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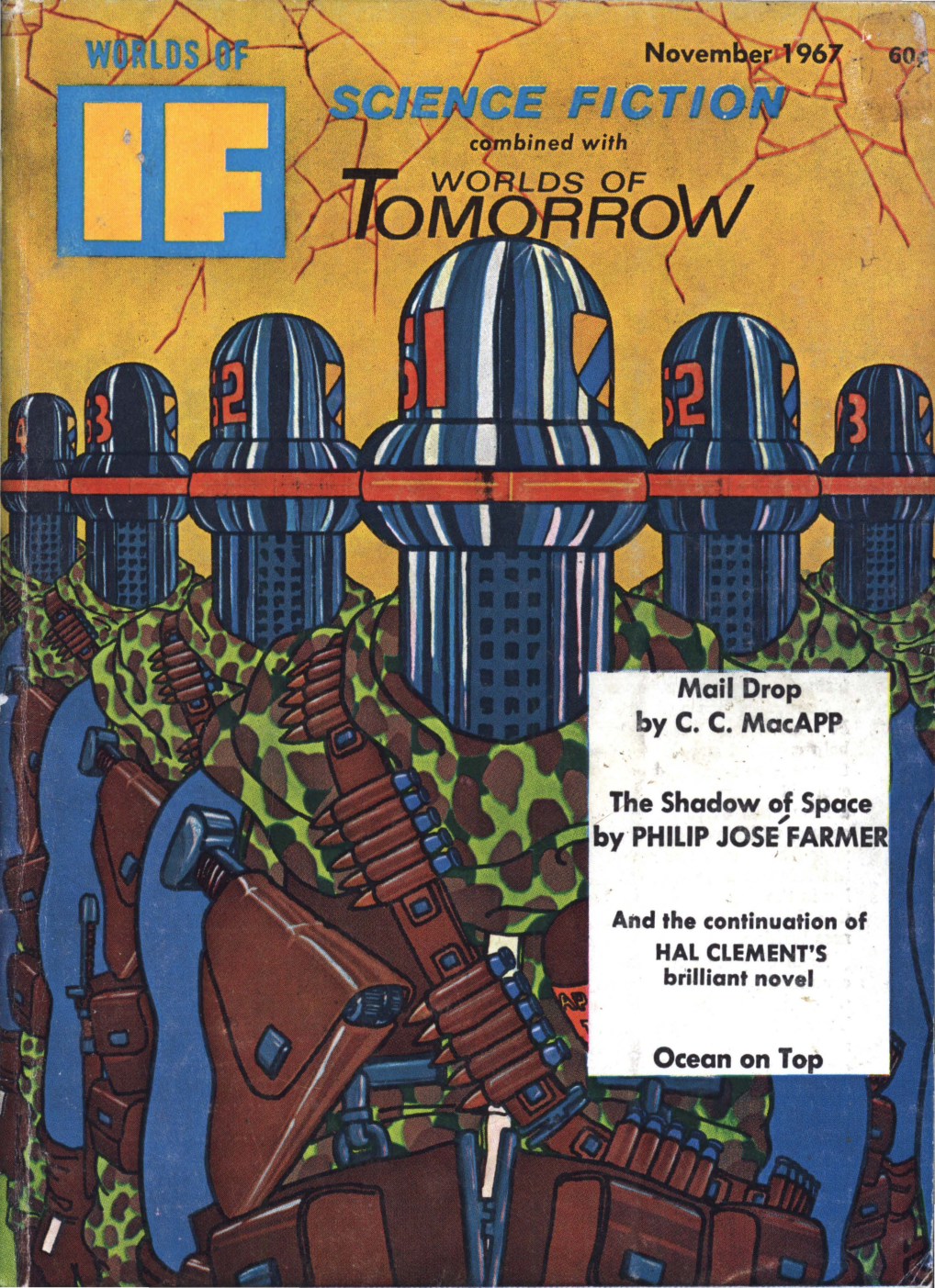

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NOVEMBER, 1967
Vol. 17, No. 11
ISSUE 120

WORLDS OF IF SCIENCE FICTION

ALL NEW STORIES

Frederik Pohl, Editor
Judy-Lynn Benjamin, Associate Editor

Robert M. Guinn, Publisher
Mavis Fisher, Circulation Director

Cover by BODÉ from THUS SPAKE MARCO POLO

IF published monthly by Galaxy Publishing Corporation, Robert M. Guinn, President, Vol. 17, No. 11. Main Office: 421 Hudson Street, New York, 10014. 60c per copy. Subscription 12 issues $6.00 in the United States, Canada, Mexico, South America and Central America and U.S. Possessions, elsewhere $7.00. Second-class postage paid at New York, New York, and at additional mailing offices. All material must be accompanied by self-addressed stamped envelope. The Publisher assumes no responsibility for unsolicited material. All stories are fiction, and any similarity between characters and actual persons is coincidental.

Printed in the U.S.A. by the Guinn Company, New York, N.Y. 10014

RAPID TRANSIT

By the time we are all a decade older, if the aircraft manufacturers have anything to say about it, we will be able to travel from point to point in a supersonic jet. We've all seen drawings and mock-ups of the SST, of course. Droop-snoot, swept wing, titanium hull and all, it is planned to cruise at 1800 miles an hour and get us from London to New York in about a hundred and fifty minutes.

Lovely idea. . . .

Happens that the other day we made that trip. (We were coming back from the Trieste Science-Fiction Film Festival, and if you've any interest in what went on there you can find out all about it in the first issue of our new magazine, *International Science Fiction.*) It might be instructive to look at the log of this particular odyssey:

11:30 AM, London time. Depart hotel in London to arrive at Heathrow Airport one hour before scheduled take off at 1:00 PM. (Required by all airlines on international flights — heaven knows why.)

Noon, London time. Arrive Heathrow, discover flight will be two and a half hours late because of "late arrival of aircraft." (You know how insistent the airlines are about requiring a telephone contact number from their passengers? Anybody ever find out why they never use them?)

3:30 PM, London time. Takeoff from Heathrow. Nonstop flight expected to take 7 hours 40 minutes; allowing for 5-hour time difference, should touch down at Kennedy Airport in New York at 6:10 local New York time.

7:30 PM, New York time. Arrive over Kennedy Airport, late because of (a) headwinds, (b) pilot dawdling because his radio advisories have told him Kennedy is stacked up due to weather and heavy traffic. We go into the stack.

7:50 PM, New York time. Delay until landing estimated at one and one-half hours. As we have only that much fuel in the tanks and the pilot doesn't like the idea of landing with dry tanks, we divert to Boston.

8:00-9:00 PM, New York time. We sit on the field in Boston, while fuel arrives and is pumped in. Because of quarantine, customs and immigration restrictions, nobody leaves the aircraft. (The air-conditioning does not work while the plane is on the ground at this airport. It is late July.)

9:30 PM, New York time. Back in the Kennedy stack.

10:00 PM, New York time. Land. Wait for assignment of unloading area.

10:30 PM. Debark. Look for missing baggage. File lost-baggage report. Pass through customs (28 inspectors "on duty", four physically present and working.) Attempt to secure taxi.

2:35 AM, New York time. Arrive at destination, 46 miles from Kennedy Airport.

Adding up the totals, we have: Downtown London to takeoff line at Heathrow, approximately 30 miles, elapsed time 4 hours.

Airborne at Heathrow to airborne over Kennedy, approximately 3500 miles, elapsed time 9 hours.

Airborne over Kennedy to destination in New Jersey, approximately 46 miles, elapsed time 7 hours 5 minutes. (This route, by the way, is served by an air taxi, actual flying time being approximately 20 minutes. However, the air taxi stops running at 10:00 PM.)

— You understand that we don't mean to say that there is anything very special or unprecedented about this sort of jet-age odyssey. That's the trouble. It happens every day.

Now let's substitute in the SST for the VC-10 we were actually using on this trip. The supersonic transport can cruise at 1800 miles an hour, which means it can do the trip in about 2 hours thirty minutes, allowing for time to get up to its operating altitude of 70,000 feet as it leaves England and get back down as it approaches the northeastern United States.

But the VC-10 can cruise at nearly 600 miles an hour and doesn't need as much take-off and landing time. It could have done the trip in 6 hours, actually took nine from point to point; it's only fair to assume that the SST won't be operating flat-out either. So increase the point-to-point time from 150 minutes to 225 minutes for the SST.

What about the rest of the trip? Ground-transport time? Certainly it will not be less simply because you're boarding a titanium aircraft instead of an aluminum one. Passing through customs? Certainly no less time; it is a fact of life that the heavier the traffic, the longer it takes to get through any sort of red tape, and the SST proponents estimate it will double traffic. Stacking time? Ah, there's where it really hurts. The SST burns up fuel at a fantastic rate. It simply cannot stay stacked very long — which means diversion for refueling, since there is no hope on God's green earth that airport facilities will be better able to cope with the demands of their traffic ten years from now than they are today. If anything, worse. Every major city needs additional air facilities *right now*. Not one has adequate expansion even planned.

