the party taking place in his apartment, he was the guest of honor.

He listened as the sound of laughter and applause burst forth from his darkened living room. They must be showing the holograms he had taken aboard *Kon Tiki III* again. The autocamera had caught him just as a giant wave had washed him overboard during a storm. The hologram showed him frozen in time up to his neck in froth. His sour expression epitomized all the injustice heaped on mere mortals by an uncaring universe. It was *very* funny!

The sounds from the party got louder, then quieted again. Someone had exited through the door leading from the living room to the balcony. He turned to see a woman silhouetted in the flickering light. She was blonde, beautiful, and of indeterminate age. She seemed to glide to where he supported himself with his elbows resting on the railing.

"Hello," she said in a husky contralto. "I wondered where the great adventurer had gone."

He smiled his professional greeting smile. "I don't believe we've met."

She held out her hand, betraying the fact that she was older than she looked. Ever since an outbreak of pseudo-leprosy fifteen years earlier, bowing had been much in vogue. "Irina Scorvini, Mr. Smith. I arrived an hour ago. If you came out here for solitude, I'll go away and leave you alone."

"Nonsense. It was getting stuffy inside. I stepped out for a breath of fresh air."

She gazed out across the city in the same direction he had been looking. "The lights are very beautiful tonight, aren't they?"

"That they are."

After another moment, she seemed to come to some internal decision. She said, "Do you mind if I ask you a personal question, Mr. Smith?"

"I'm John to my friends. What's the question?"

"I was watching the pictures inside. Why do you do it?"

"Do what?"

"Risk your life the way you do? This *Kon Tiki* expedition was hardly your first escapade. You climbed Mount Everest two years ago. If I remember correctly, you celebrated the Armstrong Tercentennial by hiking across the Sea of Tranquility in an antique spacesuit. Are you trying to commit suicide?"

He smiled. "Hardly. The fax services exaggerate the danger. True, I followed Sir Edmund Hilary's

original route up Everest, but I had the latest in climbing gear, a modern oxygen breather, and full communications with the Everest Summit Hotel. As for my vaunted stroll across *Mare Tranquillitatis*, the suit may have been a replica of an Apollo moonsuit, but my environmental control system was the best money could buy.”

“And your recent voyage aboard a log raft?”

He shrugged. “I could have summoned up rescue within twenty minutes if I’d gotten into trouble.”

“But you were nearly lost at sea!”

“I had a safety line. I was also wearing a locator beacon.”

“But isn’t it dangerous to do all of these things alone?”

He laughed. “Believe me, if I could have found someone to go with me, I would have. I’m afraid people aren’t very adventuresome.” He peered at her in the light from the living room. She had the most beautiful green eyes. Also, the wind whipped her gauzy gown in a most fetching manner. “Are you really interested in why I do these things?”

“I wouldn’t have asked otherwise.”

“Very well. How old are you?”

She smiled in a way that told him that she had been born when no gentlemen would ever ask that question of a lady. “I will be 78 next August.”

“Funny, you don’t look it.”

“Of course not. Physically, I haven’t changed since I was thirty.”

He nodded. “And barring accidents, you can expect to be young and healthy for another century at least. I, on the other hand, am only 26.”

“All the more reason for you to be careful. You have so much to live for.”

“The truth, Irina, is that I find modern society boring. People never seem to *do* anything. They are vicarious spectators. They wrap themselves in so many layers of swaddling that they can never hope to experience life in the raw. When was the last time someone punched you in the nose?”

She frowned and got a far off look in her face. “When I was twelve. I called Tommy Rankine a name and he hit me.”

“What risks have you taken since?”

“As few as I could manage,” she replied with more honesty than he expected.

“That makes my point. Life without risk is tasteless. There is more to living than merely accumulating birthdays.” He stopped and gauged his listener’s reaction. Something was wrong.

“Don’t stop,” she urged.

“Nothing more to say,” he demurred. “Now then, do you mind if I ask *you* a personal question?”

“Please do.”

“My lifestyle is very attractive to certain women. When you came out here, I had you classified as someone interested in an evening’s recreation. I think I have made a mistake. Who are you?”

“I told you. My name is Irina Scorvini.”

“That isn’t what I meant. Why did you come here? You don’t strike me as someone looking for a romp.”

She sighed. “You are very perceptive for one so young. Yes, I have an ulterior motive. I am Director of the Time Laboratory and we have need of a man of your talents.”

“Oh? To do what?”

“I’m not free to discuss the matter here. However, if you will accompany me, I guarantee that you won’t be bored.”

He thought about it for a moment, then said, “Sure, why not? The party was beginning to drag anyway.”

#

Two hours later, the aircar containing Smith and Professor Emeritus Irina Scorvini, Ph.D., began letting down toward a great pyramid of a building on the outskirts of Mexico City. The car made a sweeping turn before flaring to a landing. Smith peered at the multicolored lights in the park below. “What, no dinosaurs?”

“Very funny.”

After landing, Irina led him to the pyramid’s rooftop entrance, down a flight of stairs, and through a long hall to an auditorium-size conference room. The sole occupant of the room was a mustachioed man seated at one end of an enormous mahogany table.

“John Smith, may I present Doctor Pedro Arturo Vasquez, Deputy Director of the Time Laboratory?”

The two men exchanged greetings, after which Irina directed Smith to a seat next to Vasquez. She took the chair opposite them.

“How much do you know about the time laboratory, John?”

“Precious little. You’re funded by the planetary government and do research into the nature of time travel.”

“That is more than 98% of the public knows about us,” Vasquez replied with a hearty laugh which caused ripples in his oversize paunch. “Time travel has been a great disappointment to most people ever since its discovery in the mid-twenty-first century.”

“You mentioned dinosaurs,” Irina said. “I would give fifty years off my life to see a dinosaur. The sad truth is that our machines can never bring us back photographs of dinosaurs, saber-toothed tigers, or Paleolithic man.”

“Why not?”

“It’s a matter of control. While we can modulate our machine’s displacement in time fairly well, we have no control at all over where they emerge. Once it has been time shifted, a machine may materialize

anywhere in the universe where the local mass density is less than 10 atoms per cubic centimeter. In a way, that is lucky. It means our machines will never materialize inside a planet or a star.”

“What you are saying,” Smith said, “is that you can’t steer!”

“Correct,” Irina replied. “The theory of time travel offers us no hope that we will ever be able to control the spatial coordinates of our points of emergence. Where a time machine materializes is governed solely by random quantum effects.”

“Surely you can see our problem,” Vasquez said, giving Smith a mild whiff of garlic breath. “In one hundred years of operations, we’ve collected literally millions of holograms taken from deep interstellar space. *Every damned one of them portrays a starfield more or less identical to the one you can see from the roof of this building!*”

“How do you know you are going into the past then? Maybe your machines are merely flying off into space somewhere.”

“Not possible. We always measure the temperature of the CBR on emergence,” Vasquez responded. “That tells us the date to within 100 million years or so.”

“CBR?”

“Cosmic background radiation. The universe started out as a point of nearly infinite density that exploded outward in what we refer to as ‘The Big Bang.’ That original explosion has been expanding for 14.2 billion years now. As the universe expands, the radiation released by The Big Bang has been cooling off - ‘red shifting’ in scientific parlance. In our epoch, the temperature of this cosmic background radiation has reached 2.7 degrees Kelvin. The CBR is the quiet hissing noise you hear when you focus a radio telescope on a dark region of sky.

“Obviously, the farther you go back in time, the hotter the CBR. It rises a few degrees every billion years or so. By measuring its temperature wherever our machines emerge, we can calibrate how far they’ve traveled backward in time.”

“If you can’t send your machines back to historic or pre-historic times, what good are they?” Smith asked.

“Despite our limitations,” Irina replied, “we do important work. By observing the universe in previous epochs, we measure things the astronomers cannot. For instance, it was the Time Laboratory which first derived the correct value for the Hubble Constant.”

Smith had no idea what the Hubble Constant was, but decided not to pursue the matter.

Irina continued. “Three years ago, Pedro and I had an insight into how we might reach a particular point in space and time. On the strength of that insight, we were able to obtain a substantial increase in our funding.”

“Wait a minute,” Smith replied. “I thought you said that it was theoretically impossible to steer a time machine!”

“Our solution hinges on a rather special case. There is one point we can be confident of hitting.”

“Where?”

“Why, *The Beginning*, of course. If we put enough energy into the time field, we can send our

machines back the full fourteen billion years to The Big Bang!”

#

Smith looked at the two scientists and wondered if he had fallen into an asylum for the criminally shortsighted. He blinked. “You lost me there. I don’t see the point.”

“Think of the universe as a giant funnel, Smith,” Vasquez said. “The spout is The Big Bang and the mouth is the far future. As you go backwards in time, the universe shrinks. Therefore, the volume in which a time machine can materialize also shrinks. At the very beginning, the volume is so small that it may be considered a single point.”

“It *was* a single point, wasn’t it?” Smith asked. Science had bored him in school, but at least he had learned that much. “Besides, the density at the beginning of time was a hell of a lot higher than 10 atoms per cubic centimeter!”

Vasquez looked at his superior. “We do seem to be getting ahead of ourselves, don’t we, Irina?”

“Let me tell it,” the laboratory director said. She turned to Smith. “Are you familiar with the concept of black holes?”

“Vaguely.”

“A black hole occurs when a massive star runs out of fuel and gravity causes it to collapse in upon itself. The force of the collapse is strong enough to squeeze the star’s substance right out of existence, transforming it into a dimensionless point of infinite density.

“Such a hole is dimensionless. It does not appear so to us, however. The reason for that is that a black hole is surrounded by an ‘event horizon,’ which encompasses the region of space where escape velocity exceeds the speed of light. Since nothing can go faster than the speed of light, the volume defined by the event horizon appears to us to be a sphere of absolute darkness. The size of that sphere depends on the amount of mass that has fallen down the hole, and can be quite large. For instance, the hole at the center of our galaxy is approximately the size of the Earth - or rather, the volume inside its event horizon is.”

“What has this to do with the Big Bang?”

“It is directly applicable. In one sense, the universe itself is a black hole. It possesses an overall density large enough that one must exceed the speed of light to escape it. Therefore, the universe possesses an event horizon that defines the farthest point our telescopes can ever hope to see. The current event horizon is several billion light-years from here, of course. However, at the beginning of The Big Bang, when the universe was a dimensionless point of energy, its event horizon measured some 12 light-minutes in diameter.”

“It was, in effect, a giant black hole?” Smith asked.

“Precisely,” Irina replied. “That was the insight which Pedro and I had. We realized that if we sent our machines back to The Beginning, they would arrive in an empty bubble of space some twelve light-minutes in diameter. There they would remain until the expanding shockwave from The Big Bang collapsed their time fields and kicked them back to us.”

“What did you expect to get back? A cloud of superheated vapor?”

“Not at all. We calculate that it takes several nanoseconds for the explosion to build in strength until

it becomes dangerous. In that time, we can analyze the energy spectrum, detect elemental particles, and perform all manner of useful observations. The machine returns to us long before the explosion can damage it.”

“So what went wrong?”

Vasquez stared at Smith for a second. “What makes you think something went wrong?”

“Why else am I here?”

Irina sighed. “You are quite right, John. So far, we have succeeded in reaching The Beginning with two machines. The results have been ... disappointing.”

“How so?”

“How long a machine will stay in the past depends on where in the bubble of space it materializes. Still, no matter how quickly the initial shockwave reaches it, up until that time, the universe should be totally black. There is absolutely nothing to sense. No light, no energy, and especially no cosmic background radiation!”

“And that wasn’t what you found?”

Irina shook her head. “The first machine detected an average CBR temperature of 20 degrees Centigrade and a random fluctuation 15°C around that. There shouldn’t be any CBR at all, and the fluctuation is totally incomprehensible.”

“How long was the machine in the past?”

“Three minutes 12 seconds.”

“And the second machine?”

“Four minutes, 25 seconds. The CBR readings were more or less the same both times.”

“Tell him the rest,” Vasquez said.

Irina chewed on her lower lip for a moment. “Energizing a time field for such a long trip is terribly expensive, John. Our appropriation allowed us to budget for up to 100 trips. By materializing throughout the 12 light-minute bubble of space, we hoped to emerge within a few light-seconds of the point where The Big Bang began. Out of 75 attempts, however, we failed to reach The Beginning a total of 73 times. We have no idea why.”

“What has all of this to do with me?”

“Our previous machines have been instrumented to observe the cataclysmic birth of the universe. They were not optimized for general observations. It is our intent to use our remaining energy budget to send a different type of machine into the past. This one will be equipped with the widest possible range of sensors. It has occurred to us that there is one very general observation tool that we have not tried yet.”

“What is that?” Smith asked.

“We would like to send an observer. There should not be anything to see at The Beginning, but we cannot afford to take chances. We’d like to send you!”

#

The time machine was a sphere some two meters in diameter. It was an instrument probe that had been modified to carry a man. It was smooth save for the various instrumentation ports and the hundred-centimeter square window set directly in front of the pilot's cramped seat. It reminded Smith of some of the first space capsules.

"What sort of instruments are those?" he asked, pointing toward the square boxes that dotted the sphere's interior bulkhead.

"Film cameras," Irina said.

"Kind of old fashioned, aren't they?"

She shrugged. "All of our modern equipment uses the principle of photonics. Pedro believes that there is something about conditions at The Beginning that cause photonic devices to malfunction. For that reason, we have provided this machine with the widest possible range of technologies. Film photography may be archaic, but it was used for centuries with good results."

"I take it you don't believe your failure was due to a malfunction," he said.

She hesitated. "I can't help wondering if we are up against some sort of exclusion principle."

"What's that?"

"Consider the black hole that we were discussing earlier. Once inside the event horizon, nothing can get out. Not light, or mass, or information. What goes on inside the hole can never be known by those outside. The astrophysicists say that information exchange through an event horizon is excluded and that an *exclusion principle* is at work."

"And you think the same is true for visiting the moment of the Big Bang?"

"How else can our failures be explained?"

He shrugged. "It's too deep for me. I'm just the bus driver here."

She turned to him. "Then you accept our offer?"

"I'm tempted," he admitted. "Still, I need more information. As I told you at my apartment, I do not jump into these things foolishly. Why don't either you or Vasquez go?"

Irina smiled. "As you said, some of us aren't adventurous."

"Why not? Is it dangerous to travel in time?"

"Oh no! People do not ride the machines anymore, but when the laboratory was first built, several successfully traveled backward in time. They all returned safely and showed no ill effects afterwards."

"Any chance I might collide with one of your previous probes?"

"None. Time fields cannot overlap. No machine can approach another closer than about 50 meters."

"So what is there to worry about?"

Again, she bit her lip in a way that Smith found very fetching. Her evening gown looked out of place in the cavernous laboratory from which the machines were launched. Still, he was glad that she had not changed into something more appropriate.

“There is a theoretical danger. It involves the exclusion principle.”

“Oh?”

“If such a principle exists - and remember, it is only an hypothesis - it means that human beings can never know what happened during that first moment in time. We may well have suffered instrument malfunctions in the two machines that made it to The Beginning. That may have been the reason they were successful. The others did not complete their jumps because their instruments were *not* malfunctioning. If there is an exclusion principle at work, any probe capable of returning meaningful data will automatically be prevented from reaching The Beginning.”

Smith shrugged. “That’s why you are sending me, isn’t it? So that I can observe in the event of an instrument malfunction.”

“Don’t you see, John? By providing you with a window, we have turned you into one of our instruments. If you observe and report, then you violate the exclusion principle!”

“Are you saying that there’s no chance of this machine reaching The Beginning if I’m alive and awake?”

“That is one possibility. The other is that you may make it, but that you yourself could malfunction.”

“How?” he asked. “Die? Go blind?”

“We don’t know.”

He frowned. “What about the instruments in the two probes? Did they check out after their return?”

She nodded. “They passed every diagnostic test we could think of.”

“Then what is there to worry about?”

“We don’t know,” she replied. “That is what has us worried.”

He slowly circled the small spherical craft with Irina in tow. Vasquez was watching them from a catwalk that ran completely around the cavern. Finally, Smith stopped and gazed through the observation hatch of the machine. The window was five centimeters thick and solid when he rapped on it with his knuckles.

“Seem’s sturdy enough,” he said. “I’ll do it!”

“You’ll pilot the machine?” she asked.

“Hell, yes! It sounds like fun.”

#

John Thurman Smith sat in a powered lounge in Irina Scorvini’s private office and sipped a tall cold drink of something he did not recognize. It had fruit juice in it and not a little alcohol. It soothed him as he lay back and collected his thoughts. His jumpsuit showed large splotches under his arms and down

his back, while his hair was plastered to his head from perspiration. No one had told him the time machine would get so hot.

He had checked his chronometer just before they had pried him out of his spherical coffin. The total trip into the past had taken 90 minutes. His machine had not reached The Beginning on the first jump, or on the eighteen tries that had followed.