And, of course, a diverted SST is an abomination; it wastes all that precious fuel and flight-time.

So there you have it. On the most charitable assumptions, the SST would cut this sort of twenty-hour trans-Atlantic crossing to maybe fifteen hours. In practice, you would most certainly lose back that five-hour saving on diversions and ground time. On any other route (over land, say, or across the Pacific), the SST would be either compelled to waste its speed because of catastrophic sonic boom (requiring it to operate at the same speed as the VC-10 over inhabited land areas) or would be inefficient for other reasons.

The big difference, in short, between SST travel and what you can get out of any airport in the world right now, is that for SST travel you would be paying approximately three times as much.

Well, we civilized peoples of the world are spending an awful lot of money awfully foolishily on an incredible variety of things. But on that idiot list, wouldn't you say the $5 billion earmarked for the SST development programs stands very high indeed?

— THE EDITOR

BROTHER BERSERKER

He was sent back in time — to protect a famous heretic from destruction by a berserker!

by FRED SABERHAGEN

Illustrated by GAUGHAN

I

The barefoot man in the gray friar's habit topped a rise and paused to survey the country ahead. In that direction the paved road he was traveling continued to run almost straight under a leaden sky, humping over one scrubbily wooded hill after another. The stones of this road had been laid down in the days of expansion of the great Empire, and there was not much else in the world that had survived the centuries between then and now.

The friar was of medium height and rather thin. His appearance seemed to have little to do with age; he was somewhere between twenty and forty. His scantily bearded face expressed his tiredness, and his gray robe was spotted with grayer mud. The fields up to the shoulders of the road were all ankle-deep in mud, and most of them showed no sign of having been plowed or planted this spring or last. The only sign of recent human presence visible from where the friar stood now was a heap of low

ruined walls at roadside just ahead. Only the ruin was recent; the walls themselves had been old and might have been a caravanserai or legion post in the days of the Empire's strength. But last month or last tenday, new war had passed this way, dissolving one more building into raw tumbled stones. Before grass could start to grow on the stones, it seemed likely that they might sink into the mud without a trace.

When he reached the remnant of a wall, the friar sat down on it, resting from his long journey and looking with minor sadness at the minor destruction about him. He leaned over and picked up one fallen stone; his wiry hands showed strength. With something like a practiced mason's look in his eye, he fitted the stone into a notch in the stump of wall and studied the effect.

A distant hail made him raise his head and look back along the way he had come. Another lone figure, dressed in a habit much like his own, was hastening toward him, waving both arms for attention.

The first friar forgot his little game with the stone, returned the wave and waited.

The approaching figure soon resolved itself into a man of middle height, clean shaven and almost stout. "Glory to the Holy One, reverend brother!" puffed this newcomer, arriving at last within easy talking distance.

The bearded friar had gotten to his feet, and now his thin face lighted gently. "Glory to His name."

The portly one asked anxiously: "Are you, as I think, Brother Jovann of Ernard?"

"That is my name."

"Now may the Holy One be praised!" The heavier man made a wedge-sign with his hands and rolled eyes heavenward. "My name is Saile, brother. Now may the Holy One be praised, say I — "

"So be it."

" — for He has led me in mysterious ways to reach your side! Brother Jovann, others will be flocking to your side, for the fame of your heroic virtue has spread afar in many lands. Even in the isolated villages of these remote hills, the peasants are aware now of your passage."

"I fear my many faults are known hereabouts, for I was born not far away."

"Ah, brother, you are overly modest. From numerous people in this land, as well as elsewhere, I have heard again and again of your exploits. How, two months ago, you dared to leave the encampment of the army of the Faithful, to cross no-man's-land boldly into the very ranks of the Infidel, there to enter the tent of the Arch-Infidel himself and preach to him the truth of our Holy Mother Temple!"

"And to fail to convert him." Jovann nodded sadly. "You do well to remind me of my failure, for I am prone to the sin of pride."

"Ah." Saile lost headway. But it was only for a moment. "My own most humble wish, Brother Jovann, is that I be allowed to be among the very first to join your order. Ah, you *are* even now on your way to Empire City? To petition our Vicar,

the most holy Nabur the Eighth, for permission to found a new order of your own?"

"Truly, God has called me to such a task, Brother Saile." The thin friar's eyes looked into the distance. "Once I labored at rebuilding temples with stones and bricks, but now I am called to rebuild with men." His attention came back, smiling. "As for your becoming a member of the new order when it is formed, I can say nothing yet. But if you should choose to walk with me to Empire City, I will be happy for your company."

"I am most highly honored, Brother Jovann!"

Saile prolonged his thanks to some length as they walked on together. He had also commented extensively on the chances of yet more rain falling and was discoursing on the question of where they might hope to obtain their next meal, when there came a distraction.

A speedy coach that looked as if it might belong to some middle-ranking noble or prelate was overtaking them on the road. The friars's ears gave them plenty of warning to step aside; four agile loadbeasts were making the wheels clatter over the leveled stones at a good speed.

As the coach sped past, Brother Jovann found his eyes drawn to the face of one occupant who rode facing forward, head and one arm extended slightly out a window. This was an old man, stocky of build — so far as could be judged — graybearded, but with the short-cut hair on his head still ginger colored. His thick mouth was twisted slightly as if ready to spit or to dispute.

"I had hoped they might give us a lift," Brother Saile muttered unhappily, watching the coach dwindle along the road ahead. "All the seats were not occupied, were they?"

Brother Jovann shook his head; he had not noticed how many were in the coach. His attention had been drawn and held by the old man's eyes. Fixed ahead, in the direction of the Holy City a hundred miles away, those eyes were clear and gray and powerful. And very much afraid.

II

When Derron Odegard walked out on the victory celebration in Time Operation, he found his feet taking him to Lisa, to face her with the news of Matt's death and get it over with.

She had only just moved out of the student nurses's quarters at the hospital, to try some job and share a cubicle with another girl in a low-rank, uplevel corridor. Lisa's roommate, in the midst of doing something to her hair, opened the door to Derron and then had to go back inside to pretend not to be listening.

Lisa evidently saw Derron's' news in his face or guessed it. Her own face becoming calm as a mask, she stood just inside the half-open door, not asking him in from the corridor.

He nodded. "It's Matt — the battle's won, the berserkers are stopped. But he's dead, he sacrificed himself to do it."

She lifted her head proudly, showing no surprise. "Of course; what else could he do? That's the job you gave him."

"Understand, Lisa, when I went to him with that salestalk I thought he was going to have a chance."

Her voice and her face began to break together. "I — knew you were going to kill him."

"My God, Lisa! I didn't mean to do that."

Breaking up and melting, she leaned against the doorjamb. "And now there's n-nothing to be done."

"The doctors tried — but no, nothing. We can't go after his lifeline in the past again — it'd wreck the world to try to pull it out of that mess now."

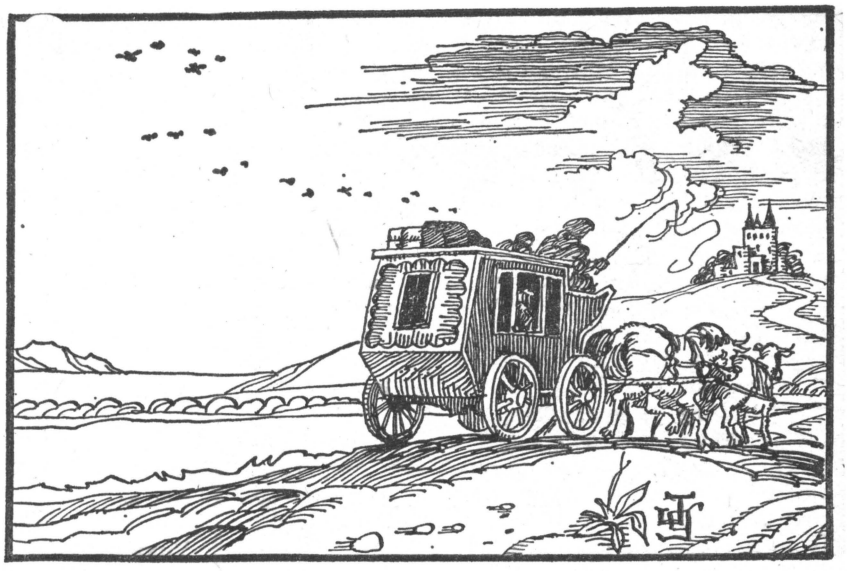
"The world's not worth it!"

He was still trying to console her with some stupidities when the door closed in his face.

A few days later he was sitting alone in his tiny private office on the Operations level, slumping in his chair, thinking that if Lisa were the woman he needed he would have stayed and kicked her door down; it was only a door, and behind it she was still alive.

No, the woman he needed, whose image still ruled his secret thoughts, had been for a year and more behind the door of death; and no man had yet found a way of smashing through that. So in the matter of Lisa — as in everything else — Derron could no longer care very much.

After he had sat in his silent office for a while, he noticed an



official-looking envelope, sealed and addressed to him, on the desk. After another while he took the envelope and opened it.

Inside was the formal notice of his new promotion, to the rank of colonel. " — *in consideration of your recent outstanding service in Time Operations, and in the expectation that you will continue* — " A set of appropriate collar insignia were enclosed.

He sat there a while longer, looking across the room at what rested like a trophy atop his little bookcase — an ancient battle helmet, ornamented with wings. He was still doing this when the clangor of the alert signal vibrated throughout Operations, pulling him reflexively to his feet. In another moment he was on the way to the briefing room.

Latecomers were still hurrying in when a general officer, Time Ops' chief of staff, mounted the dais to get things started.

"The third berserker assault has begun, gentlemen. Win or lose, this will be the last. It'll give us the final bearing we need to locate their staging area, twenty-plus thousand years down."

There was an optimistic murmur heard.

"Don't cheer yet. This third attack gives every indication of being a hard one to beat." The general went through the unveiling of hastely assembled maps and models. "Like the previous attack, this one is aimed at a single man. And again there's no doubt about the target's identity — this time the name is Vincent Vincento."

There was a murmur at that name. There would have been a reaction from almost any audience that could have been assembled on Sirgol. Even the half-educated of the planet had heard of Vincento, though the man was some three hundred and fifty years dead and he had never ruled a nation or raised an army.

Derron's attention became concentrated. In his pre-war historical studies he had specialized in Vincento's time and place. And that locale was also oddly connected with his private grief.

The briefing officer spoke on. "Vincento's lifeline is among the very few we have been able to protect by sentry action along their entire effective lengths. Of course, this doesn't mean a berserker can't get near him; but if one tries to kill Vincento or even attacks someone else within a couple of miles of him, we'll be onto its keyhole in a couple of seconds, present-time, and cancel it out. The same if it should try to kidnap or capture Vincento or take any direct physical action at all against him. The protection extends along Vincento's lifeline from before his birth until the completion of his last important work at the age of seventy-eight. We can assume the enemy knows about it and is planning something more subtle than direct physical assault."

The general went into the technical evidence for this, then moved on to another point. "Chronologically, the enemy penetration is not more than a tenday before the start of Vincento's famous trial before the Defenders of the Faith. There may well be a connection; suppose for example that a berserker could alter the outcome of the trial to get Vincento sentenced to death. It would be practically impossible for us to find a keyhole by tracing anything so indirect.

"And an actual death sentence would not seem to be necessary for the enemy's purpose. Vincento is seventy years old at the time of his trial. If it should result in his being put to torture or thrown into a dungeon, his life would be effectively ended."

Another general, seated in the front row, raised a hand. "Doesn't some such treatment happen to him historically?"

"No. Historically, Vincento never spends a day of his life in prison. After his recantation at the trial, he spends the remainder of his life in physically comfortable house arrest, where he has time to lay the foundation of the science of dynamics — and on that, of course, our science and our survival heavily depend."

The questioning general shifted once more in his front rank chair. "How in the world is an alien machine going to influence the outcome of a trial?"

The briefing officer stared gloomily at his charts. "Frankly we've still a shortage of good ideas on that. We doubt that it'll try to play a supernatural role, since the last such attempt failed.

"Here's something to keep in mind. Only one enemy device is engaged in this attack, and from all in-

dications it's physically small, only about the size of a man — which suggests the possibility that this one may be an android. Yes, I know, the berserkers have never, anywhere, been able to fabricate an android that would pass in human society as a normal person. Still, we hardly dare rule out the possibility that this time they've succeeded."

The discussion turned to countermeasures. A whole arsenal of devices were being kept in readiness for dropping into the past, but no one could say yet what might be needed.

"The one really bright spot, of course, is that this attack's within the time band where we can drop live agents, so we count on men on the spot as our main defense. People who'll keep their eyes on Vincento from a little distance; people able to spot any significant deviation from history. They'll need to know that particular period very well, besides having experience in Time Operations . . ."

Listening, Derron looked down at the new insignia he was still carrying in his hand. And then he began at last to pin them on.

Brother Jovann and Brother Saile topped yet another hill, a few miles along from the spot where they had met, and found they were soon to catch up with the coach that had passed them so speedily, Its loadbeasts unharnessed and grazing, it stood empty beside the broken gate of a high-walled enclosure at the foot of the next hill ahead.

On top of that hill there towered a great cathedral-temple, its stones too new for moss or weathering. Aloof against the lowering sky, it seemed to float above all human effort and concern.

The ancient road, after passing the broken-gated monastery at the foot of the hill, swerved to meet a bridge — or the stub of a bridge, rather, for all of the spans were gone, with most of the piers that had supported them. The river that had burst its bridge was raging, ravaging the lowlands on either side, obviously swollen to several times its normal flow.

On the other side of the river, beyond another stub of bridge, the town of Oibbog sat on secure high ground. A person or two could be seen moving in those distant streets. Coaches and loadbeasts were waiting there, too, interrupted in their journeys that were outbound from the Holy City.

Leaden clouds still mounted ominously up the sky. From them the river fled, lashed and goaded by distant flails of lightning, a great swollen, terrified snake that had burst its bonds and carried them away.

"Brother River will not let us cross tonight."

When he heard this personification, Saile's head turned cautiously sideways, as if he wondered whether he might be expected to laugh. But before he decided, the rain broke again, like a waterfall. Tucking up robes, both friars ran to join the occupants of the coach in whatever shelter the abandoned-looking monastery might afford.

III

A hundred miles away, in the capital of the vanishing Empire and the Holy City of the embattled Temple, the same day was warm and sultry. Only the cold rage of Nabur the Eighth, eighty-first in the succesession of Vicars of the Holy One, stirred like a storm-wind the air of his private apartments.

The rage had been some time accumulating thought Defender Belam, who now stood waiting for it to be over. Accumulated and saved until now, when it could be discharged harmlessly, vented into the discreet ears of a trusted auditor.

The Vicar paused, distracted in his peripatetic tirade against his military opponents by a look down into a courtyard where workmen were unloading massive blocks of marble from a train of carts and a sculptor waited to choose one block for Nabur's portrait-statue. What matter if his eighty predecessors had each been willing to let posterity decide such matters for them?

The Vicar turned suddenly, the skirts of his simple white robe swirling, and caught Belam wearing a disapproving face.

In his angry tenor the Vicar snapped: "When the statue is finished we will place it in the city's Great Square, that the majesty of our person may be increased in the eyes of the people!"

"Yes, my Vicar." Belam, for decades a defender and prince of the Temple, had seen them come and go. He was not easily perturbed by Vicarial temper.

"It is *needful* that we be shown increased respect. The infidels and heretics are tearing apart the world which has been given by God into our care!" The last sentence came bursting out, a cry from the inner heart.

"I have faith, my Vicar, that our prayers and our armies will yet prevail."

"Prevail? Of course!" A sarcastic grimace. "Someday! Before the end of time! But *now* our Holy Temple lies bleeding and suffering, and we . . . we must bear many burdens. Many, Belam. You cannot began to realize, until you mount our throne."

Belam bowed in silent reverence.

The Vicar paced again, skirts flapping. This time he had a goal. From his high-piled worktable his shaking fist snatched up a pamphlet already worn from handling — and perhaps from angry crumpling as well. A contributing and perhaps sufficient cause of today's anger, computed Belam's cool theologian's brain, knowing what the pamphlet was. A small thorn, compared with others. But this one had stabbed Nabur in the tenderest part of his vanity.

Nabur turned round and shook the paper-covered pamphlet at him. "Because you have been away, Belam, we have not yet had the chance to discuss this with you. This back-stabbing abomination of Messire Vincento's! This so-called *Dialogue on the Movement of the Tides!* In this he continues to promulgate his heresy-tainted dreams of reducing the solid world beneath

our feet to a mere speck which flies around the sun. But that is not enough. No, not for him! No!"

Belam frowned now in puzzlement. "What else, my Vicar?"

Nabur advanced on him in a glow of anger. "The arguments of the pamphlet are cast in the form of a dialogue among three persons. And Vincento intends one of these fictional debaters — the one who defends traditional ideas, who therefore is described as 'simple minded' and 'below the level of human intelligence' — he intends this person to represent ourself!"

"My Vicar!"

"He even places some of my own words in the mouth of this simpleton, so-called!"

Belam shook his head doubtfully. "Vincento has never been moderate in his disputes, which have been many. But I am not convinced that he has ever intended any irreverence to your person."

"I make no doubt of it!" Vicar Nabur almost screamed. Then the most honored man in the world — possibly also the most hated, quite possibly also the most strained by what he saw as his appointed tasks — groaned incontinently and threw himself like a spoiled child into a chair.

Arrogance remained, as always, but the spoiled-child aspect did not last long. Irascible humors having been discharged, calm and intelligence returned. "Belam."

"My Vicar?"

"Have you had a chance to read this pamphlet? It has been widely circulated."

Belam gravely inclined his head.

"Then give us your considered opinion."