A time machine that does not make it to The Beginning materializes in a universe very different from the one he was used to. It halts a few million years short of The Big Bang. In that early universe, the sky is filled with a red the color of old coals where subtle shadings mark the places giant protostars are being born.

Each time he discovered himself in the protostar universe, Smith palmed the control that returned him to the Time Laboratory. There he had waited while the machines that generated the time field recharged themselves. Then he had jumped again. On the twentieth attempt, he arrived in a place that was vastly different from the protostar universe. One look out the window told him that he had made it to the bubble of space that was his goal.

His first sight of The Beginning had told him something else. In one breathtaking moment, all that was mysterious became blindingly clear. He knew the reason the previous probes had brought back such confusing data. He also knew, as Irina Scorvini had suspected, that human beings were forever precluded from observing The Big Bang. The reason for this had nothing to do with universal exclusion principles. The answer was far simpler and much more surprising!

“Did you make it?” Irina asked, speaking for the first time since white-coated technicians had helped him out of the capsule and out of the spacesuit he had worn. Pedro Vasquez sat across the office from her, nervously twirling the ends of his mustache.

“I made it,” Smith confirmed between sips.

“Well, what did you see?”

“Have you checked the cameras yet?”

“They are being unloaded now. We’ll have the film developed within the hour.”

“Good. I will need photographic evidence to back up what I am about to tell you. It’s the only way anyone will ever believe me.”

“Out with it man!” Vasquez growled.

Smith set his glass down and turned to face the deputy director of the laboratory. “One thing I learned from my travels is that the universe is a very large place indeed. How many stars would you say are in an average galaxy, Vasquez?”

“Approximately 100 billion.”

“And how many galaxies in all?”

“A trillion or more.”

“Did it ever occur to either of you that there might be other intelligent races out among the stars?”

“Of course,” Irina said. “It’s a mathematical certainty.”

“What about time? Do you suppose there were races that developed before the Earth cooled, and others who will come into existence long after our sun has sputtered out?”

“Highly likely. What has this to do with the problem at hand, John?”

“Have you considered that every race which reaches a certain technological level will probably invent time travel? What are the chances that any of them will be able to steer their machines any better than we can?”

“They won’t be able to.”

“What if they all come up with the idea of sending their machines to the one point in the universe where they can be sure to arrive? What if they aim for a bubble of empty space 12 light-minutes in diameter where they can observe the creation of the universe?”

There was a long silence. Finally, Irina said, “I suppose it could get crowded.”

“You’re damned right it could! You were correct, Irina. We will never see the Big Bang. We won’t see it because that whole volume of space is crammed with time machines! They are jammed time field to time field until the whole damned pygmy universe is gridlocked!”

“What sort of machines?” she asked.

“All kinds. I saw big things that looked like passenger liners, small balls that must have been instrument packages. There are cigar shapes, and cubes, and one helluva lot of spheres. Some are radiating light as though they are trying to compete with The Big Bang. Others do not even reflect. The only way you can see them is by their silhouette against the more distant machines. They’re packed so close together that I couldn’t see more than a dozen kilometers in any direction!”

“Then the time machines are the source of our anomalous CBR readings?”

He nodded. “Your instruments were detecting the heat and light from the machines and averaging them out. The fluctuations are caused by a kind of Brownian motion.”

“*Jesucristo!*” Vasquez swore. “Then our failures...”

“Were due to the fact that every possible position in that entire 12 light-minute volume of space is occupied by a time machine. There have to be trillions of them! The time fields are packed edge to edge everywhere. I have no idea what factor selects which machines make it to the bubble and which do not. How can one machine get there *before* another when all machines arrive at the same instant?”

“That will bear thinking about,” Irina agreed. “Obviously, the majority of probes fail because they can’t find an empty parking place.”

“Obviously,” Smith agreed.

“Did you see nothing of the Big Bang?” Vasquez asked.

“How could I? All I saw for 5.6 minutes were time machines. Then I found myself back here.”

Irina looked at Vasquez. “Can you imagine what the total collection must mass?” she asked, suddenly excited. “This changes every assumption we’ve ever made about the creation of the universe!”

Vasquez was no longer sitting. He had begun to pace the floor. “If we can see these other beings, we can communicate with them. That means we can exchange knowledge across unimaginable gulfs of

time and space.”

“But we’d only have a maximum of six minutes in which to communicate,” she told her subordinate.

He shrugged. “We broadcast everything in high speed bursts. They do the same.”

Irina’s face lit up. “Then the information exchange is already going on, and we have it recorded on the instruments we sent back with Smith!”

“Of course. It must be,” he said. “We’d better get that data reduced as quickly as we can. I wonder what we should look for first.”

Irina was not listening. She sat on the edge of Smith’s lounge and hugged him. The warmth and perfume of her was a tonic after the discomfort of the past hour and a half. “You’ll be famous for this, John! Possibly the most famous man who ever lived.”

“Do you really think so?”

“Of course. You are the man who opened space and time for us. You guided us to the universal meeting place. There must be millions of different species out there, all anxious to exchange ideas. We’re about to join in that exchange.” She picked up her hand computer and began to figure. “Let’s see. We made it three times in 95 attempts. That means, on average, we will succeed once every thirty tries.

“We’re going to need a much bigger budget if we are to properly exploit this. Too bad the bubble is not larger. It would increase the number of machines that can congregate there and lengthen the average stay time as well. It would be much more efficient.”

Smith nodded. “I only wish I’d had a longer stay.”

Irina looked up from her calculation in surprise. “Why is that?”

He smiled in remembrance. “The being in the next machine over was almost human. We started a conversation using gestures. She was very beautiful, even considering the pointed ears and the greenish cast to her skin. Also buxom. If I had had another few minutes, I might have convinced her to join me in my machine. After all, there are better ways to spend time stuck in traffic than staring out the window!”

Author’s notes for *Gridlock* :

Science fiction comes in a number of flavors. The earliest science fiction stories such as *Gulliver’s Travels* were social commentary, basically criticisms of the prevailing political order that were disguised as fantastic stories to keep the authors from being lynched. Jules Verne wrote extraordinary voyage stories, while H. G. Wells built the foundation of modern SF by concentrating on the science in science fiction. Since then, the field has developed a large number of sub-categories.

The lady directly to my left on the bookshelves is Anne McCaffrey, the leading practitioner of what I refer to as “that dragon crap.” Other writers specialize in fantasy, sword and sorcery, cyberpunk, space opera, alternate history, and even mystery science fiction. Each writer has his or her adherents and others who would not read their stuff if you

paid them. The success of a writer depends not only on how well they write, but also, on how many people there are who like the sort of thing that they write. People tell me that my style is reminiscent of Tom Clancy's (although since I've been writing longer, I feel that his style is reminiscent of mine). So why the disparity in our sales figures? He writes about things that seem to be interesting to just about everyone on the planet; whereas, when my books aren't selling, my wife tells me, "But dear, you've already sold one to every physics major alive!"

I am what is known as a hi-tech or hard SF writer. For those of you who know the field, that should not be surprising. Most of my stories have been published in *Analog*, which has been the home of hi-tech for more than 60 years. Hi-tech SF is engineer fiction, where we try to explain the practical aspects of the machinery and give you some idea of how things operate, while still attempting to keep the story moving smoothly. This can be an extremely difficult trick to pull off. Hard SF writers do not give you a ration of meaningless jargon in lieu of an explanation, or failing that, at least try to make you believe the jargon for as long as you are reading the book. The major sin in hi-tech SF is pulling a bonehead stunt like forgetting about the speed of light, or the conservation of momentum, or some other inconvenient law of the universe. Oh, it is all right to violate them, but you have to demonstrate that you are aware of their existence.

Hard SF is not to everyone's liking. Since you are this far in the book, you either like the stuff, are extremely masochistic, or else have been reading this collection of stories as an assignment for school. Whatever your reason for sticking with me this long, thanks! If you do not like hi-tech, that is okay, too. As they say, opinions vary! [The Russian verb "to write" is "peesat," with the emphasis on the second syllable. If you place the emphasis on the first syllable, you have the Russian verb "to pee!" Your opinion of any particular brand of writing probably determines where you place your emphasis.]

Again, *Gridlock* was the result of having a momentary insight while doing something else. While it may seem that these insights come to me regularly, three in 20 years is not that often. I wrote the story in a single weekend, and as it began to take shape, I began to worry that it was too hi-tech, even for *Analog*. My fears proved unfounded. Stan Schmidt bought *Gridlock* and published it in the mid-December, 1989, issue of the magazine.

DREAM WORLD

Does modern life ever remind you of a bad 1950s science fiction story? You may be closer to the truth than you think!

Paula Kaplan was tired and irritable, a natural consequence of having been on the road for the past ten days. It was not traveling that she disliked, but rather the endless string of snotty department store managers and purchasing agents with whom she spent her days. Her nights were no better. During her five years as district sales representative for Dream World Cosmetics, she had developed a routine for passing the hours between dinner and bedtime. Often in a strange town, she would search out the local Cineplex and take in a movie or two. When nothing on the marquee appealed to her, she stayed in her motel room and watched cable TV. Once or twice each trip, especially when she did not have to travel the next day, she would find a local tavern and get quietly drunk. Occasionally she would encourage one of the local Lotharios to buy her a drink and then take him back to her motel. Even these rare adventures had a dreary sameness to them. Almost without exception, her lovers sported an untanned

strip of skin on the third finger of their left hand.

This particular night she did not feel like the movies and the television didn't work in the seedy motel into which her bosses had booked her. There was a bar next door, but it was a country-western place. If there was anything that irritated Paula more than purchasing managers, it was shit-kicker music. Bored, she hopped into her Hertz rental and sought out the little town's main drag. There she found a quiet bar in a residential neighborhood.

The bar was a small white structure with a blank front wall adorned by a red neon sign that spelled out *Bob's*. The lot behind the building was filled with cars parked more or less at random among the potholes. The entrance on the side was framed in blue neon lights. Inside she found the usual dimly lit drinking establishment whose air held a whiff of stale beer. The bar stretched along an interior wall to her left, while a row of booths hugged a yellow-painted, windowless concrete block wall. To her left was an open doorway leading to a short corridor that fronted the restrooms and led to a back room with tables. Soft rock music floated from speakers precariously balanced on plywood shelves mounted high on the walls.

The booths were filled with couples and small groups. There were several empty stools at the bar, but Paula ignored them, not wanting to be mistaken for the new prostitute in town. After a momentary pause while her eyes adjusted to the gloom, she made her way down the corridor, past the restrooms, to the back room.

The back was more brightly lit than the front, courtesy of a clock surrounded by an illuminated sign advertising Coors beer. Here, too, the tables seemed to be fully occupied. As Paula turned to leave, she noticed one table placed slightly apart from the others in the far corner of the room. A single figure sat there contemplating his surroundings while a half-full glass of beer adorned the table in front of him. He was not looking in her direction. He seemed preoccupied by the conversation of three Japanese businessmen and their Caucasian counterpart at the next table over.

"Excuse me," she said to the short, balding man after threading her way through the crowd to his table. "Would you mind if I sat with you? There doesn't appear to be an open table in the room."

He turned to face her. In addition to being bald and overweight, he possessed a receding chin and thick, Coke-bottle glasses.

Paula was aware of the figure she cut in her business suit with the paisley scarf. She expected him to jump to his feet and fall all over himself welcoming her. His reaction surprised her. For fully five seconds he stared as though he were having trouble focusing. The dilation of his pupils, along with the drooping eyelids, told her that the beer on the table was not his first ... or even his fifth. Finally, as though in slow motion, some unidentifiable emotion crossed behind his eyes and he gestured toward a chair.

"Sure, why not? It might be interesting."

"Thank you," she replied. She removed her coat and draped it over one of the empty chairs, then pulled another from beneath the table. It came out with a loud scraping noise. She settled into it and immediately kicked off her shoes. It felt good to wiggle her toes and feel the cool air waft across her soles through the nylon of her pantyhose.

When she was settled, she looked at her tablemate, put on her most sincere smile, and extended her hand. "My name is Paula Kaplan."

"Morris Cramer," he replied listlessly, shaking her hand. She noted that his palms were as soft as her own. Obviously not a mill worker.

“Is there a hostess in here, Morris, or do I need to go to the bar for my drink?”

“Kerri should be right over.”

Less than a minute later, a young blonde with a perky manner and a low-cut blouse materialized from out of nowhere. “Whattaya have, honey?” she asked in a Texas twang that was misplaced this far north.

“White wine spritzer, if you have one.”

“Sure enough. Morris?”

“Another beer.”

“Coming right up.”

A minute later, she was back with the order. Paula reached into her purse and pulled out a five, received change, and left a tip on the hostess’s tray. She noticed that Morris did not bother to pay.

“I take it you have a tab here?”

“Something like that,” he grunted.

She sipped her wine and decided that it matched the rest of her expectations of this sleepy little town.

“Well, what did you think of the game today?” she asked as a means of breaking the uncomfortable silence that had arisen.

“Game?” Morris responded dully, staring at her. From this range, it was possible to smell the beer on his breath. She sighed and decided to leave soon. He struck her as a sloppy drunk, another thing she hated in life.

“The Dolphins against the Cardinals.”

“I’m not much of a baseball fan.”

“I should say not,” she replied with a laugh, “since those are football teams.”

“Oh, right.”

“What do you do for a living, Morris?”

“I’m a writer.”

“Really? That sounds exciting. I’m regional sales rep for Dream World Cosmetics.”

“Figures.”

“Beg your pardon?”

“Nothing. Just thinking aloud.”

“What do you write?”

“Science fiction mostly. Also a few detective novels and westerns to put bread on the table.”

“Science fiction? Do you mean like *Star Wars* and *Total Recall* ?”

“Something like that.”

“Tell me, Morris. Is there any money to be made in sci-fi in 1996?”

Being in sales, Paula considered herself a fair judge of people. She noted Morris’s reaction with professional interest. He seemed to be struggling with some inner decision. Evidently, he resolved his problem because, a moment later, the corners of his mouth turned upward in a tiny smile. The expression was so fleeting that she doubted anyone else had seen it.

When he finally spoke, it was in a voice soft enough that the music nearly drowned him out. “What makes you think this is 1996?”

She blinked in surprise, wondering if this was his idea of a joke. She laughed out of politeness and pointed to the tattered calendar hanging on the wall next to the storage room door.

“Because it says so right there.”

He turned to look, causing the fat rolls on his neck to pile up in an interesting pattern. “So it does.” He turned back. “It isn’t, you know. The date is October 12, 1956. I do not expect you to believe me, of course. Not that it matters.”

“Why doesn’t it matter, Morris?”

“Because you aren’t really here. None of you are.”

Nuts were another thing that she hated about life on the road. No matter how normal a guy might seem on the surface, they were all a little twisted inside. Looking at Morris, she had trouble thinking of him as dangerous, but then that is what people had said about Ted Bundy. She considered leaving and then thought about how good it felt to have her shoes off. Rather than go back to her room and spend the night staring at the walls, she decided to give him the benefit of the doubt. After all, Morris was a science-fiction writer and they were all supposed to be eccentric, weren’t they? Besides, there were enough husky men in this bar that all she needed to get help was scream.

“If I’m not here, where am I?”

“You’re a figment of my imagination. Everyone is. This world,” -- he made an expansive gesture with his right hand -- “is one I imagined as the background for my next book.”

Paula took a sip of her spritzer. “It sounds to me like you are losing your grip on reality, Morris.”

“You don’t believe me?”

“Of course I don’t believe you.”

“What if I can prove it?” he asked in a tone that was less belligerent than challenging.

“How?”

“By logic. Take you, for instance.”

“What about me?”

“You’re a knockout.”

“I try to keep myself in shape,” she replied noncommittally. A compliment was always good for a woman’s ego, even when delivered by a dweeb like Morris.

“Would someone like you ever come and sit with someone like me in a bar?”

She shrugged. “All the other tables were occupied. Besides, if I had taken a table by myself, I would have spent the night fending off men trying to hit on me. I just came in here for a quiet drink.”

He shook his head. “No, you just think you did. You came in here because I imagined you would. The other tables were full because that is the way I set the situation up. You sat down here because I wanted you to. *Cognito, ergo sum*. ‘I think, therefore, I am.’”

“What about me?”

“The principle doesn’t apply to figments of my imagination.”

“Is that your proof?” Paula asked with a laugh. “You know you imagined this world because I happened to sit down at your table?”

“Want more? Why didn’t I pay for my beer?”

“You have a tab here.”

“Sorry. I’ve never been in this place before tonight.” He took a sip of beer and laughed. She did not like the tone. “Of course, neither has anyone else, because I didn’t imagine this scene until about an hour ago.”

“What if I call Kerri over here and ask her?”

“Then she’ll say I’m an old customer who has been coming here for years. She’ll even show you my bar tab.”

“You said you don’t have a bar tab.”

“I don’t. But to be self-consistent, I would have one in this world I’ve imagined.”

“Circular reasoning, Morris. If you want to convince me, you’ll have to do better than that.”

“If you insist. Do you ever read science fiction?”