"I am a theologian, my Vicar, and not an astronomer. But it seems to me that Vincento's arguments in the pamphlet concerning the tides really prove nothing regarding the movement of the celestial bodies and are not even very accurate as regards the tides themselves — "

"He thinks we are fools, who will accept whatever argument he offers. And who will not realize it when he mocks us!" The Vicar stood up, then tiredly sat down again.

Belam ignored for the moment the theory that Vincento had intended personal mockery. "As the Vicar may possibly recall, I had occasion some years ago to write to Vincento regarding these speculations on the idea of a sun-centered universe. Then as now such theorizing caused me concern in my capacity as a Defender."

"We recall very well. Messire Vincento has already been summoned to stand trial for his violation in this pamphlet of your injunction. What exactly did you write him, again?"

Belam spoke slowly and thoughtfully. "First, that mathematicians are quite free to calculate and publish whatever they wish regarding the celestial appearances — provided they remain strictly in the realm of hyopthesis.

"Secondly, it is quite a different matter to say that *in fact* the sun is in the center of the universe —

that *in fact* our globe spins from west to east each day while revolving round the sun each year. Such statements must be considered very dangerous; though not precisely heretical, they are liable to injure faith by contradicting the Holy Writings."

"Your memory, Belam, is even more than usually excellent. Just when did you write this letter of injunction?"

"Fifteen years ago, my Vicar." Belam smiled briefly and dryly. "Though I must admit that I reread our archive copy this morning, after perusing the — um — pamphlet in question.

He became utterly serious again. "Thirdly and lastly, I wrote Vincento that if some real proof existed of the sun-centered universe he champions, we should then be forced to revise our interpretation of those passages in the Holy Writings which would appear to be contradicted. We have in the past revised our thinking, for example in regard to the roundness of the world.

"But, in the absence of any real proof, traditional authority and opinion is not to be set aside."

Nabur was listening with great attentiveness. "It seems to us, Belam, that you wrote well, as usual."

"Thank you, my Vicar."

Satisfaction appeared mixed with anger in the Vicarial mien. "Certainly in this pamphlet Vincento has violated your injunction! The debater into whose mouth he puts his own opinions argues that in very truth our globe spins like a toy top beneath our feet — until the very last page. Then *our* argument, that God may produce what effect he likes in the world, without being bound by scientific causes — *our* argument is quoted by the simpleton, who has been wrong about everything else — quoted as coming from 'a person of high learning and wisdom, supremely above contradiction'. And at this the other debaters piously declare themselves silenced. One cannot fail to see them, and their author, laughing up their sleeves!"

Vicar Nabur paused to regain breath and calm. Then he went on. "Now, Belam. Other than this weary argument on tides, which I agree is inconclusive, can there exist anywhere any evidence for Vincento's spinning world? Anything he might impertinently produce at his trial, to . . . disrupt its course?"

Belam frowned thoughtfully at the floor. "My Vicar, I have through the years made an effort to keep abreast of astronomers's thinking. I fear many of them, religious and laymen both, have become Messire Vincento's enemies, largely because of his arrogance in claiming for his own all that these new devices, telescopes, find in the heavens. An arrogant and argumentative man is hard to bear and triply so when he is so often in the right." Belam glanced up for a moment, but Nabur had not taken the description as applying to anyone but Vincento.

The Defender of the Faith went on: "But still I believe that most astronomers now perform their calculations using the mathematical as-

sumption that the planets, or some of them, revolve about the sun. Of course such an idea is not original with Vincento, nor is the idea that our globe is only a planet. It seems these ideas make the mathematics of celestial movement somewhat more elegant and satisfying; fewer epicycles need be included in the orbits to make them fit the circular form — "

"You say Vincento makes the mathematics more elegant. But can he have *proof,* mathematical or otherwise? Plain evidence of any kind?"

"I would say rather the contrary."

"Ha!"

Belam gestured with his scholar's hands, frail fingers unsure of technicalities, but till grasping firmly what they had to grasp. "It seems that if our globe did make a yearly journey round the sun, the relative positions of the stars should appear to us to change from month to month as we approached certain constellations or drew away from them. And no such displacement of stars can be observed."

"Ha!"

"Of course it is *possible* to argue that the stars are simply too distant for our measurements to show such displacement. My Vicar, I fear that no astronomer can prove Vincento wrong, though some would dearly love to do so. The celestial appearances would seem to be essentially the same, whether we go round the sun or it goes round us.

"Now, as I wrote Vincento, where there is lack of centainty we have no excuse for turning our backs on tradition and on the plain meaning of the Holy Writings. We of the Temple have been entrusted by God with the duty to defend the truth. And, my Vicar, what I wrote Vincento fifteen years ago is still true today — I have never been shown any proof of the motion of the world we stand on. And so I cannot believe that any such proof or any such motion exists."

The Vicar raised his hands, then clamped them down upon the arms of his ornate work-chair, though his face had gentled in regret. "Then it is our decision that you and the other Defenders must proceed with the trial." As Nabur spoke on, his anger gradually returned. "No doubt he can be convicted, of violating your injunction against teaching a doctrine liable to injure faith. But understand, we have no wish to visit any great punishment upon our erring son; in charity we grant that he intended no direct insult to our person. He is only headstrong and stubborn. And intemperate in debate! He must learn that he *cannot* set himself up as a superior authority on all matters, spiritual and temporal . . . did he not once even attempt to lecture *you* on theology?"

Belam inclined his head and sharply warned himself to guard against taking any personal satisfaction in Vincento's coming humiliation.

"Ah, I could curse the man! In the past, we have been the first to heap praise on his achievements. We have granted him hours of private audience; we have shown him friend-

liness in a degree we do not always grant to princes. Before our ascending to this chair, we once even wrote a pamphlet in his praise! And now, how are we repaid?"

"I understand, my Vicar."

IV

"I see that you have requested assignment to one particular time, Colonel Odegard," said the examining psychologist. "The two days Vincento spends near the town of Oibbog on the way to his trial, waiting to cross a flooded river. Had you any particular reason for wanting those two days?"

"Just that I know the locale very well. I once spent a long holiday there, and it was one of those places that didn't change much in three or four hundred years." Of course like everything else on the surface, the town and cathedral of Oibbog were in the past tense now. And of course Derron did have his own inner particular reason; the long holiday there had been with *her*.

The psychologist threw one of his fast balls. "Have you any reason for wanting to be a field agent at all?"

One reason seemed to be Matt and Ay, their images blending into one kingly figure as they receded from the moving moment of the present, blending and seeming to grow larger with distance like a mountain when a man walked away from it. Derron didn't know if he could put that into words, and he saw no need to try.

"I know the period very well, as I said. I believe I can do a good job. Like everyone else, I want to win the war. I want prestige, I suppose. Accomplishment."

"I see." The psychologist ruffled routinely through papers on his desk. "Just one more thing I want to bring up before approving you as agent material, Colonel. What are your personal religious views?"

"Oh. Well frankly. I think that gods and temples are fine things for people who need crutches. I haven't yet found any necessary."

"I see. I raise the point because of the dangers inherent in sending back to Vincento's time anyone likely to find himself personally involved in the issues of that time. Taking sides. You as an historian know better than I how thick the air is back there with dogma and doctrine. Religious controversy and warfare."

"I understand." Derron shook his head calmly. "No, I'm no fanatic; I'll play any part that's necessary. I'll be a rabid monk and spit on Vincento if required."

"That's all right, then. But I rather think you'll do better as a traveling scholar."

Operations gave him a name — Valzay — and started to build for him a character who had never historically existed and rushed him into preparation with about a dozen other agents, mostly male. Each agent was to stay watchfully near Vincento during a day or so of the critical period of his life.

The training and preparation was rushed and rugged, beginning with

the surgical implantation of communications transducers in jawbone and skull, so an agent could be in contact with Operations without being seem to mumble aloud. Amid fatigue and concentration Derron noticed almost without surprise that Lisa was now employed in Operations, one of the calm-voiced girls who relayed orders and information to sentries, and would do the same for slave-unit operators or live agents in the field.

He had little free time and made no effort to use any of it to speak to her. Then one day as he sat resting between training sessions, Lisa came passing by and stopped.

"Derron, I want to wish you success."

"Thanks. Pull up a chair, if you like."

She did. "Derron, I shouldn't have accused you of killing Matt. I know that wasn't your intention and it wasn't your fault. If Matt's death had caused her anything more than brief sorrow at a friend's loss, she did not show it now.

Derron said abruptly: "You and I might have had — something, Lisa. Perhaps not the whole thing there can be between a man and a woman, but still something good. At least I thought we might."

"I had some feeling like that about — Matt. But that wouldn't have been enough for me."

He went on hurriedly: "As far as anything permanent and tremendous, well I've tried that already once in my life. And I'm still up to my neck in it, as you may have noticed. I'm sorry, I've got to get moving."

And he got up out of his chair and did so.

The experts dressed him in suitable clothing, slightly worn. In his haversack they placed a reasonable supply of proper food, and in his wallet a moderate sum of proper money, coins of silver and gold and a forged letter of credit on an Empire City bank. They hoped he would not need much money nor get as far as the Holy City. But just in case.

Hung around Derron's neck was an abominably carved wooden wedge-symbol, big enough to conceal the bulk of his communicator and too ugly for anyone to want to steal. If anyone was moved to wonder, it was a present from his wife.

In an arsenal off Stage Three, they issued him a sturdy traveler's staff, which was a more effective weapon by far than it appeared to be, and then at last they were ready to drop him.

All the agents were going to be launched within half a minute, to emerge on different days and in diffent places. Their training and preparation had been too hurried and too individualized for them to get to know one another very well; but for a few minutes there was joking camaraderie in Stage Three as the masquerade-costumed group bade one another good luck and good berserker-hunting.

The launching file formed. Derron stood looking over the head of the agent ahead of him, a short man named Amling, who wore the garb of a traveling friar and who was to watch over Vincento on the

two days preceding Derron's shift. On the count, the line moved briskly forward, disappearing one figure after another. Amling vanished. Then in a long stride Derron's booted foot swung out over the mercurial circle and came down.

He was standing in darkness, in the open air. Except for a drizzle of rain, there was silence all about him, a lonely silence in which his materialization must have been unseen. Good.

As his eyes grew more accustomed to the gloom, he made out that the hard surface under his boots did seem to be that of the old Empire road which passed through Oibbog. It seemed that the launching people had scored a bull's-eye, spatially. Whether he had arrived at the proper time remained to be seen, though the rain was as it should be.

Subvocalizing, he tried to reach Operations for a routine communications check; but some kind of paradox-loop seemed to be blocking contact. One ran into such things, and one would hope they would not last.

When he felt sure no one was near, he opened his staff at one end and consulted the compass thus revealed to make sure he had the right direction ahead of him. Then he began to walk. Lightning flashed distantly at intervals, but the rain was slowly diminishing. He drew deep breaths of the washed air.

The transducer behind his ear twinged suddenly. "Odegard, can you read me yet? It's plus two days since you dropped. Time scale has been slipping."

"Affirmative. I'm about plus five minutes since dropping. Still on the road at night in the rain." Derron was tapping along with his staff to keep from floundering off the pavement into the mud.

"You're blurring on the screens. But we think we dropped you about two miles from the cathedral, further than we intended. Have you ascertained your exact location yet?"

"Negative. How's the game going?"

"All the agents ahead of you are back with us, no problems. Except Amling. We haven't been able to reach him, maybe just because of the time-slippage. Listen, Odegard, keep your eyes open. If you're more than about two miles from Vincento, a violent attack on you will be possible — "

The waning lightning flared up, obligingly showing Derron his road running straight for some distance ahead, with the dim brooding cathedral at last visible to him on its far-off hill. Much nearer, the lightning also showed him a shiny object lying in the center of the road, lying atop what seemed to be a line scratched or dug perpendicularly across the way.

"Stand by, Operations." Derron made his way cautiously up to the wet, soft thing, prodded it with a toe and waited for the lightning, which came again to show him Amling's naked body. "Never mind looking in the blur for Amling's lifeline. I guess he came down outside the safety zone too."

He knelt briefly over the body, gripping his weapons staff while his

eyes searched the rainy night as best they could, and described the situation. The line had been scratched at precise depth across the road by some tool or cybernetic limb that sliced stone like cheese; quite likely the same implement that had removed the back of Amling"s head. "Maybe it marked the boundary line of violence for us; just to let us know that it's aware of it."

Derron did not dawdle there. For a time he walked backward toward Oibbog, staff ready, trying to probe with eyes and ears the rainy night as he retreated from it. Not that his senses, or his reactions, were likely to be good enough if the enemy was there.

But he was spared. The berserker had killed in passing, where it could do so safely, and then had gone on about its real business.

V

By the time Derron reached the place where the road bent sharply to the left toward the wash-out bridge, the lightning had gone on over the horizon, so he felt rather than saw the bulk of the hill and cathedral ahead of him and above. But close by the side of the road he could now make out the monastery wall, the broken gate and, just inside the gateway, Vincento's coach deserted in the puddles. From the shelter of a cloister came the gentle mumbling and grunting of loadbeasts. Derron paused only a moment before plodding through the gate and across the soggy earth to the entrance of the main building.

He made no effort to be quiet, and the dark entrance promptly emitted a challenge: "Who's there? Stand and give our name!"

The dialect was one Derron had expected. He stopped, and as the beam of a lantern flicked out at him, he answered: "I am Valzay of Mosnar, mathematicus and scholar. From the coach and animals I see here, I judge that you within are honest men. And I have need of shelter."

A door creaked, and behind the door the lantern retreated. "Step for'ard, then."

Derron advanced slowly. When he had gotten in out of the rain he found himself in what had been the common room of the monastery, facing a pair of soldiers. One of these was armed with a crude pistol and the other with a short sword; judging by their uniforms, they were from a mercenary company.

When they could see his gentleman's clothes more plainly, their manner became more or less respectful. "Well, sir, how d'you come to be a-wandering afoot and alone?"

He told how his skittish loadbeast, scared by lightning, had run off with his light sulky. A plague on the animal! If he could catch it in the morning, he'd have some of its hide off! With whip-cracking vehemence he shook water from his hat.

Derron had an effortless feel for acting when there was a need. The soldiers chuckled, relaxed most of their vigilance, became willing to chat. There was certainly plenty of room here for another boarder — the proprietary monks had left long

ago. The place was no tavern with girls and ale; even firewood was in short supply, but the roof did keep the rain off. Yes, they were from a mercenary company, one now in the pay of the Holy Temple. Their captain with the bulk of his men was in Oibbog, which was just across the river.

They still harbored some suspicion of Derron — he might conceivably be a scout for some well organized band of brigands — so they did not tell him how many soldiers had been caught on this side of the torrent when the bridge collapsed. He did not ask, of course, but he gathered that there were not very many.

"And if the cap'n can't do more'n wave to us for the next couple days, why that's all right with us, hey what?"

"Naw, no one else but the old gentleman as owns the coach and his servant an' his driver. And a pair of friars. Plenty empty cells, sir, so take your pick. One's about as damp as the next."

Derron murmured his thanks and, with some brief help from the lantern, groped his way down a passage and into a vacant cell, doorless now like all the others. Built against the rear wall was a wooden bunk frame that had not yet been ripped out for firewood, and on that he sat down. The rush of events had left him a little numb; he still could not quite grasp that Vincent Vincento was here somewhere within a few meters of him, might even be the author of the snore that echoed faintly down the passage.

Derron streached out on the wooden frame, knapsack under his head; genuinely tired, he found himself dozing toward sleep. His thoughts as consciousness dulled were filled not with Vincento or time travel or even berserkers, but simply with the sound of fading rain and the freshness of the infinite clean atmosphere around him. It was the theme of resurrection . . .

He had been asleep for a few minutes when Operations put a throbbing behind his right ear. He came wide awake at once and tucked his carven wedge-symbol closer under his chin.

"Odegard, you're in the monastery all right?"

"Affirmative."

"Good. Now we're getting our screens tuned in. There are fourteen lifelines in or near that monastery-temple complex, counting your own. One of course is Vincento's. One seems to be an unborn child's, you know how they show on a screen in dots and dashes."

Derron mused subvocally. "Let's see. Me, Vincento, his two servants, and the two soldiers I've seen. That makes six. And they said there were two friars. Eight, which would leave six more unaccounted for. Probably four more soldiers and a camp- follower who's picked up something she won't want to carry — though that one soldier did say something about there being no girls. Anyway, I suppose your idea is there may be some apparent person here who has no lifeline showing on your screens — our hypothetical berserker-android."

"That's precisely our idea, yes."

"Tomorrow I can count noses and we'll see . . . wait."

At the entrance of Derron's cell a shape of lesser blackness became discrete and moved. The figure of a hooded friar, utterly faceless in the gloom, came a halfstep inside before halting abruptly and muttered a few indistinguishable words that might have been an apology for entering the wrong cell. The figure then withdrew as silently it had come.

Derron was gripping his staff, pointing it at the doorway. "Just had a short visit from someone. Or maybe from something. Maybe that's where Amling's robe went."

Hours passed before Derron dozed again.

When Vincento was awakened in darkness to find himself bedded amid damp straw, with bare stone walls close about him, he knew a moment of sinking terror. The worst had already happened, and he lay in the Defender's dungeon. The terror was deepened when he saw the monk-hooded figure bending over him. He could see in the moonlight which filtered now through the tiny window. Evidently the rain was over —

The rain — of course, he was still on his way to the Holy City for his trial!

The intensity of his relief was such that Vincento accepted his being awakened almost with courtesy. "What is it?" he gasped, sitting up on his shelf of a bed, pulling his traveling-rug closer about his shoulders. His manservant Will slept on a bundled mound on the dark floor.

The visitor's hooded face could not be seen; the visitor's voice was a sepulchral whisper: "Messire Vincento, come alone to the cathedral tomorrow. At the crossways of nave and transepts you will receive good news, from your friends in high places."