She shook her head. “Frankly, I don’t have time to read anything these days. My brother reads a little.”

“Did you ever hear of a writer named Robert Heinlein?”

“Everyone’s heard of Heinlein,” she replied. “Died a couple of years ago, didn’t he?”

Morris nodded. “In my imagination, he did. Now, of course, he is at the height of his powers and soaking up entirely too much money the rest of us could use. His *Double Star* in *Astounding* last spring blew me away ... as you people say in my future idiom. If his new *Door Into Summer* serial is as good, I’m going to be depressed for months.”

“Sorry, I’m not familiar with those stories. What about Heinlein?”

“He has a technique he uses, one the rest of us wish we’d invented. He convinces readers that a

story is set in the future by peppering it with outlandish newspaper headlines.”

“So?”

“Tell me, Paula. Can you even think of a headline that is more bizarre than the ones you see daily in the newspapers of your world?”

“Not a fair test, since I’m not an aficionado of sci-fi.”

“Ess eff.”

“Huh?”

“We call it ‘SF,’ like the city of San Francisco. ‘Sci-fi’ is a term I imagine people who don’t know anything about the field will be using in another forty years.”

“Look, I like to play games as well as the next person, but games have to have rules. So far, you have told me things that cannot be checked. Surely there is some way to prove that this world I’m living in is fictitious.”

“Just look around you,” he replied. “Open your eyes and see! Can you honestly tell me that the modern world is logical?”

“Life’s not logical.”

“Of course it is. *Real* life is eminently logical. This life isn’t, because I dreamed it all up.”

She sighed in exasperation and mentally kicked herself for trying to find reason in the ravings of a drunk. Still, she had to admit that the man was entertaining.

“We’re not getting anywhere.”

“All right. What about astrology?” Morris asked.

“What about it?”

“In the real world of 1956, only nuts believe in astrology. In your world of 1996, it has become respectable. Christ, you can call up on a telephone and talk to an astrologer for five dollars a minute.”

“I read somewhere that the rise of astrology is a measure of people’s alienation with their lives,” Paula replied. “People don’t understand the world around them, so they put their trust in something greater than themselves.”

“Rubbish. Astrology is my own ‘weird newspaper headline’ technique. It’s my way of convincing the reader that the story is really taking place in the future.” He looked into his beer and then up at her. There was a silly grin on his face. “I do like my invention of the 900 telephone number, though. It lends verisimilitude to the plot. Which reminds me, what about the Phone Company?”

“What about it?”

“What more proof do you need that I imagined this world? In your world, I have broken the Phone Company’s monopoly and split it into a dozen little companies. In the real-world, that will never happen.”

“There are good reasons why Ma Bell broke up.”

“You’re damned right there are,” Morris replied with a flash of anger. “Those snotty bastards overcharged me on my last telephone bill. I’ll teach them to mess with Morris Cramer.”

“Anything else?” she asked.

“Everything else?” he mocked. “Do you own a computer?”

“Not personally. I am on the road too much, although the boss has been talking about getting us all notebooks in which to keep our sales records. Why?”

“What do you think of my naming convention? Microprocessor, coprocessor, ROM, RAM, 8088, 80286, 80386, WYSIWYG? Doesn’t it just sound like there’s an entire industry building cheap little computers that cost just a few thousand bucks each?”

“What’s wrong with that?”

“It’s silly! Everyone knows that IBM sells computers for millions of dollars a pop. You don’t really think you could squeeze one of those monsters down into a little box you can carry around under your arm, do you?”

“I wouldn’t know about IBM’s. The boss is looking at Apple portables.”

“Aha!” Morris yelled, slamming his flat palm down on the table. Despite the shotgun-like sound, only a few people glanced in their direction.

“What?”

“Apple Computer! Do you really think a big corporation would come up with such a silly name? Not in a thousand years. It’s called that because I have a whimsical nature. And what about nuclear power?”

“What about it?” Paula asked with resignation. Obviously, the nebbish was the sort who warmed to his topic once he started rolling.

“You people all hate nuclear power, don’t you?”

“They haven’t solved the waste problem yet.”

“Damn right, they haven’t! If they do, I don’t have a story to tell.”

“Nuclear’s bad for the environment.”

“What environment? That is another plot twist of mine. Here you have an ecosystem -- cute name, huh? -- that has been stable for four billion years and suddenly; the puny human race has upset the balance. The icing on the cake is the ozone layer, which does not really exist, by the way. It has a hole in it due to pollution. Neat idea, isn’t it?”

“The neatest. I suppose you have an answer for everything.”

“Of course. I’d be a pretty poor creator of worlds if I didn’t.” He looked at her and frowned. “I can see that you still don’t believe me.”

She reached beneath the table to put her shoes back on, then straightened up in preparation for standing. “I must say, Morris, that you have an active imagination. Of course, I guess that’s an asset in your profession.”

“Wait, don’t go!”

“Sorry, but I must. I’ve got some early sales calls.”

His look was suddenly pitiful. All of the arrogance was gone. “Look, I don’t know why it is so important that you believe me, but it is. Stay for another couple of minutes and I’ll think of some way to convince you.”

She glanced at her Lady Timex. It was still a few minutes short of ten o’clock. “Very well. I will give you five more minutes. Make it good.”

“Ronald Reagan,” he said with an air of finality.

“What about him?”

“He was president for eight years, damn it! Can you imagine anyone more unlikely to become president?”

Paula shrugged. “I didn’t vote for him.”

“Would you have expected the two biggest stars in Hollywood to be Danny DeVito and Arnold Schwarzenegger?”

She laughed. “You’ve got me there, Morris. I suppose that is your whimsical nature showing through again?”

He beamed, mistaking her jest for a breakthrough. “You see! Then there is the demise of the Soviet Union. Pure wish fulfillment on my part. Look, I am no fan of Joe McCarthy, but I also do not want the commies to win. So I swept them away in my dream world, even though they are on the verge of taking over the real one.”

“It must be a good feeling being an author and able to rearrange the map to fit your own prejudices,” Paula said.

“The greatest. That is why I have the Israelis acting like a bunch of brown shirts toward the Palestinians in the occupied territories. Only, I am going to have to take that part out. My editor is Jewish, you know.”

“No, I didn’t know.”

He sighed. The manic need for her approval seemed to have passed. He slouched in his chair like a man who had taken all the responsibilities of the world onto his shoulders. Of course, she reminded herself, that was precisely what his delusion commanded him to do.

“Look, I can’t say that it hasn’t been entertaining. I do have to be leaving now, however. May I give you some advice? A little unreality is probably a good thing in a science-fiction writer, but I think you have taken it too far. One of these days, you are going to launch off on one of these imaginary trips and not come back. Go see a doctor. He can help you.”

“I’ll think about it.”

“Good. Now, if you will excuse me, Morris. She stood, retrieved her coat off the back of the chair, and hung it around her shoulders. She threaded her way through the tables that had magically become uncrowded while they had been talking. At the corridor, she halted and glanced toward the far

corner of the back room. The little man was slumped down in his seat, gazing at the few flecks of foam that remained in his glass. He looked even more like a nebbish than when she'd first come in.

"Oh, well," she thought, "We've all got our problems."

She turned and made her way to the side door through which she had entered the bar. Just inside, she paused to fish for the Hertz keys in her purse. As she did so the door swung open and something gray with tentacles waddled in. She stood respectfully aside, and then made it outside before the hydraulic mechanism closed the door.

The night was lit by the green neon shamrock over the door and two feeble street lamps. The skyscrapers at the city center showed above the low buildings around her. Halfway to her car, she halted in midstride.

"Funny, I don't remember them announcing that they'd discovered intelligent life on Mars." After a moment, she shrugged. *"Oh, well, maybe I missed the news that day."*

Five minutes later she was seat belted into her car, making her way back to her hotel. Tomorrow she would try to peddle that obsolete face cream to the Jovian Embassy over on the Thoroughfare of the Planets. The boss thought the beetles might use the stuff to polish their shells. She had her doubts.

#

Author's notes on *Dream World* :

I was sitting around the bar one day when it struck me how much modern life resembled a bad 1950's science fiction story ... Actually, since I don't drink, I never sit around bars. However, I remember holding forth at a science fiction convention on the fact that no one can use Robert Heinlein's "weird newspaper headline" technique any more because none of us can think up a headline any weirder than the one we saw this morning. Then I began to mull over all the other things in life that I find incongruous - How can a people who went to the moon possibly believe in astrology? - And it struck me. Life does resemble a bad science fiction story!

Can you prove it isn't one?

THE VOID

End of the world stories are very popular in science fiction. If only the problem was that small!

Captain-First-Rank Tessa Hallowell stood before the mirror and cast a critical eye over the black-and-silver uniform that hugged her svelte form. It was not vanity that caused her to switch the mirror camera from viewpoint to viewpoint, but rather a desire to make the proper initial impression on her newly acquired prisoners. The war council had entrusted her with one of the most important missions of the impending attack and she was determined not to fail them in the slightest detail.

Having assured herself that her uniform was spotless and wrinkle free, she turned her attention to the

body within. The face was pretty enough, she supposed, with high cheekbones and a mouth that fell too easily into a pout. Her eyes were her best feature, emerald green and expressive, but as hard as diamond when she wanted them to be. The blonde hair was cut short in order not to interfere with the helmet seal of her space armor. The body was muscular, without being manly; properly curved, but without the excess flesh that some men found attractive. There were many planets in the galaxy where Tessa Hallowell would be considered beautiful--and, of course, an equal number where her large framed blondeness was little more than a curiosity.

She smiled as she scanned the mirror one last time. At 28, she was the youngest captain in the fleet and only one of two women commanding starcruisers. It had taken a great deal of effort and not a little political maneuvering to achieve her current status and everything she had worked for was about to culminate in triumph.

Finished with her inspection, she called out, "Yeoman!"

"Yes, Captain?" came the immediate reply from the overhead speaker.

"Have my gig made ready. I'll go over to the observatory now."

"Aye aye, Ma'am."

She picked up the anachronistic helmet that the Hegemonic Navy had adopted for its official headgear and strapped it on. Moments later she was striding purposefully around the main circumferential corridor of the busy star cruiser, acknowledging salutes from the crewmen she passed. The salutes were as crisp and perfect as any to be seen at the Galactic Guard's academy on New Rome, an indication that her pride was shared by those who served her. Two corridors later and a quick fall down a dropshaft brought her to one of the bays where they kept the auxiliary craft.

The gig launched into the great blackness less than two minutes later. As they cleared the cruiser, Tessa glanced up and suppressed a sharp intake of breath as the galaxy came into view. From her current position some ten thousand light years above the plane of the galaxy's equator, the Milky Way was a vast river of subdued fire frozen against the utter blackness of space. The great pinwheel was so close that it seemed three dimensional, yet sufficiently distant that its foreshortened spiral form was easily discerned. Next to the galaxy's glory, the other patches of light in the ebon sky dimmed to near invisibility.

The Hegemonic Fleet Starcruiser *Warwind* had been six thousand hours in transit to reach her objective located high above the galactic spiral. For two-thirds of a standard year they had slipped upward from where humanity's million-plus stars floated among a hundred billion unexplored brethren, climbing nearly to the halo of ancient blue suns that englobed the flattened disk and bulging central mass of the galaxy.

Warwind's objective was the Extragalactic Tachyon Observatory, the largest and most costly observing tool ever created by human beings. For a starship to approach the universe's premier tachyon instrument by stealth required careful piloting and not a little luck. For eight long months, *Warwind*'s crew had monitored the superlight communications bands, searching for any hint that the observatory had noticed the tachyons that streamed continuously out of their ship's engines as it climbed ever higher above the galaxy. For all of that time, Tessa Hallowell had lived with the tension brought about by fear of discovery, tension made worse by the knowledge that it would only take but a single warning to alert New Rome and ensure the destruction of the Hegemonic fleet.

Nor was lack of an alarm necessarily evidence that they had not been spotted. Even in these non-military times, a great deal of comm traffic was in code--whether originated by computers,

diplomats, or merely commercial concerns eager to keep their monied secrets. Also, the warning could have been disguised, either as an innocuous message or by being buried in the astronomical data the observatory transmitted back to the galaxy round the clock. A single nanosecond pulse was all that was needed to send the Galactic Guard streaming away from their bases and toward the worlds of the Hegemony.

After eight months of worry, action had come as an anticlimax. *Warwind* had closed to within a hundred thousand kilometers of the great observatory before launching her strike boats. Her marines had grounded on the hull without incident and then proceeded to break in at a dozen different places. They had been met, not by armed defenders, but rather by a staff more bewildered than resisting. The sheep had submitted meekly as soon as they found armored wolves in their midst.

With surprise total and her victory complete, Captain Hallowell had sent the coded words so ancient that few knew the language that had originated them. "Tora, Tora, Tora!" had whisked toward Hegemonic Headquarters on a beam of modulated tachyons, to be instantly responded to with, "Make your preparations, but hold for orders. H-hour is imminent!"

Suddenly, a tiny sphere appeared in the great blackness before them. With the galaxy at her back, it seemed lost in an empty ebon sea. It expanded quickly and turned into a large habitat globe, almost mundane in its ordinariness. There were literally tens of millions of these islands of hospitality scattered throughout human space. Most orbited yellow suns that emulated (to a greater or lesser degree) the warm glow of Father Sol. Others bathed in the ruddy rays of great stars the color of old coals, or flashed with the actinic blue-white of nature's supergiants, or orbited close to many of the universe's countless midget suns. Still others floated where every star was a dimensionless pinpoint and only the most sensitive instruments could detect the pull of distant gravity. The standardized habitat modules were used wherever men and women found themselves enveloped by vacuum. Out here there was nothing to reflect off the white hull save the suffuse glow emanating from the Milky Way. Even so, the contrast with the black backdrop and its myriad faint smudges of light made it seem as though the habitat globe was illuminated by some internal fire.

The habitat was only the most visible portion of the observatory. Dispersed across a billion kilometers of surrounding space were the sensors that collectively made up the tachyon "array." Invisible though the sensors were, they were the reason Tessa's ship had been dispatched to this distant outpost. Here, high above the galactic swirl, conditions were nearly perfect for "seeing" the superlight particles created in the nuclear fires that burned at the heart of every star. Out here where space was virtually flat, where cosmic gas and dust were nearly nonexistent, tachyon astronomers could watch the universe in real time, unfettered by the snail like crawl that is light speed.

Nor were they limited to observing natural phenomena. The engines of starships burned bright with waste tachyons that were instantaneously flung toward the farthest reaches of the firmament. Like their sublight cousins, the neutrinos, tachyons were virtually unaffected by passage through normal matter. Thus, starships appeared as tiny moving stars to the great instrument at the edge of the galaxy. It was the tachyon telescope's ability to track ships that had caused the Hegemony's high command to dispatch *Warwind* to this most distant of all humanity's installations.

#

The space gig floated through the observatory habitat's main ship lock and was immediately winched to a tie down pad within the large cylindrical hangar bay. As soon as the gig was secure, its flanks were buffeted by a hurricane of expanding air as atmosphere was released into the bay. Tessa unstrapped and floated toward the midships airlock.

Sergeant Major Cochrane of *Warwind*'s marines waited in the hangar bay with a small squad to welcome his captain. Despite the lack of gravity and his space armor, Cochrane managed to look as though he were standing on the parade ground back at headquarters.

“Situation report, Sergeant Major!”

“The habitat is secure, Captain,” the sergeant’s amplified voice said from somewhere around his belt. “We control communications and are continuing to transmit routine messages and scientific data. We have rounded up the observatory staff and have them in the messhall, all except the headman. He’s waiting for you in his office.”

“No stragglers?”

“No, ma’am. We tapped into their roster and have them all identified by face and retina scan. There are twenty-eight of them. Ten scientists, twelve assistants, and six housekeeping and maintenance types.”

She nodded. It would be even more crowded aboard *Warwind* on the return voyage than on the outbound leg, but that could not be helped. A warship was not a liner. Even with every free bit of cubic crammed with food and other consumables when they had launched; this voyage was straining their resources to the limit. They would naturally restock from the observatory’s supplies of foodstuffs and oxygen, but even so, by the time they returned to the galaxy, ship’s crew and prisoners would be on short rations.

“What is the name of the head astronomer?”

“Senior Academician Trevor Vannick, Captain. I must warn you that he is not a happy individual.”

“Did he resist when you captured him?”

“Other than cuss us out in about four languages? No, ma’am!”

“Conduct me to him.”

“Yes, ma’am.”

Cochrane gave a silent order over his helmet commlink and his party immediately assumed convoy positions. Tessa grasped Cochrane’s equipment harness and let him tow her toward the axis hatchway using his suit’s maneuvering thrusters.

The habitat’s interior was as nondescript and common as its exterior. Here and there, the inhabitants had attempted to personalize it with pictures and potted plants. Like all such installations and every ship of space, the place smelled of people and machinery forced into too close proximity.