Could Nabur or Belam be sending him some secret word? Or, more likely, was this some Defenders's trickery? A man summoned to trial was not supposed to discuss the matter with anyone.

"It will be good news, Messire Vincento. Come alone and be willing to wait if you are not met at once. And do not seek to know my name or face."

Vincento held his silence; he would commit himself to nothing. But the visitor, satisfied that the message had been heard, melted away into the night.

When Vincento awakened again, it was from a pleasant dream. He had been back on the estate provided for him by the Senate of his city, safe in his own bed, with his mistress's warm body solid and comforting beside him. In reality the woman had been gone for some time — women no longer meant very much — but the estate was still there. If only they would let him return to it in peace!

He had been awakened this time by the touch on his face of a shaft of morning sunlight, which came striking into his cell from the high thin window of the opposite cell across the corridor. As he lay re-

calling with curiosity his strange midnight visitor, the sun-shaft was slowly moving away from his face. That motion made it instantly, for him, a golden pendulum of subtle torture.

He faced also the pendulum of choice. His mind could swing one way, *tick,* and meet in foresight the shame of swallowed truth and pride, the humiliation of an enforced recanting. And the other way, *tock,* there would be the breaking agony of the boot or the rack, or slower destruction in a buried cell.

Oh, of course, the crude physical torture was a remote threat only. He would have to be very obstinate and outspoken before the Defenders would go that far with him. But it was not impossible. *They* would say that a stubborn defendant forced them to employ such means.

So his pendulum of choice was not real; he had no real choice but to recant. Let the sun move as they want it to. Let it whirl round the globe in an insane yearly spiral, to please arrogant fools who thought they could read all the secrets of the universe in a few dusty pages of the Holy Writings.

Lying on his back, Vincento raised a hand veined with ropy vessels against the slow-swiveling torture-blade of the sun. But the sun would not be stopped in its motion by any man's hand. It mocked him all the more, making bright translucent wax out of the oldness of his fingers.

On the floor, Will stirred sluggishly in his rug-cocoon. Vincento barked him awake and chased him out to rouse the coachman Rudd, who slept beside the beasts — Rudd to look at the river's level, Will to start getting something together for breakfast.

Left alone, he began the slow humiliating process of getting his aging bones unlimbered and ready for what the day might bring. In recent years his health had been poor. But he was not sick now, only old. And yes, he was afraid.

By the time Will came to inform him that a fire and hot tea were ready in the monastery's common room, Vincento was ready also.

With mild surprise he found a new arrival in the common room, a youngster who introduced himself as Valzay of the distant land of Mosnar. Valzay made, as he put it, a modest claim to scholarship. And for a wonder he was decently respectful — he looked at Vincento with genuine, if restrained, awe and murmured that even in his distant homeland Vincento's discoveries were known and praised.

Vincento acknowledged all this with pleasant nods, sipping his morning tea, wondering if this Valzay was the bearer of the good news he was supposed to hear from someone in the cathedral. Anyway he was not going to rush up there at once; Rudd reported that the river was no longer rising, but still too high and dangerous at this point for anyone to think of fording it. One more day, maybe.

So Vincento took his time consuming tea and a little food, told Rudd to give the two friars something if

they came round, then strolled leisurely out into the sunshine to warm his bones. If he came late to his trial, there were plenty of witnesses here to tell the reason. Let the Defenders inveigh against the river, if they liked. No doubt it would dry up for them. No doubt all of nature could be made to do their bidding if they but threatened it enough.

But he must begin to practice his humility. He called to Will to bring him his writing materials from the coach, and he went to sit alone in the sun outside the broken monastery gate, with one tumbled block of stone for a bench and another for a table.

It was really about time he started writing his statement of recantation for the trial. Of course, the accused was not supposed to know why he had been summoned — probably the Defenders's first question would be whether he had any idea of what he was charged with. But in his case there could hardly be any doubt. It had been fifteen years since the warning, which Vincento had half-forgotten; but when the summons came, he realized he had made enemies among men who never forgot anything.

The first paper he pulled from his portable escritoire was the old letter from Defender Belam. Involuntarily Vincento's eye went at once to the words: ". . . *no proof of our globe's motion exists, as I believe, since none has been shown to me.*"

No proof. Vincento wiped at his forehead with a tremulous hand. Now, with mortal fear to enforce bleak clarity of thought, he could see that the arguments he had conjured up from tides and sunspots really proved nothing about the motion of sun and planets. The truth about those motions had come to him before he had ever thought of proving it — he had looked long through telescopes, he had thought long and deeply, his mind weighing the sun and grasping at stars and comets; and truth had come through some inward door, like — just like a revelation.

His enemies who cried him down were blind and stupid in their refusal, or their inability, to see. And yet he knew that those who were to sit as his judges were shrewd logicians, within their limitations. If only there were something firm that he could set simply and incontrovertibly before them . . . oh, what would he not give!

His mind ached, and his fists clenched, his very guts contracted at the thought. If he had one solid simple proof he would risk all, he would dare anything to confront and confound them with it, to rub their long arrogant noses in the very obvious truth!

But since there was nothing to support this mood of glorious defiance, it soon passed. The truth was he was old and afraid, and he would recant.

Slowly he got out pen and ink, and slowly he began his first draft. From time to time he paused, sitting in the sun with closed eyes, trying not to think.

VI

Derron counted seven soldiers round the breakfast fire and found each of them overjoyed to accept a swallow of brandy from his traveling flask and willing enough to talk. No, there was no one else in the monastery or cathedral or nearer than the town across the river. Not that they knew of.

When he was alone a few minutes later, Derron did some subvocal mumbling. "Operations? Count the lifelines here again. I make it thirteen of us. If you can make it twelve, then one of my smiling companions has clockwork for guts. But if you come out with fourteen again, then either there's some bandit or deserter lurking in a corner or you're misreading. I think you're misreading that dotted line, anyway; I consider it unlikely that any of us here is pregnant, since we're all men."

Operations was apologetic. "We'll recheck right away; you know it's not easy reading these things."

After finishing their morning meal and emptying Derron's brandy flask, most of the soldiers settled down to serious loafing. Rudd, Vincento's coachman, led his loadbeasts forth in search of grass. Following them through the gate, Derron located Vincento, sitting peacefully alone and apart. Well and good.

Remembering his mythical loadbeast and sulky, Derron put on an exasperated expression and strolled along the road toward the bridge-stump, scanning the muddy fields on either side as if in search of his property.

At the bridge-stump were the two friars, gray cowls thrown back from their unremarkable heads. They seemed to be talking of ways in which the bridge might sometime be rebuilt. Derron knew that within a year or two, the river would be spanned here by new arches of stone. And those arches would still be standing solidly more than three hundred years later, when a young postgraduate history student would come on a hiking tour with the girl he loved, enthusiastic about seeing the town and cathedral of Oibbog . . . the river would look much different then, gentler of course and with more trees along its banks. While the stones of the road would still look much the same . . .

"May the Holy One give you a good day, esteemed sir!" It was the stouter of the friars whose voice broke in upon the start of reverie.

The interruption was welcome. "Good day to you also, reverend brothers, in His name. Does the river still rise?"

The thinner friar had a loving face. In hands all bone and tendon he held a chunk of masonry, as if he meant to start this minute to rebuild the bridge. "The river falls now, sir. How goes the path of your life, up or down?"

The falsehood about beast and buggy seemed dreary and unnecessary. "That can hardly be an easy question for any man to answer."

Seven or eight of the local peasantry had materialized out of mud and distance and were plodding their

barefoot way along the drying bank of the torrent toward the bridge-stump. One walking in front swung proudly in his hand a string of large and silvery fish, fresh enough to be still twitching and twisting.

A few paces away the peasants halted. Together they bowed rather perfunctorily in Derron's direction; he was not dressed finely enough to overawe anyone, and plainly he was not the one they had come to see. The man with the fish began talking to the friars, and almost at once others interrupted him, all squabbling over who had the right to speak first and who the right of disposal of the fish. They had come to strike a bargain. Would the holy brothers accept one of these fine fish ("From me!" "From me, Holy Brother, it was *my* fishline!") and in return say some potent prayers for the giver's crops?

Derron turned away from what gave promise of becoming a nasty quarrel among the peasants to see that Vincento was still alone. And the full sunlit view of the Cathedral of Oibbog caught Derron unawares.

The tip of the central spire held its symbolic wedge two hundred and sixty feet above the flattened hill-top. The stones of tower and wall, of arch and flying buttress were rich clear gray, almost shining in the morning light. Inside, the stained glass would be living flame along the eastern wall. There was only one sight in all the world like this, and he had seen it only once before, with his beloved at his side. If air and grass were now alive again, surely she too must be alive and somewhere near where he might reach her. The resurrected reality before him was at the moment more convincing than any thought or logic. At any moment now he might hear her voice, might be able to reach out and touch . . .

There was a splash nearby. The stout friar was wearing a caricature expression of anger, disappointment and surprise, while the thinner one stood with a hand stretched out over the water. As Derron watched, a big fish jumped and splashed again; one of the slippery catch had evidently escaped.