Academician Vannick’s office was just one hatch out of many that lined the outer curve of the main equatorial passageway. It would have been indistinguishable from all the others save for the two *Warwind* marines who flanked it. The hatchway retracted into the bulkhead at their approach, and Tessa pulled herself hand over hand into the office beyond.

Vannick was cadaverously thin, with wisps of white hair that floated akimbo in microgravity. He glanced up as the hatch opened and watched his captor make her way to the anchor frame in front of the desk. There was a look of barely controlled rage on his face.

“Are you the leader of this band of hooligans?” he demanded as she wrapped her legs through the

anchor frame.

“I am Captain Tessa Hallowell, commanding Hegemonic Star Cruiser *Warwind* .”

“You’re from the Hegemony of Stars?” Vannick asked, incredulous.

“I am and you, sir, are my prisoner.”

Tessa could see the astronomer’s expression change as he processed this new bit of information. The Hegemony had begun life as little more than a regional lobbying group, an association formed by the new, raw star systems at the fringes of human space to blunt the influence of the older, more civilized systems that clustered around ancient Sol. There had been talk of secession for generations. Lately the talk had turned serious. To find himself face to face with someone who claimed to represent the navy of a sovereign state told Vannick that the political situation was far worse than the news reports from New Rome indicated. The Communion of Humanity, with its capital at New Rome, had not had a competitor for almost 200 years, not since the Antares Republic had submitted following a brief, bloody war in the 28th century, in fact.

“The Hegemony has seceded?”

“It is I who ask the questions here, Professor,” Tessa said coldly. Onboard her ship, such a response would have halted all protest instantly. Rather than quiet the astronomer, her rebuke only drove him to fury.

“Goddamn it, have you people seceded?”

Tessa frowned and made a conscious effort to hold her temper. In general, scientists did not respond well to authority and her greatest need was for a quick, orderly evacuation of the station. She made a quick calculation that she would complete her mission most expeditiously with the appearance of being reasonable. There would be plenty of time later for the professor and his people to learn who commanded.

“Not yet,” she answered with deceptive calm. “However, military action to bring about a situation where we can declare our independence is imminent.”

“You can’t! This is the worst possible time...” Vannick’s protest died in his throat. A new, horrible thought had occurred to him. “What are you people doing here?”

“My fleet will soon be in action against the Galactic Guard. I have been ordered to ensure that the *gigi*’s do not use this observatory against us.”

“How could they possibly do that?”

“With your sensors, you can track ship movements. That is a capability the guard will find most useful after the commencement of hostilities.”

Vannick’s response was a rude noise.

“Do you deny that your instrument detects starships?”

“No, of course not. Interference from ships moving *ftl* often corrupts our data. In fact, we do everything in our power to detect your precious ships.”

“But you could if you wanted to?”

The senior astronomer nodded his head reluctantly. His wisps of hair moved as though alive in the air currents. “We could, of course. However, the technique is not terribly useful. For one thing, with only a single instrument, we have no ability to triangulate observations. What good is it for me to watch your ship cross my field of view if I have no third dimension with which to pinpoint your location? Do you think the guard has enough ships to search every kilometer along a constantly changing position vector some ten thousand light years long?”

“We are less concerned with the tactical utility of this observatory than its strategic implications in the long term. Up until now, we have taken great care to mask the movement of our fleets in order to preserve the element of surprise. After the battle is joined, we will no longer have that luxury. Our ships must return to their bases periodically for refit and resupply. Given time and sufficient observations, the guard will be able to pinpoint the location of our bases. We can’t risk that.”

The worlds of the Hegemony were well known to the Galactic Guard, and nearly defenseless against a determined space attack. Likewise, the worlds that circled the central suns of human space were known to the Hegemonic Navy. What kept everyone safe was the ancient principle of “balance of terror.” So long as the rebels maintained a credible striking force able to revenge giant terror raids, then Tessa Hallowell’s family on Askar would remain relatively safe.

For twenty years, the Hegemonic Navy had secretly built bases on unexplored worlds circling out-of-the-way suns. A base whose location is unknown cannot be attacked, which left the rebel fleet free to devote its full efforts to defeating the guard in their home systems. All that would change, of course, if the Extragalactic Tachyon Observatory were able to track the Hegemony’s ships. Even with deceptive maneuvering, there would be no hiding the number of ships that stopped in supposedly uninhabited star systems. Once those systems were identified, the Galactic Guard would concentrate overwhelming force there to quickly end the rebellion.

After long seconds, Vannick cleared his throat and asked, “If you were truly interested in the long term strategic outlook, you would call off your attack.”

“Why is that?”

There was a brief struggle on his face as a variety of emotions raged within him. Finally, he said, “Never mind. I suppose that you want us to track the guard’s ships for you rather than vice versa.”

Tessa Hallowell shook her head. “No, my orders are to evacuate your people and then deny the use of this observatory to the enemy.”

“Deny how?”

“I am to vaporize this habitat and destroy as much as possible of the sensor array before returning to the galaxy.”

For an instant, she worried that he would have a heart attack. The already pale face turned ashen and his whole body shuddered as though stricken. When finally he regained the use of his voice, the elderly astronomer croaked, “You can’t!”

“I can, sir, and I will. I have my orders.”

“What if I give you my solemn word as to our neutrality in the coming war?”

“Not good enough.”

“We’ll give guarantees. You can rig a bomb to blow us all up at the first hint we’ve betrayed you.”

“The first hint will come when the Galactic Guard slugs down fleet headquarters. No, Professor, I am sorry. This observatory will be destroyed.”

Vannick hesitated for long seconds, and then sighed heavily. When he spoke, it was with the air of a man who has struggled with his conscience and come to a difficult decision. “Before you destroy the observatory, Captain, there is something you must see. I think you will agree that it places all of this in a different light.

“A very different light, indeed!”

#

Without waiting for her answer, Vannick slipped his restraint and clambered across the desktop like a monkey at feeding time. She considered having the Cochrane halt him, but decided that the quicker whatever game he was playing was over, the quicker they could begin the evacuation. Instead of ordering Vannick stopped, Tessa ordered the sergeant major and his guards to follow them. The small party swarmed along the circumferential corridor, then turned upward into a radial corridor that led to the interior of the habitat.

Within a few dozen meters, she found herself floating in a large spherical space. A platform with several workstations hovered at the sphere’s center, held there by some invisible means. Vannick immediately kicked off and floated the ten meters to the platform. Tessa ordered the guards to station themselves at the entrance hatch and followed him. She anchored herself beside the astronomer, who was powering up various controls.

“What now?”

“Watch,” he said, cryptically.

A moment later, she was no longer inside the featureless gray sphere. Instead, she hovered in deep space with the galaxy spread out below her and the infinite universe above. The view was the same as she had had from her gig, except the stars were a bright kaleidoscope of colors that bore little resemblance to the pale radiance they exhibited outside. Overhead and behind them were dim patches of colored light that represented the far galaxies.

“A holographic display from the tachyon array,” the astronomer explained. “You are seeing the galaxy not in visible light, but rather, by the superlight particles that stream out of the interiors of stars.”

“Why the false colors?”

“They denote particle energy. Red is for the slowest tachyons, blue for the fastest.”

“I thought tachyon velocity was infinite.”

“Close enough to it that it doesn’t matter for most purposes,” Vannick agreed. “Even the slowest can cross the known universe in less than an hour. However, if they were infinitely fast, there would be no way to detect them. They would appear to be everywhere at once, with no means of telling their direction. As it is, we require more computer power than most planets to interpret the readings we receive from the array.”

“Surely this isn’t what you brought me here to see?”

“Right. Let’s take a little journey.” He passed his open palm over one of the controls as he spoke a series of coordinates. Suddenly the sky changed around them.

“The galaxy is only one of billions, you know. Galaxies are arranged in gravitationally bound groups called clusters, and clusters of galaxies are themselves arranged in superclusters, and so on virtually *ad infinitum*.”

“I excelled in astronomy at school, Professor,” she said acidly, not knowing where he was going with all of this. She watched while the universe rotated and the galaxy, which had below them, began to shrink precipitously. In less than a second, the Milky Way was just another hazy patch of light on the ebon vault of the viewdome. Other patches streamed past her until one particular patch began to grow. As it grew, the smudge of light split and became numerous tiny smudges, which in turn grew until each developed a tiny shape of its own. When the expansion halted, it was as though some careless giant had sown the sky with hundreds of tiny spirals, each oriented at random.

“This is the Virgo cluster of galaxies, which is the gravitational center of our own local supercluster. It is about 70 million light years from here. It contains some 250 large galaxies and about 1000 smaller ones.”

Tessa felt a momentary pang as her mind struggled with the scale of the universe, something for which the human brain is singularly unsuited. After seven centuries of star travel, humanity had visited less than 0.1 percent of the suns in the home galaxy. As for the Andromeda Galaxy, humanity’s closest neighbor, it remained unattainably distant. On the viewdome stretched hundreds of galaxies, many far larger than the Milky Way, all crammed into a portion of the sky that could be covered by a thumbnail held at arm’s length.

Nor was this particular galactic cluster unique. There were galactic clusters everywhere one looked in the sky, so many that the astronomers barely paid attention to anything as small as a mere galaxy. The entire fifteen billion light year diameter of the universe was so filled with galaxies that on a large enough scale they had the appearance of being the foam flung skyward by some overpowering violent surf. There were more galaxies in the sky than grains of sand on a beach. It was enough to give even a starship captain a feeling of inferiority.

The Virgo cluster was so large, the number of galaxies within it so numerous, that it took a dozen seconds for her to notice the small violet sphere in the crosshairs of the viewdome’s coordinate display.

“What is that?” she asked, wondering if it were part of the display.

“That, Captain Hallowell,” the astronomer said heavily, “is the reason why the Hegemony must not secede from the Communion of Humanity. More importantly, it is the reason why you must not destroy this observatory!”

#

“What is it?”

“We call it The Void. It is absolutely pure vacuum as far as our instruments can determine. No stars, no planets, not even cosmic gas or dust.”

“How come we can see it then?”

“For reasons that I will explain, the void possesses an event horizon. Any normal matter that crosses that event horizon is converted into pure tachyon energy.”

“Event horizon? Like a black hole?”

“The analogy is close, but The Void is not caused by gravitational curvature like a black hole. In

fact, we do not know what causes it. All we do know is that it appears to be a sinkhole into the tachyon universe.”

“I’m afraid I didn’t get that far in astronomy class, Professor. What, exactly, is a ‘tachyon universe?’”

“The theory is a very old one. It was first postulated more than a thousand years ago and has been generally accepted since the invention of FTL travel. It was back in the twentieth century that people first realized the true nature of the universe, namely that it began in a titanic explosion. Our ancestors somewhat whimsically dubbed this colossal event ‘The Big Bang.’”

“I’m familiar with the concept.”

Vannick ignored the sarcasm. “The important point is that the Big Bang did not create one universe, but three. Those three are the universe we see, the antimatter universe, and the tachyon universe.”

“I beg your pardon.”

“Believe me, Captain, there are strong scientific reasons for believing that these universes exist. Your ship is one. Without The Trinity, as the three universes are collectively known, there could be no fl ships.”

“Right. What do these other universes do?”

“The antimatter universe, as the name suggests, is composed almost solely of antimatter, just as ours contains mostly normal matter. Time flows backwards there.”

“Time flows *backwards* ?”

Vannick shrugged. “Why not? There is nothing inherent in the nature of time that causes it to have a preferred direction. In fact, antimatter is nothing more than normal matter for which time is reversed. The tachyon universe is the one that contains all of the superlight particles created in the first moments of the Big Bang. Nothing in the tachyon universe can travel slower than light, just as nothing in our own universe can travel faster than light, save inside an fl drive field.

“You called The Void a ‘sinkhole.’”

Vannick nodded. “We think our universe has somehow managed to collapse into the tachyon universe, taking a great deal of normal matter with it.”

“And matter that falls into the sinkhole are transformed into tachyons?” Tessa asked, interested in spite of herself.

“Correct. Normal matter cannot exist there.”

“Interesting,” she said, “but I fail to see what this has to do with my mission, Professor.”

“Two years ago, Captain, The Void was but a bright, dimensionless point of faster-than-light energy. It is now four million light years in diameter and has just consumed its second galaxy. If it continues to grow as it has, within 75 years, *it will consume our galaxy!*”

#

For a moment, the viewing compartment became indistinct as Tessa labored to catch her breath. The sensation was remarkably like being punched in the stomach. When finally she could speak again,

she asked, "Is this some sort of a joke?"

"If it is, it isn't a very funny one," he replied puckishly.

"Why haven't the other astronomers reported this?"

"The other astronomers work with electromagnetic radiation, which is limited to light speed. The Void's rate of expansion is trans-Einsteinian. Normal light astronomers will see nothing awry even should they happen to be staring directly into The Void as it washes over them. The wave front is advancing at a million times light speed."

"So you alone have discovered this menace?" she asked caustically.

He nodded. "My people and I. We have the only instrument in existence with the capability of mapping tachyon emissions at such long range. We have been studying this for two years. Our data, which we have forwarded to all of the major astronomical facilities within the Communion, has been classified Most Secret. It was the government's hope to avoid mass panic. Perhaps it would have been better to release the news. Panic just now would be vastly preferable to rebellion."

"How do I know that thing out there is real? You could easily have programmed your computer to display this ... this ... hallucination!"

Vannick moved his hand across a new set of controls and suddenly The Void expanded until it was more than two meters across. At this level of magnification, it was fuzzy, with the barest hint of a mottled surface.

"Does that look like a spur of the moment programming job? We have thousands of hours of observations on file. Do you think we could have produced those in the few seconds between the time your people blasted their way in here and when we were captured?"

Tessa hesitated. She had to agree that they had not had any time to react to the invasion, unless they had spotted *Warwind* during the long approach. Except, if *Warwind* had been seen, New Rome would now be on full alert.

"Show me your files," she commanded gruffly. She was beginning to understand the implications of this new discovery. Suddenly the universe did not seem so large and impersonal. In fact, it had just become *very personal!*

Vannick complied with the order. He showed her records of The Void when it had been a dimensionless source of tachyon emissions, as it had looked when it first developed a disk, and again, when it consumed the galaxy in which it had formed. The review took more than an hour, but in the end, Tessa Hallowell found herself convinced of the truth of the astronomer's claims. Convinced and very confused.

She spoke not a word when the last fuzzy starfield faded and the lights came up in the observation globe. She considered for a moment, and then asked, "What is New Rome planning to do?"

"What can we do for the moment except observe the beast?"

"Can it be stopped?"

The astronomer laughed. There was very little merriment in the sound. "Our ancestors used to think hurricanes were awesome. Compared to The Void, a hurricane isn't even Brownian motion!"

“You’re saying that we’re helpless.”

“Not helpless, Captain. We can learn everything possible about the phenomenon and then figure out how to keep out of its way. That is why you must not destroy this observatory. We need every minute remaining to learn all we can.”

“Keep out of its way how?”

“How fast is your ship?”

“That is classified information.”

“Let me guess. Your top speed is about fifteen thousand lights, correct?”

“Something like that,” she allowed.

“Well, if we’re going to outrun The Void, we need ships with top speeds on the order of 2 million lights . Even if it gobbles up the entire universe, it will take 1500 years to do so. We can learn a lot in fifteen hundred years. Perhaps we will learn how to survive whatever comes after. Then there is the possibility of escaping back into time. Remember, time runs backwards in the antimatter universe. Why not here, too?”

“If we had escaped back into time, wouldn’t there be a record of it?” Tessa asked.

“Not if the refugees from the future colonized worlds far distant from those we now inhabit. The universe is a large place, Captain Hallowell. There is nearly an infinity of worlds we could use. I have had two years to think about this, and believe me, the possibilities are endless. However, we must concentrate the energies of every single human being on the problem. This is no time to divide the race with a war, Captain.”

“I don’t make policy, Professor.”

“You can influence policy!”

“How?”

“By reporting what you know. If you were to tell your high command about The Void, then they will call off this insane attack. I know they will.”

Tessa shook her head. “Too many ships are in motion. Things have gone too far to call them back now.”

“Have they?” he demanded shrilly. “Have they really? There is no power in the universe that can recall those ships?”

In reality, she knew, there was. Every ship captain had been supplied with a code sequence to abort the attack if they came across evidence that the Galactic Guard had been forewarned. A captain who used the sequence for any other purpose would likely be shot.

“I’m sorry. I have my orders and I must carry them out. The universe will have to look out for itself until we win our freedom from New Rome.”

“*Think, woman!* We are talking about the end of everything we know in less than 75 years! That isn’t even one lifetime. If we start building now, we may be able to save much of our population when the time comes, but not if you people and the Galactic Guard slug it out across the star lanes for the next

twenty or thirty years.”

“We project a war of less than two years,” she answered, no longer as sure of herself as when she had boarded her gig this morning. In truth, history was rife with such rosy predictions. They seldom came true. “There will be plenty of time afterwards to study this void of yours.”

Vannick gazed at her as one does a student who is slow to understand the lesson being taught. When he spoke again, there was soft pity in his voice. “The Void may not be our only problem.”

“What do you mean?” she asked, suddenly suspicious.

He dimmed the lights and brought the display back up on the screen. He passed his hands quickly over the controls. The violet void dimmed until it became a phantom object framed against the obsidian blackness of space. Somehow, it had also grown larger and fuzzier, as though it had developed a halo. The halo was not violet like the sphere. It was pale yellow and indistinct, so much so that it was nearly invisible.

“What did you do?”

“I’ve filtered out the highest energy tachyons. What you are seeing now are low energy particles that tend to be washed out when we look at The Void.”

“Low energy tachyons? What is the source?”

“Starships.”

#

Tessa Hallowell barely reacted to the news. There had been too many shocks this past hour. She was put in mind of an old expression: “You can’t wet a river.” That was the way she felt.

“Whose starships?” she asked in a voice made toneless by too much emotion.

“The races of the Virgo Cluster, of course. You didn’t think that we were the only starfaring race in the universe, did you? God wouldn’t be so wasteful.”

“But it has only been two years since the appearance of The Void. How did they arrange an evacuation so quickly?”

“A good question,” the astronomer agreed. “In some cases, they must have only had a few months warning, possibly less. Even on such short notice, they managed to send billions of starships in this direction at velocities substantially in excess of a million lights. We are going to have to deal with those people long before The Void’s event horizon passes this way. Do we want to be engaged in war when those ships arrive in this vicinity? Moreover, what about all of the other races from all the thousands of galaxies that will soon be taking flight? Just how crowded do you think it will be on whatever distant planets we finally choose for refuge?”

It is often said that one’s life passes before one’s eyes at the moment of death. Tessa experienced a similar sensation. She suddenly found herself floating above her father as he blasphemed New Rome. Her detached consciousness seemed to hover in a classroom at home on Askar as her teachers and fellow students plotted rebellion in hushed tones. She watched as though detached from her body as she once again slaved through the 27-hour days to gain admittance to the Hegemonic Space Academy, and she relived the overwhelming surge of pride that she’d felt when she had been given *Warwind* to command.

It was as though all of her emotions had been burned out through overwork. Try as she might, she could not recapture the patriotic fervor she had once felt at the thought of throwing off the Communion's yoke. Indeed, as she watched the tracks of starships fleeing The Void, it was difficult to recall the Hegemony's reasons for wanting to separate from the Communion of Man. Suddenly the coming fight with the *gigi*'s seemed akin to two ant colonies fighting over the same crust of bread.

The attack of ambivalence lasted an eternity that measured a dozen seconds by chronometer. When it passed, it left behind a Tessa Hollowell who was not the same woman who had set out from her ship a conquering hero. This new Tessa Hollowell was much older and wiser than that adolescent of a few hours previous. She turned to Vannick and with deceptive calm said, "I want recordings of all your observations, along with all communications relating to The Void."

"You'll get them, Captain."

"Good. I will broadcast them to my headquarters as soon as my ship breaks orbit. I suggest that you send a warning to New Rome about what you have learned today, as well."

"Does that mean that you aren't going to destroy the observatory?"

"It means that I will probably be shot for not doing so, Professor Vannick. I hope it is worth it."

"It is," the relieved astronomer said. "And, Captain, ... thank you."

Tessa barely heard him. She keyed her personal communicator. "Sergeant Major Cochrane."

"Yes, captain?"

"Prepare to disembark the observatory. We're going home."

There was a heartbeat's hesitation before the customary response. "Yes, ma'am!"

"Patch me through to the ship."

The next voice she heard was that of *Warwind*'s communications officer.

"Pasqual, send 'Vertigo Veritatus Velocipede' to headquarters. Do you have that?"

"'Vertigo, Veritatus, Velocipede. Aye aye, Captain?"

Tessa listened to the words that would cause a mighty armada to halt in its tracks, turn around, and then return to base without a shot fired. She hoped she was in time. She waited tensely for the automatic acknowledgment from Hegemonic headquarters, knowing that it would take a few minutes before the angry questions began to fly starward. She ordered communications to shut down, anxious that her own arrest order not arrive before she'd had time to explain her actions to her crew and superiors back home.

She turned to Vannick and said; "We'll have to draw from your stores in order to get home, Professor."

"You are welcome to everything we have in surplus above our barest necessities, Captain."

A very chastened Tessa Hollowell climbed aboard her gig half an hour later with several record cubes tucked into her pockets. She gazed neither at the Milky Way, nor at the tiny patches of other galaxies. She no longer felt any desire for stargazing. The universe no longer seemed the overwhelming giant that it once had. In fact, despite being fifteen billion light years in diameter, it seemed almost

claustrophobic.

Author's note for *The Void* :

There is a rule in writing that in order to be effective; an author must “particularize.” In other words, if you blow up the world, everyone will yawn; but if you blow up the world and a little girl with a broken arm who is out searching for her stray cat, there will not be a dry eye in the house!

The Void is essentially an attempt to see how wide I could broaden my horizons and still write an entertaining story. I think you will agree that the horizon couldn't get much wider, and as for whether I have succeeded in writing an entertaining story ... well, you will have to be the judge of that. Like *Beer Run* before it, *The Void* started out as a writing exercise and turned into a story.

It was published in the May 1995, issue of Analog Science Fiction. Interestingly, I nearly missed it! I was at a school giving a lecture when someone brought me up a copy of the previous month's issue and showed me my story. I immediately ran out to buy up all the copies on the newsstands and found that they had already been pulled. I looked for my subscription copy, but apparently, we were between subscriptions at the time (wives never seem to understand the importance of keeping the SF magazines coming in an unbroken stream). So, I ordered a batch from Analog direct.

Had that nice lady at the school not showed it to me, I would probably still be waiting for its publication!

LYSENKO'S LEGACY

There are things in life more important than ideology. Sometimes it takes the wisdom of age to realize this simple truth.

“*The days are too short in December,*” thought Vladimir Ivanovich Petrov as he hurried downhill along Tverskaya Street past Pushkin Square. As he did so, he breathed in the cold winter air of Moscow, which was characteristically heavy with the smell of automobile exhaust fumes and impending snow. His fur *shapka* was jammed tightly onto his bald head, but with the ear covers still tied up such that his naked earlobes were exposed to the frigid atmosphere. He did not need to see the twin flaps of flesh to know that they were the same bright shade of pink as his cheeks and nose; the needles pricking at his features from the inside told him that. As last night's covering of snow crunched beneath his winter boots, he burrowed more deeply into the warmth of the mink lined collar of his coat and lengthened his stride to speed his progress toward the glowing red stars that were just coming into view down the street.

Tverskaya was one of the Soviet capital's show arteries, six lanes wide and modeled after the boulevards of Paris. Despite the early hour, the avenue was jammed with traffic -- oversize trucks, all painted the monotonous pea-green of the Soviet army, and smaller automobiles that represented all the colors of a somber rainbow. Intermixed with the Russian Zhigulis, Ladas, and Moskvitches were

“foreign” models -- Mercedes, Bentleys, Volvos, and Fiats -- from the associate republics of the Greater Union of Soviet Socialist States.

It was past 0700 hours and still the sun had yet to put in an appearance. As he hugged the cold facade of a building to avoid being splashed by the oily dark liquid that pooled near the curb, Petrov wondered why the scientists hadn't solved the problem of Moscow's dark winter days before now. Perhaps the comrades in the Physics Directorate had not yet been properly motivated. Doctor Professor Petrov was a biologist, not a physicist, but if there was one thing the Soviet Saint had taught them, it was that human beings could work wonders if properly energized.

If the physicists could build atomic powered aircraft able to orbit the Imperialists' North American stronghold for years without refueling, why couldn't they provide the residents of the most powerful city on Earth with a little winter sunshine? In his mind's eye, he saw giant aircraft circling the capital of the G-USSS just beneath the winter clouds, illuminating the landscape with great searchlights built into their bellies. Perhaps the searchlights could even be colored! What a glorious sight would be the ever-changing kaleidoscope of multihued shadows as the sunlight planes orbited overhead.

He contented himself with the thought of a multihued Moscow until he reached the underground tunnel that led down beneath Tverskaya and across to the red brick buildings along the western border of Red Square. The tunnel served as a gathering place for the new free-market vendors hawking their wares. Petrov gazed at the bundled up people standing quietly on both sides of the tunnel and felt a momentary surge of irritation. Since the days of the Kulaks, private property had been anathema to all good Communists. It had been the late General Secretary who had loosened the laws against private property sufficiently to allow these street vendors to ply their trade. In Petrov's opinion, such liberalization was as dangerous to the G-USSS as the imperialist air force, and should be guarded against with equal vigilance.

A large crowd of people milled about near the western end of the pedestrian tunnel where escalators brought commuters up from the metro. Petrov joined the crush and fought his way through to the steps leading back up to street level. There he noted two menials who were chipping ice from the steps without regard to the traffic barrier they were creating. As he passed the slowly working louts, he heard Russian spoken with thick English accents. He smiled inwardly at the sound, but did not pause. The people's business was too important to waste on remembered triumphs, not when there were so many future triumphs to come.

Petrov disdained walking the western length of the Kremlin Wall toward the river entrance. That was for comrades who labored in obscurity to serve the proletariat just as he himself had done for nearly thirty years. Those years of hard work and unwavering devotion to the party line had paid off with his appointment as Chief Inspector of the All-Union Biological Institute. Petrov's current position allowed him to enter the Kremlin through the new gate just beyond the mausoleum of Stalin and Lenin, and as such, caused him to be inspired each morning by the statue of the Great Man.

The Colossus stood in the center of the square. Nearly as tall as Saint Basil's, the great statue looked southwest, as though staring toward Smolensk where an atom bomb of the Soviet Air Force had vaporized the massed tanks of the Hitlerite bandits in the darkest days of the Great Patriotic War. After Smolensk, nothing had stopped the soldiers of the *Rodina* as they swept unhindered into Germany. Petrov's father had often recounted the day when Berlin had vanished in nuclear fire, and the fascists had sued for peace. June 6, 1944, had been the greatest day in the history of the world!

The Soviet Saint had lived twenty more years and had devoted himself to the formidable task of consolidating the Greater Union beneath the Soviet nuclear shield. Before his death in 1964, Stalin had extended the Union from the western coast of Wales to the harbor mouth of Hong Kong. Only the twin

obstacles of the Atlantic and Pacific Oceans had slowed the great consolidation. Even these two great natural barriers would not hold the forces of socialism forever. Petrov expected that before his life was over, he would see the Red Banner fluttering above every capital on Earth.

The post-war years had been good ones for Soviet science, which was only proper since it had been science that had crushed the Hitlerite foe. Not even the advances in atomic physics had exceeded those in Petrov's own field, biology. For in the complex structure of the cell were to be found the greatest mysteries of the universe.

Petrov stopped at the gate to present his papers to the two members of the Taman Guards stationed there. Two meters tall, with broad chests and rippling muscles bulking out their greatcoats, the soldiers' stern expressions could not quite make up for the youthfulness of their faces. Petrov smiled inwardly. He had helped develop that particular strain in the years he and Marina had lived in the city of Perm in the foothills of the Urals. Those had been good years, with meaningful work, a beautiful and loving wife, and a new son to keep him occupied. He remembered the many times he and his son had canoed on the Kama River, floating past the huge camps where the world's most important experiments were conducted.

The guards held him up for the regulation 15 seconds before handing back his internal passport and waving him through the security barrier. A dozen strides later found him through the great wall of red brick and inside the Kremlin itself. The weather was more comfortable here in the lee of the wall amid the buildings that housed the center of government for the G-USSR. As he hurried through courtyards where once Czars and Czarinas trod, Petrov's reflective mood continued. He saw not the cold winter day, but rather a lively spring morning a dozen years past. His son Mikhail Vladimirovich had been twelve at the time, and Petrov had brought him into the Kremlin to see the historical exhibits. They had toured the Armory, filled with Faberge eggs and silver gifts to the long dead czars. They had seen the Arsenal, around which were still stacked the hundreds of cannon captured from Napoleon's *Grand Armee* nearly two centuries earlier. Nor was the French artillery train the only cannon within the Kremlin walls. Young Mikhail had exclaimed in wonder at the big Czarist cannon on display there, a gun of sufficient size that a small man might climb completely into its bore if we wished a spectacular means of committing suicide.

However, the moment that Petrov remembered most fondly was when he had showed Mischa the statue of Lysenko, Father of Soviet Biology. Mikhail Vladimirovich had stood quietly with his head tilted back and his mouth open for nearly a minute while gazing up into the features of the great man. It had been then that he had told his father that he, too, wanted to be a biologist when he grew up. That spring day in the Kremlin courtyard had been the best day of Petrov's life.

#

LYSENKO, TROFIM DENISOVICH (1898-1967)

Hero of Soviet Labour, Biologist

#

T. D. Lysenko was born in a small village in the Karlovka region and graduated from the Uman School of Horticulture in 1921. He was initially assigned to the Belaya Tserkov Selection Station before receiving a degree as Doctor of Agricultural Science from the Kiev Agricultural Institute. After a further series of assignments, Comrade Lysenko was appointed senior specialist in the department of physiology at the Ukrainian All-Union Institute of Selection and Genetics in Odessa.

It was there that Comrade Lysenko became interested in a process known as "vernalization." The

method involved immersing the seeds of winter wheat in water and then freezing them. Seeds so treated germinate in the spring and grow to maturity before the killing frosts of autumn, thereby increasing the efficiency of our collective farms. Seeds not so treated lie dormant through much of the summer growing season.

Contrary to popular belief, Comrade Lysenko did not actually invent the vernalization technique. It had been known to agriculturists for centuries. His contribution to our glorious science lay in noticing something that all others had missed.

With the goal of improving the yield of crops on the new state *runkolhozes* (collective farms), Comrade Lysenko experimented with a batch of seeds of a particular species of wheat. He froze the seeds for several days, then thawed and planted them. When the young wheat plants sprouted, he found that most were identical to their parents, but that a few appeared to be of a completely different species. Thus, he reasoned, while the stress of freezing had merely reset the biological clocks of most of the plants, the actual heredity of a few special plants had been altered as a result of exposure to cold. From this humble beginning grew the thought that would, many years later, be formalized as Lysenko's Law:

"There exists within every species the possibility of changing the genetic makeup of individual organisms through the application of environmental stress."

Comrade Lysenko announced his discovery at the All-Union Biological Conference in Moscow in 1930. His paper was not well received by the reactionaries who were in control of Soviet biology at the time. Most maintained that evolution could only take place from generation to generation and never within a single organism. Indeed, many of the biologists in attendance, notably, the infamous N. I. Vavilov, demanded to know if Comrade Lysenko was next going to begin cutting the tails off rats. The remark referred to a theory by the 18th Century French philosopher, Lamarck, who maintained that if one cut the tails off enough generations of rats, eventually the species would be born tailless. Others demeaned Lysenko's results as being caused by sloppy experimental technique, namely the contamination of the original wheat sample with seeds of the other species.

The argument between Comrade Lysenko and Vavilov went on for nearly five years, with many of the more reactionary biologists siding with Vavilov. Lysenko was not without his allies, however. Several highly intelligent scientists, notably I. I. Prezent and V. R. Vilyams, came to his defense. Lysenko's argument with the biology establishment might have remained merely a squabble among specialists had he not come to the notice of our great leader, Josef Stalin. The Soviet Saint heard of the brash young scientist and was impressed by the practical benefits of Comrade Lysenko's ideas. In 1935, he made Lysenko director of the institute in Odessa and substantially increased state support for plant research.

By this time, however, Comrade Lysenko had foreseen even greater benefits to be derived from his discovery. If environmental stress could be used to alter the heredity of plants, he reasoned, why not apply the principle to higher organisms as well? However, it was not until the outbreak of the Great Patriotic War some five years later that Lysenko was given the opportunity to prove the full range of his theories.

--From *Geroi Soyuzo Sovietskikh Socialisticheskikh Respublik* (Heroes of the Union of Soviet

Socialist Republics), 1992, Moskva, Rossiya

#

Vladimir Petrov entered the long mustard yellow building that housed the offices of the Greater Union Biological Institute. The decor inside was plush, as befitted the union's premier scientific establishment. Petrov's shoes sank into the plush crimson carpet as he walked, even to the point of leaving a barely discernible trail, as though in snow, behind him.

He had used the private entrance to the institute, as was the habit of most of the staff. To enter by the public door would have meant navigating through the ever-present crowd of wailing mothers, tearful babushkas, and forlorn fathers, all of whom were seeking exemptions for loved ones. Nor were all such seekers old. Young people often came in person to seek exemptions for themselves. Like a horde of cursed capitalists, they came clutching sheaves of ruble notes, each hoping to find an official who would take their money in exchange for the coveted exemption. The young women, of course, offered other inducements than money.

There had been a time when Petrov could elbow his way through the jostling crowd without really seeing them. No longer. Now to navigate the cavernous public hall of the institute was to subject himself to an emotional tug-of-war that threatened to rip him asunder. He would rather have faced Guederion's massed panzers alone.