. . . touch her warm and living skin. The way her hair moved in the wind came back to him now, with the clarity of something seen only a minute ago.

His feet took him away from the bridge, back along the road. He saw without really thinking that Vincento still sat alone in the sun.

The hill raised its cathedral before Derron, and his feet began a steady climb.

Jovann was looking sadly at the peasants, while he addressed the splasher in the water. "Brother Fish, I have given you liberty not because we do not need food, but so you may be able to praise God, who sends all blessings — the fish to the angler, or freedom to the fish. We men so often forget to be thankful!"

The fish splashed and leaped and splashed again. As if the pain of the hook or the time spent gilling air — or something else — had driven it quite mad.

Jovann looked down at this watery uproar in distress. "Be still now, Brother Fish. Enough! Live in the water, not the painful air. Give praise and thanks as a fish may naturally do!"

The splashing stopped. The last ripples and foam were swept away downstream.

Every peasant's hands were raised in the wedge-sign, and they darted their eyes at one another as if they would have liked to run but dared not. Brother Saile's face gaped as blankly as had the fish's, as his eyes swung from Jovann to the river and back again.

Jovann beckoned Saile away and said to him: "I am going apart for an hour, to pray the Holy One to cleanse me of anger and pride. And for these poor men's crops. Do you likewise." And Jovann walked away alone, following the riverbank in the opposite direction from the peasants.

As Derron climbed the steps that switchbacked up the face of the cathedral hill, it crossed his mind that at this moment in time the genes of the girl he loved were scattered in the chromosomes of some two thousand ancestors. Only in such a tenuous sense was she alive today.

He had never forgiven her for dying, for being helplessly killed with all the other millions, for emptying his world. So, he told himself, forgive her now, today. Get it all over with, out of your system once and for all, so you can be some good to yourself.

Now the roof of the monastery was below the level of his climbing feet. And now his eyes rose above the level of the paved space before the cathedral door.

Here all seemed to him just as he remembered it. He stood upon the very stones where her feet and his would one day stand, facing the same hedges and statues along the cathedral's front. Holiday and love might still be true, war and grief no more than bad dreams.

But it was she who was the dream now, who would never again be anything more. For a moment the knowledge was almost too much, still — he thought he might be going to kneel down or fall down or cry aloud — but then it could be accepted, at last, at long long last.

He was not going to collapse or even cry out. They had looked out over the valley from here and talked about building their home on some nearby spot, the home for the kids they were going to have. Now he was just going to stand here and go on living.

The crisis building up in him since he had known he might see Oibbog again slowly faded. Peace and stillness reigned.

He had still to go into the building, where he had spent a morning helping her photograph stained glass. He wished he could be lucky enough to find the supposed author of the universe inside; Derron would have a few pointed questions to ask.

The main door was just as solidly hung as he remembered it; he wondered briefly if a wooden door might last three hundred years. No matter.

He tugged it open and heard the booming reverberation of the broken closure come back from the cavernous interior. And only then did he recall that his staff with all its weaponry was resting back in his monastery cell. No matter; immediate violence from the berserker was not a danger.

He went in and paced down the center of the enormous nave. There was nothing to be seen of God or berserker, nor for that matter of deserter or pregnant waif whose lifeline might be showing up to confuse operations.

There would seem to be room in here for all of them to hide. The arched nave was about three hundred feet long and a hundred feet high for most of that length. Construction had not been quite completed when the workmen had been ordered or frightened off the job; much scaffolding still surrounded columns and clung to walls, and a few abandoned tools were very slowly gathering dust where they had been set down.

Whether because of the combatants's reverence or superstitious awe, or only by chance, war had not trampled here. Even the stained glass was all intact, splintered only by the sun coming in to fire the gloom with richness. This main body of the temple was now no more than a few decades old. The paving stones of the nave, the wide steps leading to side chapels, all were flat and unworn; three centuries and more of random footsteps would be needed to shape them into standard distribution curves. Here and there the workmen's cables and ropes hung from the scaffolding, as steady in the motionless air as if carved from stone themselves.

As Derron approached the intersection of transepts and nave, a movement caught the corner of his eye. One of the friars, hood worn over his head here in God's house, was approaching him.

Derron cleared his throat. "Reverend Brother." And then it struck him as odd, that one of the two men he had left at the bridge should have hurried here ahead of him. Peering closely, he saw that the face beneath the cowl was not quite a face. The hands reaching to grab him as the figure shot forward were dummy flesh, split open now to show the steel claws.

A little mob of peasants was coming up the road from the bridgehead, babbling loudly of miracles and fish. The noise was distracting, and in truth Vincento was only too ready to let himself be distracted from his humiliating task. He summoned Will, gave him the escritoire and papers to take in charge and then turned his own steps restlessly upward in the fine sunlight.

He had decided that the meeting supposedly arranged in the cathedral was probably some Defenders's snare. Let them try! He would see through it before they had gotten very far. No more than the oafs who called themselves scholars were clerics Vincento's equals in cleverness. It was only the Defenders's power he respected and feared, never their brains.

He was patient with his old legs, and so they served him well enough on the climb. After a pause at the top to breathe, he entered at the cathedral's main door, tugging it firmly closed behind him. He devoutly hoped that no one was going to meet him to offer sympathy. A sympathizer always had at least some implied claim to be the equal — or even the superior! — of the one he tried to console. Pah!

Vincento strolled through the nave, a stone-sealed space too vast to give the least sense of confinement. To his right and left, columns towered in their parallel rows. With distance the apparent gap between each column and the next diminished, until at fifty paces each row became opaque as a wall. No matter where a man stood inside this unpartitioned space, half of it would always be blocked from his view — more than half, if one counted the areas of the transept-arms and the chapels.

When he reached the appointed meeting place, the crossways of nave and transepts, Vincento could look directly up nearly two hundred feet, into the shadowed interior of the mighty spire. There were workmen's platforms there too, reached by ladders mounting from the clerestory level, where must be the upper end of some stair that coiled up within the wall from floor level.

In this temple there were no chandeliers and no breezes to swing them if they had existed. If in Vincento's youth this had been his parish house of worship, he could hardly have begun, during a drowsy Sabbath sermon, to discover the laws of pendulums.

A single cable of great length descended thinly from the uttermost dark interior of the spire. Vincento's eye followed it down, to find that after all there was a pendulum here, at least in potential. For a bob, there hung on the end of the long cable a ball of metal that would be heavy as a man. This weight was caught and held by the merest loop of cord to one of the huge columns at a corner of the nave-transept intersection.

Looking up and down, up and down again tended to make an old man dizzy. Vincento rubbed his neck. But what use could the builders have had for such a patriarch of pendulums? It could, Vincento supposed, be something they swung when hard stone and mortar had to be demolished. Or was it only a plumb-line made gigantic?

Whatever they had intended it for, it was a pendulum. The restraining tether of cord, with its single knot, looked insubstantial. Vincento thrummed the taut little cord with his finger, and gently the long long cable whipped and swayed. The massive weight made tiny bobbing motions, dipping like a ship at anchor.

Quickly the oscillations died away; the cathedral stillness regained ascendancy. Cord and weight and cable were once more as steady as the stone columns in the still gray air. The pendulum-ship was drydocked.

Set sail, then! On impulse Vincento tugged once at the end of the knotted restraining cord. And with startling ease the knot dissolved.

Starting from rest, the weight for a moment seemed reluctant to move. Even after it had undeniably begun its first swing, it still moved so slowly that Vincento's eye raced involuntarily once more up into the shadows of the spire, to see how it was possible that mere length of cord should so delay things.

A man might have counted four without haste before the weight for the first time reached the center, the low-point, of its swing. Almost touching the floor, it passed that center in a smooth fast rush and immediately began to slow again, so that it needed four more counts to climb the gentle gradient of the far half of its arc. Then an unmeasurable instant's pause, not quite touching a column on the other side of the crossways, before the weight edged into its returning motion.

Back and forth it went, in a perfectly straight track about ten yards in length. Vincento's eye could find no diminution in the amplitude of the first half-dozen swings. He supposed that a heavy weight swinging so freely might continue to oscillate for many hours or even for days.

But wait. Vincento squinted at the pendulum. Holding his head motionless he watched it closely through another half dozen swings.

What was it he had come in here for? Oh yes, someone was perhaps going to meet him.

But this pendulum. He frowned at it and shook his head. He was going to have to make sure of something that he thought he saw.

Workmen's sawhorses stood not far away. He dragged a pair of these to where he wanted them, then spanned them with a plank, which lay beneath the end of the pendulum's arc and perpendicular to its direction. On the bottom of the swinging weight he had noticed a projection like a small spike — whatever it had been designed for, it would serve Vincento's present purpose well. He laid a second board atop the first and readjusted his whole structure slightly. Now on each swing the spike passed within an inch of the topmost board.