He reached the oversize door leading to his own office and pushed it open. Inside, his secretary, Natalia, was on the telephone and his assistant, Grigoriy, was perched on the edge of her desk, undoubtedly attempting to win some measure of sexual favor from her. Grigoriy snapped to attention, somewhat comically, Petrov thought, and Natalia smiled, covered the mouthpiece with her hand, and wished him good morning.

"Good morning to you as well, Natalia. Grigoriy Borisovich, do you not have duties to perform?"

"*Da*, Comrade Chief Inspector."

"Then please perform them."

"Yes, Comrade."

"Natalia, the morning reports as soon as you are off the telephone."

"Right away, Comrade Chief Inspector."

"And my morning tea, too."

"Five minutes, Comrade."

Petrov nodded and pushed through into the inner office. Like the rest of the institute, his office was richly furnished with czarist finery. His writing table and chair were at least a hundred years old. Even so, he would have preferred a regulation government desk and a chair made of good Siberian ash. He removed his coat and *shapka* and hung them on the clothes tree provided for the purpose before moving to sit down in the delicate chair that was one of the perquisites of being a chief inspector.

On the edge of the writing table were a photograph of Marina and little Mischa, taken while they had still lived in Perm. The sight of his dead wife caused the usual small pang to form in his heart. That was not the reason why he quickly averted his eyes, however.

He reached for the morning's *Pravda* and had barely finished the first story concerning crop yields in Uzbekistan when Natalia knocked on his door and then stepped inside. She laid the morning report on his desk along with a glass of steaming tea in a silver holder before turning to go.

"Natalia!"

"Yes, Comrade Chief Inspector?" she answered as she turned back.

"Is Grigoriy bothering you again?"

Her pouty lips beneath high cheekbones and slanted eyes widened into a smile. "Our little boy Grigoriy is just being himself, Comrade. I can handle him."

"If he gets to be too much of a bother, let me know and I will say something to him about it."

"Yes, Comrade Chief Inspector. Will there be anything else?"

"Not at this time."

Petrov laid aside the paper and opened the green file folder. The paper was light gray in color, and had been typed on a typewriter with too light a ribbon. Central supply was being niggardly again, he noted, and resolved to lay in a stock of the precious ribbons. He was getting too old and too set in his ways to tolerate straining his eyes on a report that was barely readable. What were they trying to do, blind him?

Nevertheless, he quickly scanned down the multiple columns of figures. The casualty lists were approximately as he expected.

The cold weather project at Omsk had lost 1.2% of their subjects over the past week. By the end of winter, they would be down to one-third the number they had started this year's experiments with ... again. That was to be expected. Developing a human being that could live, work, and fight in snow was a dream that the Greater Union had been pursuing for nearly thirty years. Results had been disappointing. The problem, of course, was that cold adaptation was not a single gene or even a few related genes. It was a complex of genetic characteristics that ranged from one end of the DNA molecule to the other.

"How many had died in the search for that particular Holy Grail of science?" he wondered somewhat blasphemously to himself. The blasphemy was against the Greater Union, not the Christian religion in which he did not believe. "Millions? Tens of millions?" He could have looked, of course, but why depress himself on such a cold, cheerless morning?

Petrov had just finished working his way through the voluminous columns of statistics that were the morning report and in the process managed to drink three-quarters of the heavily sugared tea, when Grigoriy knocked respectfully on the office door before entering.

Petrov looked up in irritation to see that his aide had his fur coat and *shapka* on. He strode directly to the clothes tree to fetch Petrov's own.

"What is it, Grigoriy?"

"A message from the Director, Comrade Chief Inspector. There was some trouble at Zagorsk last night. He asks that you look into it."

"Trouble? What kind of trouble?"

“A riot by the experimental subjects, I believe, Comrade.”

Petrov nodded. The Zagorsk camp was engaged in a program to breed a strain of humans capable of living and working with ten percent less food intake. The program was not one of Petrov's favorites. In fact, it had been begun at the behest of the Ministry of Agriculture after he, Petrov, had recommended against it. In his opinion, the Greater Union would be better served if the comrades at Agriculture worked half as hard at growing foodstuffs as they had in lobbying the Biological Institute. Their efforts had put Petrov in mind of a joke that periodically made the rounds of the office, a joke about a fictitious Lysenko Program that attempted to breed a horse that need not be fed. The joke was that those in charge of the program kept reporting that they were progressing well, but that the horses died just shy of success. Like most jokes, this one had enough truth in it to make the subject an uncomfortable one for those in positions of power.

That there had been a riot among the experimental subjects at Zagorsk did not surprise him in the slightest. Even the most zealous of socialists had difficulty remembering the public good when their bellies were empty. Unfortunately, even the Great Lysenko himself could not find a method that would force the subject's DNA to adapt to new conditions while leaving the subject himself in good humor.

In truth, the Science of Lysenkoism was too new, its results too haphazard, for Petrov's peace of mind. No matter what experimental technique was used to force a desirable genetic change, the percentage of subjects who bred true after treatment was always low. Among Great Russians, for instance, the number of subjects who showed positive results ranged from 0.1 to 0.3 percent, and that after a preselection process that chose only those with the greatest opportunity for success. That was the reason why the camp populations were so large at the beginning of an experiment, if only one person in a thousand responded to treatment, the initial experimental sample must, of necessity, be a large one.

There had long been an argument within the institute as to why results were so poor. Some of the senior biologists maintained that there was a recessive gene -- yet unidentified -- that allowed organisms to alter their genetic makeup in response to environmental stress. The problem, these scientists maintained, was a simple one, namely that the gene in question was only present in a small percentage of the population. Other biologists theorized that Lysenko adaptation was controlled by the human mind, and that given a proper incentive, anyone could adapt. While counterintuitive, the theory had the advantage of explaining why human beings were the least adaptable of any species yet tested.

A wheat plant exposed to freezing cold at an odd time of the year has no way of knowing that it is being artificially forced from its normal cycle. Neither does a bovine whose udders are pumped a dozen times a day to encourage milk production. However, human beings are intelligent and can recognize when their environment is artificial. Knowing that conditions are not normal, the human brain always resisted making a change. The Great Lysenko had characterized this tendency by postulating that “intelligence is inherently conservative.” In practice, a positive Lysenko Adaptation was only possible when the experimental subject became absolutely convinced that the experiment would continue until either death or success resulted.

Nor was it possible to concentrate only on the single environmental change that was the goal of a particular experimental series. To prepare an organism for adaptation one must necessarily assault it on several fronts: hunger, thirst, heat, cold, sleeplessness, and enforced exercise.... Any or all of these must be applied for months or years at a time before the survivors' subconscious minds gave up their fight against change.

Those fortunate few who adapted were richly rewarded for their service to the state. Once out of the camps, they were given fine apartments and even their own automobiles. Women spent their days exercising, eating well, and bearing as many children as possible. Men were similarly pampered, although

they were given work other than merely servicing the women. Some maintained that such luxuries were inconsistent with true socialist philosophy, but Petrov believed that they were a small enough price if they kept the valuable breeding stock content. For once, the human genetic code had been forced into the proper socialist path; it needed to be duplicated as quickly as was practical.

Petrov considered all of these factors in the time it took him to rise to his feet. As his aide helped him into his coat, he wondered how badly the program at Zagorsk had been damaged. Once ensconced in fur, he turned toward the door. "Come, Grigoriy. Let us go see for ourselves what has happened."

#

Zagorsk was eighty kilometers northeast of Moscow. It was reached via a wide highway whose two halves were separated by a snow-covered strip of cleared ground. The institute's Zhil automobile raced away from the capital at 120 kph, its driver confident that the GAI, the traffic police, would never dare to stop him for speeding. He did not even slow as they passed the GAI inspection station that stood on the outskirts of the city. Petrov had a brief impression of a greatcoated policeman saluting him as they roared past. Behind the policeman lay the inevitable junkyard of wrecked autos that such stations always seemed to collect.

In czarist times, Zagorsk had been the seat of the Russian Orthodox Church. Even with its current status of cultural museum, the walled compound was gorgeous as they swept past it less than an hour after leaving the Kremlin. Visible above its whitewashed walls were nearly a dozen onion domes. Some were bright blue with gold stars, while others were pure gold. Each was topped by the double bladed cross of the eastern Christian churches.

Zagorsk Camp, a kilometer down the road from the old religious center, lay in stark contrast to the great cultural monument. The camp was modeled after those of the Red Army, with row after row of barracks stretching back into the birch forest. Petrov and Grigoriy presented their credentials at the gate and were ushered through onto the muddy track that served as the main road into camp.

The headquarters building was a hundred meters inside the tall triple fence festooned with "Danger, High Voltage" warnings. As the Zhil splashed its way to a halt in front of the building, a portly man in an ill fitting brown suit huffed his way onto the wooden porch that ran the length of the building.

"All right, Alexander Alexandrovich, how did it happen?" Petrov demanded as he mounted the three steps leading up to the porch and the waiting camp director.

"Good morning, Chief Inspector," A. A. Sermentov stammered.

"I asked you how it happened." Petrov's voice held that quiet quality that signified to anyone that knew him that someone was in very serious trouble. Sermentov blanched at the sound. Perhaps, Petrov decided, the camp director had guessed his thoughts. Sermentov was too old to enter the experimental program -- not enough breeding potential if the requisite Lysenko Adaptation were successful -- but that wouldn't stop him from so ordering if he thought the camp director had failed in his duty.

"I ... I ... don't know, Comrade Chief Inspector. We were doing our weekly cold stress exercises on the parade ground when the subjects rushed the gate. They must have planned it for some time, else why would it have occurred to so many of them at once?"

"Perhaps they were merely tired of the cold," Petrov interjected mildly. "What happened next?"

"The guard towers began firing over their heads until they reached the compound gate. When it appeared that they would break through into the headquarters area, they fired into the crowd. All was in

accordance with doctrine.”

“How many dead?”

“Twenty six, Comrade Chief Inspector.”

“And wounded?”

“Fourteen.”

“I don’t suppose the wounded will be able to continue the experiment.”

“No, Comrade. I have had them transferred to a hospital for treatment of gunshot wounds.”

Petrov nodded. One thing the Great Lysenko had learned early in his researches was the effect of physical trauma on the adaptation process. It was as though there were two levels of healing at work within all organisms -- a short term healing process for injuries and a long term healing process to adjust to permanent environmental changes. Unfortunately, the human body had the same outlook as a factory worker with a liter of vodka in his belly. Short-term needs overrode all else. Any serious injury to an experimental subject would halt the Lysenko Adaptation process as quickly as a mountain halted any aircraft foolish enough to try tunneling its way through.

“Therefore, Comrade Chief Scientist, your inability to keep order in this camp has wasted 40 prime samples of genetic material. Not only prime samples, but those into which we had already pumped a great deal of time and many millions of rubles.”

“I am afraid so, Comrade.”

Petrov’s respect for the fat fool raised a notch at his admission of culpability. He decided to put off disciplinary measures until he had more facts. “Well, there is no sense trying to milk a goat that has been turned into stew, is there? Let me see the parade ground.”

“This way, comrade!”

The camp director led the way around the side of the headquarters, through another high fence, and into a cleared area. The space did indeed look like an army parade ground. Lying on the ground around the inner gate were heaped the bodies of numerous men and women, their features and limbs contorted by death struggles and frozen in place by the cold. The bodies were nude beneath a light covering of snow, which somehow made their deaths even more obscene.

“They are as they fell?” Petrov asked.

Sermentov quickly nodded. “We knew that Moscow would send someone to investigate. Save for removing the wounded, the scene has not been touched.”

Petrov knelt down and brushed snow from one of the faces that gazed sightlessly skyward. The woman had been about the age of his Marina when he had married her. If she had not been so skinny -- protruding ribs and flat breasts showed the effect of the current experimental cycle -- she would have looked even more like his dead wife.

Damn the Ministry of Agriculture! Why can’t they just grow enough food to feed all of us? He wondered as he rose and turned away in disgust. His baleful glare as he turned to face the camp director was not lost on that worthy. The look left no doubt, if there had ever been one, that the investigation was about to begin in earnest.

#

En route to Moscow some four hours later, Grigoriy interrupted his boss's introspection to ask, "What are you going to do with Sermentov, Comrade Chief Inspector?"

"I don't know," Petrov replied somberly. In fact, he had been pondering that very subject. The man had failed to take precautions against rioting because he had failed to recognize that even the most committed citizen could lose his fervor if forced to do naked calisthenics in a snowstorm. That had been a grave error in judgment. To make it worse, the Zagorsk project had been in operation for more than six months, meaning that those 40 people had survived the initial winnowing process. Sermentov's oversight had cost the state dearly, and the state did not suffer failure gladly.

"Did you see any evidence that the experiment at Zagorsk is bearing fruit?" Grigoriy asked, again breaking into his thoughts.

"None, so far."

"We had more than a thousand people in this particular group when we began. You would think we would have started seeing results by now."

"Not necessarily. The process is often long and arduous, especially when dealing with something as basic as the body's intake of nourishment."

"In the west they say that Lysenkoism is a fraud, Comrade."

The comment, seemingly from out of the gray sky, caused Petrov to turn sharply toward where his aide sat bundled in furs. "In the west they say many things which are not true."

"Haven't you ever wondered about it, though?" Grigoriy asked as he returned Petrov's intent gaze.

"Wondered about what?"

"Whether there is such a thing as the Lysenko gene?"

The comment shocked Petrov down to the toes that had yet to warm themselves under the car's inadequate heater. "Whom have you been listening to?" he demanded.

The younger man suddenly grew cautious. "No one in particular, Chief Inspector. You just hear talk sometimes..."

"Out with it, Comrade! Who has been spreading these lies?"

"Some of the younger biologists have idly speculated on the subject from time to time," came the weak response.

Petrov's features froze into a cold mask. He knew how the Pope-in-Exile must feel upon learning that one of his cardinals is an atheist.

"The Great Lysenko proved that the process of environmental adaptation some fifty years ago. Only fools and imperialists question the matter any longer. You are, I hope, neither of those."

"Of course not, Comrade Chief Inspector!"

"Then you will prove yourself by telling me exactly what these 'young biologists' have been saying."

Petrov studied his young aide's discomfort with professional interest. Even if Grigoriy did not believe in Lysenkoism, how could he be so foolish as to utter such a heretical comment in Petrov's presence? Another possibility suddenly occurred to him. Could it be that his young aide was an agent provocateur for the KGB? In that case, he must report this conversation at the earliest possible moment.

"They wonder why our success rate is so low."

"Low or not, we do have our successes!"

"But is Lysenko Adaptation at work, or merely natural selection? Think about it, Comrade. We take several thousand healthy people from the general population, we feed them reduced rations for a year, and in the end, most have perished from malnutrition. Who survives such treatment? People who began the experiment with low rates of metabolism. Why do they survive? Because they need fewer calories than those who die. Then we take them from the camps and force them to breed together. Is it any wonder that the children who result inherit their parents' low metabolism rate?"

"You are parroting imperialist propaganda, Grigoriy Borisovich," Petrov warned. "The Great Lysenko did not invent a program of animal husbandry for humans. I want the names of those who have who have filled your brain with this nonsense, Grigoriy."

"I cannot tell you that, Chief Inspector. The comment was made in confidence."

"You are harboring an enemy of the people, Comrade Sokolov. I demand to know who he is!"

Petrov knew the look of petulance that returned his glare. "I'm sorry, but I cannot tell you."

"I warn you, Grigoriy, that this matter is not over."

That was the last either of them spoke until the Zhil stopped for inspection before entering the Kremlin.

#

"Chief Inspector Petrov to see you, Comrade Director," the svelte blonde secretary said while Petrov waited in his boss's outer office.

"Send him in," came the tinny reply from the intercom box.

"*Spaciba*, Lilya," Petrov said as he walked around the desk and opened the tall door leading to the inner sanctum.

"It was nothing, Comrade Chief Inspector," the secretary replied as she returned to her typing. Petrov noted that the ribbon in her typewriter produced bold black letters on paper that was as white as new fallen snow. *Rank hath its privileges*, he observed to himself.

"Ah, Vladimir Ivanovich," the Director said. He stood and put out his hand to Petrov as the chief inspector approached the desk. "How is your son?"

"The same, Comrade Director."

"Well, please let me know if there is anything we at the institute can do."

"You have done too much already."

"Nonsense. Mischa is a Hero of the Greater Soviet Union. Nothing is too good for him."

“Thank you, Comrade Director.”

“Now, then. What happened at Zagorsk?”

Petrov launched into the report he had been mentally preparing since the first moment he'd looked into the sightless eyes of that poor woman on the frozen ground outside Sermentov's headquarters. He summarized the situation for his superior, and then reviewed the casualty list. The director's lips became progressively thinner as he listened, a sign of his growing anger. By the time Petrov had finished his damage assessment, his superior's normally pleasant features had a definite scowl on them.

“Is the program still viable? Do we have sufficient subjects to continue?”

“We have enough subjects to finish the program, Director. The number is still above worst case projections.”

“You still don't like the Zagorsk project, do you?”

“The Director is well aware of my feelings on the subject,” Petrov replied coldly.

“It may help you to know that some of the senior staff agree with you. However, the Minister for Agriculture has a voting majority on the politburo, so what are we to do?”

“I understand the political realities, Director.”

“But you wish you didn't have to worry about them.”

“That is a question which I will prudently not answer, Director.”

“What of Sermentov?” the director asked, returning to the subject at hand.

“He should be replaced immediately.”

“You say that rather quickly, considering who the man's patron is.”

“He is stupid. Our task is hard enough without adding the handicap of stupidity to our problems.”

“How was he stupid?”

“The subjects reached the Third Stage more than a month ago. He should have known they were dangerous and taken extra precautions. He did not. When trouble did break out, his guards acted inappropriately.”

“They acted in accordance with doctrine.”

“I stand by my opinion, Comrade Director. There was never any real danger of the subjects escaping the camp. The most they might have done was enter the headquarters compound. They were naked in a snowstorm. Where could they have gone?”

“Are you going to recommend that Sermentov be placed on experimental status?”

Petrov shook his head. “He is stupid, but not criminal. I do not care whether you make him senior staff member in charge of sewage disposal, or award him *adacha* where he can spend his retirement years counting trees. Just get someone to Zagorsk who can properly run a Lysenko Program.”

“It shall be as you say, Comrade Chief Inspector. Now, what else is bothering you?”

The question surprised Petrov. “Excuse me, Director?”

“Vladimir Ivanovich, I have known you too long not to recognize the symptoms. What else do you wish to discuss?”

“My aide said something disturbing on the trip back.”

“Young Grigoriy Sokolov? What did he say?”

Petrov reported the conversation verbatim. To his surprise, the director did not seem disturbed. He listened with both elbows propped on a writing table even more ornate than Petrov’s own.

“Do you think young Sokolov has been irretrievably damaged by this corruption he has been spouting?”

“Grigoriy has many faults, Director. He is lazy, he believes himself to be Stalin’s gift to women, and he sometimes seems to go out of his way to irritate me. Still, I am used to him and do not wish to take the time to train another aide.”

“If the situation is as he reported, you have nothing to fear. We will have security watch his movements for a while and find out who it is that has been spewing this filth. Remember that we were both young and foolish once ourselves.”

“*Da*, Comrade Director.”

“You look tired, my old friend. Why not go home to your hero son? The written report can wait until tomorrow.”

“Thank you, director. I believe I will.”

“Good. See you in the morning, Vladimir Ivanovich.”

#

Petrov lived in the corner apartment on the ground floor of an old apartment building off Tverskaya. As befitted his rank, his apartment was the best situated in the building. Not only did its location help keep it warm in winter; it also obviated the need to climb stairs on the all-too-frequent occasions when the lift was broken. It also had the advantage of its own small cellar.

As the last gray light of day filtered down through low clouds, Petrov wearily climbed the few steps leading to his apartment. Despite a near absence of crime -- a testimony to the efficiency of the Moscow Militia -- his door was constructed of heavy metal and bore a large, brass lock. Both were signs that the occupant was high in the party hierarchy, or at least a citizen favored by the state.

“Elena Borisnova, I am home,” he called out as he entered. Elena was the nurse and housekeeper the institute had provided him and Mischa. She lived in her own small apartment just one flight up and spent her days with his son.

“Ah, Chief Inspector, you are early. The sun is still in the sky.”

“Such as it is,” he sighed. “How was Mischa today?”

“I believe that he is improving, Comrade Petrov. I truly do.”

Petrov frowned. Elena was as efficient a nurse as he’d had, but her constant optimism depressed

him. He regarded her with a hard look.

“See for yourself!” she sputtered. “I think he recognized me today.”

Petrov stopped in the hall to remove his furs. It had been three years since the first telegram had arrived ordering Mischa to report to the institute for genetic evaluation. The occasion had not been a cause for great concern. All citizens of the Greater Union received a similar summons on their twentieth birthday. It was a preselection process aimed at improving the success rate in the camps.

Nor had Petrov been overly alarmed when the second telegram arrived. That one had ordered Mischa to take an extended series of genetic evaluations. All it had signified was that specialists had determined that he might be predisposed to carry the Lysenko gene.

The arrival of the third telegram had caused Petrov to consider the unthinkable. He had considered obtaining an exemption for his son. As a high official of the institute, it would have been simple enough to do. Indeed, the children of high party officials were routinely given what the average soviet citizen could only dream of -- a lifetime exemption from biological experimentation.

He had carefully broached the subject with his son and had been surprised by the forceful reaction. How, Mischa had asked, could he become a famous biologist like his father if it became known that he had refused to serve the state when called?

So it was that Flight Officer (Experimental) Mikhail Petrov had received orders to report to a Lysenko Camp for inclusion in “experiments vital to the well being of the Greater Union.” The project was not one that belonged to the Institute, but rather, one run by the Air Force. Current aircraft were limited in performance by the limitations of the men and women who flew them. Mere mortals could not react fast enough to control an aircraft at speeds more than Mach 1, nor could they withstand all the gee forces the planes produced without blacking out. Nor could unaided human lungs breath the rarefied air where the jet fighters flew. The Soviet Saint had often reminded his marshals that soldiers too encumbered by artificial devices were at the mercy of the enemy when those devices failed. So it was that the air force had been trying to breed a better pilot for more than two decades.

Petrov remembered seeing his son off that morning at the Byelorussia train station. That had been the last time his son had been whole of body and mind in his presence.

In the second month of Mischa’s stay at the southern Lysenko Camp where he had been assigned, the air force had herded some two dozen experimental subjects into an altitude chamber without oxygen masks. The plan had called for a one minute run up to 10,000 meters simulated altitude in order to put stress on the subjects’ hearts and lungs. It was a routine stress exercise the air force had done a thousand times before. It had not been routine this time.

This particular day had been a particularly humid one and ice had formed in the valve that allowed atmospheric pressure back in the chamber. Thus, nothing had happened when the test technician punched the repressurization button. Another valve, this one in the emergency repressurization system, had been rusted into uselessness and never been replaced. It had taken seven full minutes to restore air to the tank. By that time only two of the subjects still lived. One of those had been Mischa Petrov.

Petrov stopped at his son’s door and steeled himself for the nightly ordeal. The hinges squealed softly as he slowly opened the door and stared into the gloomy room. Mischa was seated in his customary chair, gazing out a dirty window at an equally dirty brick wall some ten meters distant. His bright blue eyes, once so alive with intelligence, were vacant and staring. Spittle ran down his chin and a familiar odor announced that Elena had neglected him for too long.

“Mischa?” Petrov asked gently as he watched his son for some sign of recognition. As he had for nearly a thousand days and nights, Mikhail Vladimirovich Petrov failed to respond to his father’s entreaties. He merely sat and stared out into the cold gray light of dusk.

“I swear he seemed to know me,” Elena said plaintively as Petrov shouldered his way past her and out of the bedroom.

“Clean him up before you go home, please,” he muttered over his shoulder. His jaw was set hard as he strode swiftly to the door that hid the ladder leading down into what had once been a potato cellar. He had cleaned the place up and had installed a desk in there. Unlike the museum piece at which he sat in the office, this was an honest desk, well scarred and solid.

Emotion overcame him as it often did when he allowed himself to think that one day Mischa’s oxygen starved brain would awake from its slumber. However, grief for his son was not the only cause for his turmoil. If only Grigoriy had not been such a damned fool today!

Petrov’s anger at his aide had not been completely grounded in socialist fervor. Indeed, young Comrade Sokolov would have been shocked to learn how closely his ideas came to those of his boss. Many times over the past three years, Petrov had wondered if Grigoriy and the imperialists might not be right. What if Lysenkoism was indeed a fraud? What of all those people who had been killed in its name these past five decades? What of his son, who had sacrificed his intelligence at the altar of what might well be a false god?

There had been successes, of course. The Taman Guards, children who reached maturity in only fourteen years, cows that gave twice the pre-Lysenko quota of milk -- all were successes to which the Institute constantly pointed. However, there had been failures as well. Too many of them! Lysenko Adaptation took place in only a fraction of one percent of subjects. With such a low rate, it was impossible to tell if a Lysenko gene was responsible for the successes, or if they were the result of the vigorous natural selection process imposed by the regimen of the camps.

What sort of science was it that could not make a prediction about even the simplest of its experiments? he wondered. This question had haunted Petrov for more nights than he cared to remember. Were the changes they wrought in humanity the result of environmental stimulus, or merely caused by the simple process of killing off everyone who did not possess the desired trait? Were they changing individuals for the better or merely engaged in the human equivalent of developing a new breed of dogs?

Momentarily, his mind rebelled at the awfulness of the thought. Of course, the Great Lysenko had been right! Otherwise, his life and that of his son had been wasted. Neither Christian God nor Soviet Saint could be so cruel ... could they?

Then reality asserted itself and Petrov did what he had done so many nights over these past three years. He put his head in his hands and began to sob softly. The former potato cellar reverberated with the sound, cries made even more pitiable by the fact that they were barely audible. Indeed, it was so quiet in the cellar that he had no difficulty hearing the scraping of chair legs on the floor above. It was the most pitiable sound of all. The noise signified that his beautiful 23-year-old son -- the heir for whom he had had so many hopes -- was about to have his diapers changed.

#

Author’s note for *Lysenko’s Legacy* :

Zdrastvitcha, Tovareeshie! Kak dela?

The end of the Cold War brought with it many changes in my life. One of the most far-reaching was that after a life engaged in building things to shoot down Russian airplanes, I enrolled in a class at my local community college and learned to speak Russian. Not that I am any great linguist, but I can read Cyrillic and generally make myself understood in conversations composed of sentences of no more than three words each.

For 25 years as an engineer, I worked on everything from the F-15 jet engine to the Sidewinder missile. I am now engaged in an effort to form a joint venture with a Russian aerospace company. In the past five years I have been to Russia eight times - so often, in fact, that when it comes time to run the standard Kremlin tour at the end of each trip (for the benefit of first time visitors), I generally mutter, "Not the damned Kremlin again!"

What I have learned from my travels is that I like Russians. They are very similar to Americans in many respects. Unlike some Europeans, they are straightforward in their relationships. When they do not like something, they will come out and tell you to your face. And when they like you ... well, a friend named Achille Pekhov and I have a running joke in which I explain to him that American men don't kiss each other for any reason whatever! That does not stop me from being kissed from time to time - in that platonic Russian way, of course.

In 1994, I went to the Moscow Air Show, where they lined up all of their airplanes at the Zhukovsky Air Force Base (formerly known as "a secret airfield somewhere in Russia") for easy photographing. When the Russians visited us last spring, we took them to see the Titan Missile Museum south of Tucson, Arizona, and the Pima Air Museum next to Davis-Monthan Air Force Base. A fun time was had by all. I currently hold the corporate record for the lowest per capita business dinner expense ever turned in to the accounting department. I fed 11 people for \$32.00 - we were running late, so we stopped at McDonald's.

An interesting thing happened in April 1995, during a visit to Moscow. We always stay in one of the western-style hotels on Tverskaya Street about a mile from the Kremlin. We do this both for the western standard accommodations and for reasons of security. Late one night, I heard a rumbling out in the street. Glancing down from my window, I saw a T-82 tank go past at high speed. It was followed by 50 others, and some really big rocket launchers and self propelled artillery. (One of them ran over a manhole cover and snapped it like a twig.) Because it had been less than a year since the Russian army shot up the Russian White House, I naturally became concerned. When CNN had no reports about unrest in Russia, I realized that we were coming up on the 50th anniversary of the end of World War II. What I was watching was the return to barracks by the units practicing for the big military victory parade. Two nights later, they did it again. I and my companions stood out on the curb, watched them go by this time, and took pictures.

You don't have to tell me the world has changed!

Lysenko's Legacy is the result of my many trips to Russia. The locales are real and I have been to all of them. The story is obviously a member of the alternate universe genre. I began to write the story based on the premise that a world existed where T. D. Lysenko's ideas about evolution had proven to be correct. It was a grim place. However, no matter how much I massaged the story, I could not bring myself to totally embrace the premise. So, I wrote about a world where those in power merely think his theories work. It is a pretty grim

place, too.

Stan Schmidt at *Analog* read the story, corrected my pidgin Russian, and said that it was too much of a downer for his taste. At that point, I began casting about for another market. Kim Mohan at *Amazing* wrote to tell me that he was pleased to hear from me, but that *Amazing* was temporarily suspending publication. *Omni* appears not to be with us any longer. After more than a decade of concentrating on novel writing, I found that the old, traditional markets for short SF were drying up.

The world, it would appear, is changing again, but not necessarily for the worse. For the same mass communications revolution that is strangling the print magazines has opened a range of new possibilities. This book is an example of that. *Lysenko's Legacy* is being published on Sci Fi - Arizona for the first time anywhere (? 1996, Michael McCollum. All rights reserved). We appear to be heading for a world where the writers are the publishers.

It may not be any better, but it is certainly going to be different! When you purchased this book and protected my intellectual property rights by not reproducing it wholesale, you helped yourself. If Sci Fi - Arizona is successful, then many more writers will deliver their work to you directly via the INTERNET and your reading choices will be multiplied a hundred-fold.

WELCOME TO THE REVOLUTION!

GIBRALTAR STARS

An Excerpt

Recently I have been working on *Gibraltar Earth*, the first book in the *Gibraltar Stars* Trilogy.

Human beings have just begun to colonize the stars when they encounter a ship of a race that rules a million sun galactic empire. This race of alien overlords does not allow potential competitors the freedom of the stars. If they become aware of humanity's existence, their invasion fleet will quickly fill Earth's sky. We know about them, but they do not know we exist ... yet. The problem facing humanity is very simple: What are we going to do about this intolerable situation?

And now, for a bonus, Chapter 1 of *Gibraltar Earth* :

CHAPTER 1

Captain Dan Landon of the Survey Ship *Magellan* sat strapped in his desk and gazed at the large holoscreen that dominated the far bulkhead. It was filled by a blue-white planet bordered by a patch of ebon sky. Stretched out before him to the curving planetary limb was a panorama of fleecy-white clouds and seas of royal blue. To the right lay a sprinkling of green islands; each surrounded by aquamarine shoals. At the top of the screen, just coming into view, was the jagged coastline of one of the major continents. Soon they would be sweeping over amber plains blackened by herds of six-legged beasts, mountain ranges capped by snowfields, forests of deep green, and a river network that was equal to the Nile, the Amazon, and the Mississippi combined.

In the two generations since humanity had won free to the stars, the race had found but twelve worlds sufficiently like the Mother of Men to be considered even marginally habitable. This was the thirteenth, and so far, the best. Preliminary results gave it double the highest habitability index previously recorded. A solid month of orbital scanning, laboratory tests, and on-the-ground exploration had revealed a paradise. For that reason, Landon scowled as he watched the scenery float by far below. A life spent in the service of the Stellar Survey had left him with a philosophy that mirrored the organization's unofficial motto: "If things are going well, you have obviously overlooked something!"

As he gazed at New Eden, the crew's unofficial name for their find, he wondered what they were overlooking. Even after a month of study by a thousand talented specialists, they had only scratched the surface of what there was to know. A world was just too large and too varied a place to be surveyed by a single shipload of scientists. To understand New Eden completely would be the work of generations. Where lurked the microorganism that would ultimately prove fatal to humans, the environmental factor that would render colonists sterile, or the million-and-one other deadly possibilities that would turn this beautiful new world into a pestilential hellhole?

Landon knew that his current black mood was a defense mechanism against the high hopes that New Eden had spawned in him. It was easy to remain detached when the system to be surveyed consisted totally of sterile rocks and gas giants, as most of them were. There was no love in his breast for the usual dust balls, volcano fields, and oceans of hydrochloric acid. However, to find this beautiful world and then lose it because of some innocuous-seeming environmental factor would be too great a disappointment. Better to keep expectations low until they knew more about it. Sighing, he moved to retrieve a bulb of steaming hot tea from its microgravity holder.

There was a quiet rattle as the cabin around him shivered. Landon froze for a long second as his brain analyzed what he had sensed largely on a subconscious level. A chill had gone up his spine as it sometimes did when he was thrilled or frightened. Yet, it had not been just him. There had been a subdued clatter from the storage lockers that lined every unused centimeter in his cabin. The holoscreen had flickered with static, hadn't it?

The introspection took less time than it takes to gulp. A moment later, his hand reached out of its own volition and slapped down on the intercom plate inset into the desk.

"Report!" he snapped as the duty officer, a pimple-faced ensign, stared back at him.

"Don't know, Captain," the boy squeaked. "We are getting reports from all over the ship. Wait a second. Scout Three is reporting that they felt it, too!"

Scout Three was Jani Rykand's ship, en route back from exploring the larger of the two moons of the planet. The fact that she was ten thousand kilometers from *Magellan* eliminated the thought that whatever had happened was a problem only with his ship.

"Sound general quarters, Mr. Grandstaff."

"Aye aye, Captain."

Landon was already out of his seat, pulling himself hand over hand toward the control room as the alarms began to bleat. A thousand past drills provided him with a mental picture of the organized bedlam that was taking place all over the ship. Before the alarms lapsed into silence, he was strapped into his control console at the heart of the big survey craft, surrounded by dozens of screens, none of which told him what he wanted to know.

"What was it, Doc?" he asked a white-haired man in his personal screen after keying for the ship's chief scientist.

"Whatever it was," Raoul Bendagar replied, "it wreaked holy hell with our instruments. Half of them lost calibration at the same precise moment we felt the shock."

"You must have some idea," Landon persisted.

"Wait a second while I check something," Bendagar answered. He stooped to manipulate a screen on which a series of glowing red lines were superimposed on a polar coordinate grid. "Well I'll be damned."

"Don't keep me in suspense."

Bendagar glanced up at the captain, a look of shock on his face. "We just experienced the Grand Hooting Monster of all gravity waves, Captain. No wonder it knocked everything out of alignment."

Landon frowned. He knew that gravity waves existed, of course. For more than a century, a trio of satellites had orbited between Earth and Mars at a precise one thousand kilometers from one another. They used laser beams to maintain their spacing to twelve digits of accuracy, forming a vast right triangle that detected the microscopic distortions caused by the collapse of distant stars and other more catastrophic events. The largest gravity wave ever detected had distorted space by an amount less than the width of a proton. This one had been heavy enough to rattle Landon as he sat in his cabin.

"Come off it, Doc. Couldn't have been."

"The instruments recorded a distortion wave traveling from Equipment Lock Two to the boat deck at the speed of light. Call it what you will, but I say it was a gravity wave."

"Captain," the communicator on duty reported, "Scout Three has a sighting report."

"Put her through."

As usual, Jani Rykand's features were framed in a tousled copper explosion of hair. Unlike most women who lived and worked in microgravity, she refused to bob her mane, or to keep it bound in a hair net. On her, it looked good.

"Report!"

"Something weird going on out here, Captain. I am getting energy readings from a point thirty

degrees aft of my orbital path.”

Landon glanced at Bendagar.

“We’ve got them, too,” the chief scientist reported.

“What do you make of it, Scout Three?”

“Hirayama’s got the scope focused on it, Captain. It looks like a couple of ships.”

“Patch your view through to us,” Landon snapped.

An instant later, Jani Rykand’s features dissolved to show the blackness of space. In the background were the usual constellations of stars, subtly or drastically altered from the familiar constellations of home by the hundred light-years *Magellan* had crossed to reach this world. At first, there was nothing to see. This changed when a violet flash of light sparked the darkness. It put Landon in mind of summer lightning back home in B.C. Except this lightning managed to illuminate two shapes in the blackness, one of which glowed for long seconds after the bolt.

“Give us a tighter view, Hirayama,” the captain ordered. Onboard the scout the geologist who was operating the scope controls moved to comply. The distant stars jerked back and forth a few times as the telescope zoomed to maximum magnification. When it stopped, there was no doubt that they were looking at two vessels and that one of them seemed intent on destroying the other.

The prey was the larger of the two, a squat cylinder - it looked remarkably like the pressurized cans in which ground coffee was shipped to prevent vacuum damage. The ship was obviously intended to be spun to produce artificial gravity. Its tormentor was a thin cylinder with a variety of mechanisms jutting from a central core. While they watched, the attacker again sent a beam of violet to splash against the hull of its larger prey. They watched as a geyser of plasma spewed away from the strike in a wide-angled vacuum expansion cone.

“All recorders to maximum,” Landon ordered without being aware of it. “Hirayama, track them!”

Even with the telescope focused on the battling duo, it was obvious that the larger ship was doing everything in its power to escape. It jinked one way, then the other, always trying to stay ahead of its tormentor. The effort was futile. The small warcraft matched each violent maneuver with one of its own, hanging onto its prey like a small terrier harrowing a large bull. Every few seconds another violet beam would splash across the hide of the larger craft, leaving an ugly, glowing scar in its wake. Yet, if the small ship were attempting to disable the larger, it was having little luck. After each hit, the target changed course and tried to flee.

“They’re headed this way!” Jani Rykand’s excited voice said over the intercom. Sure enough, the larger ship had changed course and was now headed directly for the scout. As the observers aboard *Magellan* watched, the squat cylinder became a perfect circle and began to grow on the screen. Whatever drive principle the two unknowns were using was not obvious. There were no flares or other emissions to suggest they moved by means of reaction engines.

“Scout Three, take evasive action!”

“Any particular ideas?” the young woman pilot asked. “They both look as though they can fly rings around this tub of mine. My God, look at them come!”

She was right. Both ships were growing at an unbelievable rate on the screen. Soon Hirayama was backing off on the magnification to keep them in view. It took less than a minute before both ships were

within naked eye range of Scout Three. The larger prey flashed past at a range of ten kilometers with the small war craft in hot pursuit.

Then it happened.

Dan Landon had been dividing his time between the view from Scout Three and several long-range views of the battle from *Magellan*'s own telescopes, which showed only an occasional spark of violet against the ebon backdrop of space. As it passed the scout, the warship fired another of its violet beams. The beam reached out and momentarily bathed Scout Three in a violet corona of light. The signal from the scout cut off abruptly.

"Scout Three!" Landon screamed. "Report. Jani, how badly are you damaged?"

The answer was obvious on the screen. Where a moment earlier there had been a tiny human spacecraft too small to be seen against the blackness of space, now there was a tiny speck of radiance, a glowing cloud of plasma that cooled as it expanded.

Landon felt a sudden surge of rage. His vision was clouded by the memory of a laughing face framed in wild red hair. Then, as quickly as it arrived, the rage was gone. He felt nothing as he watched the larger ship again foreshorten until it was a half-lit circle of light expanding on the screen. It was the same as the view from Scout Three's cameras, but with the difference that this time, *Magellan* was drawing the battle to it.

"Prepare message probe."

"Captain, we can't do that," Grandstaff said beside him. "We are too deep in the planet's gravity well. The generators will never stand the strain."

"Load message probe, damn you!"

A moment later, Grandstaff reported, "Message probe prepared for launch."

Crammed with power reactors and a star drive generator, a message probe was a small, unmanned starship. *Magellan* carried a dozen of the five-meter diameter spherical craft. They were used for sending reports back to Earth. Not only did they obviate the need to return home after each system; they were insurance against the loss of valuable data should the ship meet with an accident.

Landon watched the oncoming pair while monitoring a display that showed their speed, course, and relative bearing. Since no one had ever expected to fight a space battle out among the stars, *Magellan* was ill equipped to defend itself. The ship's entire armory consisted of rifles, machine guns, and a few heavier weapons to take care of pesky carnivores. Still, they had one potential weapon onboard that might prove useful in stopping an alien marauder.

The two craft came on, with the smaller continuing to chew away at the larger. The damage was beginning to take its toll. Chunks of the prey were being shot off as a cloud of gas and vapor issued forth from dozens of rips in the hull.

Dan Landon set up the probe's coordinates himself, not trusting anyone else to do it. As the warship neared the distance from which it had destroyed Scout Three, Landon keyed the control that would send the tiny unmanned starship racing for Earth. Except, its target was not Earth this time. Landon sent it directly toward the alien warship.

Ensign Grandstaff was right. They were far too deep inside the planet's gravity well for a star drive generator to remain stable. The message probe disappeared from its launching cradle and moved a

hundred kilometers at superlight velocity. Those few nanoseconds of operation were sufficient to overload the probe's generators. They exploded, hurling the probe back into normal space. The excess energy was converted to velocity. The rapidly expanding cloud of debris that returned to normal space moved at 0.6c. There was no time for the unknown warship to react. An instant after the cloud of debris appeared, one or more of its particles struck the small warship, turning it into a star that rivaled the system primary for a few seconds.

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Lieutenant Harlan Frees had joined the Stellar Survey because he did not relish the thought of taking over the family business in Woomera. The life suited him. To Frees, the opportunity to lead a party aboard the surviving alien craft seemed too good to be true.

"Report, Scout Two," Landon ordered as Frees's command hovered just beyond range of the slowly tumbling alien craft. Immediately after *Magellan* had destroyed its tormentor, the large ship had put on a burst of speed to escape the scene of the battle. It had apparently been too much for the craft's tortured engines. Moments later, the squat cylinder had gone ballistic. After checking the point where Scout Three had been destroyed, *Magellan* went in pursuit.

"She's not human, Captain. No orbital shipyard anywhere near Sol ever built this thing," Frees reported. He had ordered his vessel in as close as he dared. In front of him was a vast gash where one of the warcraft's beams had struck a slashing blow. In the compartment beyond floated a body. It was badly mutilated, but enough survived to know that the being had possessed two arms too many.

"Get a shot of that," he ordered Ensign Grimes, his copilot.

"Yes, sir."

"After you get the body, do a slow pan. Show them the extent of the damage."

"Yes, sir."

While Grimes took care to document the alien ship, Frees looked for a place to dock. The alien ship's slow tumbling motion was a problem. They would have to latch on and use their own drive to halt it before anyone could explore. Otherwise, there was too much risk of an accident.

Frees found what he was looking for and gently nudged the scout forward. He became conscious of a strange stink in the helmet of his vacuum suit, and then realized it was his own fear producing the odor. He wondered if Grimes smelled the same thing inside his own closed environment.

Scout Two made contact without incident. Two minutes later, they secured their ship to the derelict with a cable. Five minutes after that, they had the tumbling motion halted.

"You have got the conn, Mister," Frees ordered as he unstrapped. "If you see anything other than us moving about in there, blow the explosive bolts and run like hell for the ship. Got that?"

"What about you, Lieutenant?"

"Don't mind me or anyone. Anything with four arms comes into view, you get out of here."

"Aye aye, sir."

Frees moved to the after compartment where the rest of his boarding party waited. The three were sealed inside vacuum suits and looked slightly ludicrous with a collection of weapons strapped to their

chests. Firing a gun in microgravity was a tricky business. The recoil could send you caroming off in the wrong direction, not to mention the possibility of a ricochet puncturing a suit. Nevertheless, considering what had happened to Scout Three, the captain had ordered the boarding party armed.

“I’ll lead the way,” Frees told Able Spacers Goldstein, Valmoth, and Kurtzkov. “Monitor this frequency and the emergency one at all times. Everyone set?”

He received several clenched fists, the gesture that substitutes for a nod in a vacuum suit, in response. After checking to see that Grimes was prepared in the cockpit, he turned the valve that spilled cabin air directly to space. This was one time, Frees reasoned, when they might not have time to cycle through the airlock in the normal manner. When both inner and outer doors were latched open, each man floated through the short airlock tunnel and entered the alien ship.

They encountered corridors that were two meters square and lined on two sides with equipment lockers. This confirmed that the ship was designed to be spun to produce artificial gravity. In ships designed for microgravity, the lockers would have covered walls, deck, and overhead. During fifteen minutes spent exploring the dark, they discovered several members of the crew. There were more of the four-armed beings that looked like beetles with fur. Another species had bulging eyes and thin manipulators that seemed to have evolved from something like a lobster’s claw. Whether the bulging eyes were natural or the result of explosive decompression was not immediately obvious.

Frees was examining one of the dead when a radio call came echoing to him through the metal corridors. “Come look at this, Lieutenant. We’ve found a section with air behind it.”

“Stand by.”

Frees pulled himself hand over hand to where the able spacer shone his light on a closed pressure door. The door was similar to that found on a human spaceship, although the proportions were different. So, too, was the control inset in the door’s face. It glowed in a script composed primarily of dots and swirls. Kurtzkov braced his legs against a ledge that stuck out into the corridor and tried to lever the door open with his own strength. The hatch did not budge. That was hardly surprising if there were air on the opposite side.

“Are you sure it isn’t jammed?” Frees asked as he floated to join the two spacers.

“Don’t think so, Mr. Frees. None of the other hatches we came through was.”

“Right. Valmoth, get back to the ship and break out the portable airlock. We have atmosphere on the other side of this bulkhead.”

Rigging the airlock took twenty minutes. The biggest problem was finding a point to anchor the lock in order to control the blow-off load when it was pressurized. The lock was just big enough for two men in vacuum suits. Frees and Kurtzkov crowded together and let the other two seal them in before getting to work on the hatch. A quick flash of light from Kurtzkov’s drilling laser and the airlock filled with air.

As soon as his suit collapsed around him, Frees reached out to touch the hatch control. Pressing one contact had no effect. He tried the other. The pressure door swung silently back on its hinges.

Inside, Frees swept his flashlamp around the darkened room. In one corner, a figure lay huddled in a tight ball. At first, Frees thought it another corpse. Only after a moment did he notice the unblinking yellow eyes that stared at him and the quick panting breath.

“Tell the captain that we have a survivor,” he told the two spacers still in the vacuum portion of the

ship.

Slowly, carefully, he moved toward the shivering mass of flesh. The being jumped and whimpered when Frees reached out and touched it on a pointed shoulder. Slowly, gently, Frees and Kurtzkov unrolled it.

“Damn, Mr. Frees. It’s a monkey!”

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To Be Continued

AUTHOR’S BIOGRAPHY

Michael McCollum was born in Phoenix, Arizona, in 1946, and is a graduate of Arizona State University, where he majored in aerospace propulsion and minored in nuclear engineering. He is currently employed at AlliedSignal Aerospace Company, Tempe, Arizona, where he is a senior engineering manager in the Pneumatic Controls Product Line. In his career, Mr. McCollum has worked on the precursor to the Space Shuttle Main Engine, a nuclear valve to replace the one that failed at Three Mile Island, several guided missiles, Space Station Freedom, and virtually every aircraft in production today. He is currently involved in an effort to create a joint venture company with a major Russian aerospace engine manufacturer and has traveled extensively to Russia in the last several years.

In addition to his engineering, Mr. McCollum is a successful professional writer in the field of science fiction. He is the author of a dozen pieces of short fiction and has appeared in magazines such as Analog Science Fiction/Science Fact, Amazing, and Isaac Asimov's Science Fiction Magazine. His novels (all originally published by Ballantine-Del Rey) include *A Greater Infinity* , *Procyon's Promise* , *Antares Dawn* , *Antares Passage* , *The Clouds of Saturn* , and *The Sails of Tau Ceti* . His novel, *Thunderstrike!* , was optioned by a Hollywood production company for a possible movie. Several of these books have subsequently been translated into Japanese and German.

Mr. McCollum is the proprietor of Sci Fi - Arizona, one of the first author-owned-and-operated virtual bookstores on the INTERNET. He has completed the first book in a series titled *The Gibraltar Stars Trilogy* . *Gibraltar Earth* was the first original novel published on Sci Fi -Arizona. Mr. McCollum is now working on *Antares Victory* .

Mr. McCollum is married to a lovely lady named Catherine, and has three children: Robert, Michael, and Elizabeth. Robert is a newly minted engineer, and Michael is studying to be a police officer. Elizabeth is a student at Northern Arizona University, where she is majoring in communications.

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For the reestablishment of interstellar travel has brought with it news of the Ryall, an alien race whose goal is the extermination of humanity. If they are to avoid defeat at the hands of the aliens, Alta must seek out the military might of Earth. However, to reach Earth requires them to dive into the heart of a supernova.

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As scientists struggled to find a way to alter the comet's course, world leaders tried desperately to restrain mass panic, and two lovers quarreled over the direction the comet was to take, all Earth waited to see if humanity had any future at all...

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Starhopper was humanity's first interstellar probe. It was designed to search for intelligent life beyond the solar system. Before it could be launched, however, intelligent life found Earth. The discovery of an alien light sail inbound at the edge of the solar system generated considerable excitement in scientific circles. With the interstellar probe nearing completion, it gave scientists the opportunity to launch an expedition to meet the aliens while they were still in space. The second surprise came when *Starhopper's* crew boarded the alien craft. They found beings that, despite their alien physiques, were surprisingly compatible with humans. That two species so similar could have evolved a mere twelve light years from one another seemed too coincidental to be true.

One human being soon discovered that coincidence had nothing to do with it ...

9. GIBRALTAR EARTH - First Time in Print -- \$6.00

It is the 24th Century and humanity is just gaining a toehold out among the stars. Stellar Survey Starship *Magellan* is exploring the New Eden system when they encounter two alien spacecraft. When the encounter is over, the score is one human scout ship and one alien aggressor destroyed. In exploring the wreck of the second alien ship, spacers discover a survivor with a fantastic story.

The alien comes from a million-star Galactic Empire ruled over by a mysterious race known as the Broa. These overlords are the masters of this region of the galaxy and they allow no competitors. This news presents Earth's rulers with a problem. As yet, the Broa are ignorant of humanity's existence. Does the human race retreat to its one small world, quaking in fear that the Broa will eventually discover Earth? Or do they take a more aggressive approach?

Whatever they do, they must do it quickly! Time is running out for the human race...

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