Somewhere in here he had seen sand . . . yes, piled there in a mixing-trough, by the entrance to the first side-chapel. The sand was damp with the long spell of wet weather; he brought handfuls and dumped them on the upper board, where he patted and built the sand into a small wall, an inch or two high, along the board's length. Then in an interval between swings he slid his upper board slightly forward, taking his sand-wall into the edge of the pendulum's arc.

A neatly designed experiment, he thought. On its first return the moving spike notched his little sand wall delicately, tumbling a tiny clot of grains down the minute slope. Then the weight pulled its taut cable away again, taking another nibble of eternity.

Vincento held his breath, held his eyes from blinking as he watched the pendulum's return. Now he heard

for the first time the faint ghostly hissing of its passage.

The spike coming back to the wall of sand made a new notch, though one contiguous to the first. Then in movement huge and regular enough to be the cathedral's stately pulse, the weight once more departed.

And the third notch was new again, by the same margin and in the same direction as the second. In three vibrations the plane of the pendulum had shifted its extremity sideways by half a finger width. His eyes had not deceived him earlier; it was creeping regularly clockwise.

Perhaps some slow untwisting of the cable? Then it should soon reverse itself, Vincento thought, or at least vary in amplitude. Again he stared up into the high shadows.

He would have to hang another pendulur like this somewhere, someday, and study it at leisure. If he could. Even supposing that his health held out and he was spared prison, it would be difficult. Enclosed towers of this height were anything but common. In another temple or at some university, perhaps . . . but he had no intention of stooping to collaboration.

. . . suppose now that the sideways progression was *not* due to the cable unwinding. He thought he could feel that it was not — in somewhat the same way as, after study, he had come to feel the stability of the sun. This clockwise creeping had something too elemental about it for him to be able to credit a trivial cause.

Already the width of two fingers had been nibbled from the top of his little parapet of sand.

He wondered how the cable was fastened at the top. Younger legs than his would be required to find that out, and Vincento departed to get them. Several times in his passage down the nave he turned, frowning back at the pendulum as he might have stared at an unexpected star.

VII

Of it all, Derron had seen only an upper segment of the moving cable. He saw even that much with only one eye, for his face was being held with steady force against the rough planking of the high platform to which the berserker had carried him, helpless as a kicking infant. Inhumanly motionless, it crouched over him now, one chill hand gripping his neck and holding part of his garment gaglike in his mouth, the other hand twisting one of his arms just to the point of pain.

Obviously it had no intention of killing or crippling him. Still his captivity felt more like eternity than time, though measured by the meaningless regularity of the swinging cable. Having his prisoner, the berserker was content to wait, which meant that he had failed. It had at once known his communicator for what it was, had ripped the wooden carving from his neck and cracked it like a thin-shelled nut, squeezing the meat of metal and components into trash between its fingers.

Only when the cathedral door far below had boomed shut once more did eternity begin to come to an

end. The berserker then let him go.

Slowly and painfully he raised his numbed body from the wood. Rubbing the arm that had been twisted, he turned to face his enemy. Under the cowl he saw a pattern of seamed metal that looked as if it might be able to open and slide and reshape itself. Was there plastic somewhere inside that could evert to become the mask of a human face? There was no way to tell that much, let alone guess what identity it might be able to wear.

"Colonel Odegard," it said, in a voice machine-tailored to neutrality.

He waited for more, while the thing facing him on the high platform squatted on its heels, arms hanging limp. Like the face, the hands were ambiguous; they were not human now, but there was no saying what they might be able to become. The rest of the thing was hidden under the shapeless robe, which had probably once been Amling's.

"Colonel Odegard, do you fear the passage from life to not-life?"

He didn't know what he had expected to hear, but hardly that. "And if I do, what difference does it make?"

"Yes," said the berserker. "What is programmed goes on regardless of any passage."

Before he could try to make any sense out of that, the machine jumped precisely forward and grabbed him again. He struggled again, which of course made no difference. It tore strips from his coat, ripping the tough cloth with precise and even sounds. With the strips it gagged him

again and tied him hand and foot — tightly, but still not so that he felt hopeless of ever working free. It would not blunder into causing his death, here where it must be careful not to kill. When it had bound him, the machine paused for a moment, moving its cowled head like a listening man, searching the area with senses far beyond the human. And then it was gone, down the ladder in utter silence, like a giant cat or ape.

He strained desperately to get loose, choking curses on his gag.

From some village in the hills a second group of peasants had come along the road to the cathedral. It was Brother Saile they met first; their anxious faces fell even further when they learned he was not the saint and miracle-worker of whom the whole countryside was talking.

"Tell me, what is it you wish to see Brother Jovann about?" Saile inquired, his hands clasped with dignity across his belly.

They clamored piteously. For the past several days a great wolf had terrorized their little village, killing cattle and even a child and even — they swore it! — uprooting crops. They were isolated and very poor, with no powerful patron to give them aid of any kind, save only the Holy One himself! And now the saintly Jovann, who must and would do *something*. They were utterly desperate.

Brother Saile nodded, his face showing sympathy mixed with reluctance. "And your village is several

miles distant? In the hills. Well — we shall see. Come with me, and I will put your case before good Brother Jovann."

With a puzzled Will beside him, Vincento entered the cathedral once more and hurried down the nave. Rudd had bothered him, complaining of the scarcity of food for the loadbeasts. And then his old legs had rebelled against climbing the hill a second time. Now, when he got back to the still-swinging pendulum, more than an hour had passed since he had first set it in motion. The tiny battlement of sand had been demolished by continuous notches, up to the point where the pendulum's plane had left it behind altogether. By now that plane had inched clockwise through ten or twelve degrees of arc.

"Will, you've helped me in the workshop. Now this is another such case, where you must do precisely what I say."

"Aye, master."

"First, keep in mind that you are not to stop or disturb the swinging of the cable here. Understood?"

"Aye."

"Now I want you to climb; there seem to be ladders and platforms enough for you to go up all the way. I want to learn how this swinging cable is mounted, what holds it at the top. Look at it until you can draw me a sketch, you're good at that."

"Aye, I understand, sir." Will craned his neck unhappily. "It's a long bit o' climbing, though."

"Yes, yes, a coin for you when you're down. Another when you've given me a good sketch. Take your time now and use your eyes. And do not disturb the cable's swing."

Derron had made only slight progress toward loosing his hands, when he heard clumsier feet than the berserker's climbing toward him. Then between the uprights of the ladder Will's honest face came into view to predictably register shock.

". . . bandit!" Derron spat, when his hands had been cut free and he could rid himself of the gag. "Must've been hiding in here somewhere . . . forced me up here and tied me up."

Wondering and sympathetic, Will shook his head. "Likely he'd 'a slit your throat, sir, but didn't want to do no sacrilege. Think he might still be here about?"

"No, I'm sure he was running away."

"Long gone, then, by this time." Will shook his head. "You'd better liven up your limbs, sir, before you starts to climb down. I'm going on up, bit of a job to do for master."

"Job?"

"Aye." Will was already climbing again, right into the spire.

Still on all fours, Derron peered over the edge of the platform. Vincento's ginger-colored hair marked a toy figure more than a hundred feet below. Down there the mysterious moving cable ended in a dot which traced back and forth with sedate regularity . . .

Derron's muscles locked, and he felt himself near falling. He had suddenly understood what Vincento was looking at, what Vincento had

probably been studying all the while the berserker held Derron captive. Its earliest designers on old Earth had called it a Foucault pendulum.

VIII

"Honorable Vincento!"

Vincento looked around in surprise and some annoyance as the young man, Alzay or Valzay or whatever his name was, came hurrying toward him from the foot of the tiny stair by which Will had begun his climb.

Valzay rushed up, babbling some imbecilic story about a bandit, spouting pestiferous wordage that threatened to tangle Vincento's thoughts.

"Young man, I suggest you give your recitation to the soldiers." Now, if it was not the cable untwisting, and proved to be *not* some trick of the mounting above . . . certainly the bones of the cathedral were not creeping counterclockwise . . . but yet his mind strained forward into unknown territory . . .

"I see, Messire Vincento, that you have discovered my little surprise." Derron saw very clearly how the game was certain to go, perhaps had gone already. But one desperate gamble was still open to him, and he took it.

"Your little surprise?" Vincento's words became low and measured, while his brows knit as if presaging thunder. "Then it was you who sent that rascally friar to me in the night?"

Derron let the question of the friar pass. "It was I who arranged — this." He gestured with proprietary pride at the pendulum, and in a few words he sketched the outline of a huge lie. How he had really been here a day before the other refugees, with friends to help him (this lie would not stand investigation, but if Derron's plan succeeded, Vincento would never want to investigate) install the pendulum — while in his mind Derron visualized the berserker here, catlike, monkeylike, devilish, arranging mounting and cable and weight in order that: ". . . you see before you, Messire Vincento, a firm proof of the rotation of the globe!"

There was a start in the old eyes, but no real surprise; a desperate gamble had been justified, all right. Now Vincento had become a waiting statue, mouth twisted and eyes unblinking.

Derron went on: "Of course I have followed your example, distinguished sir, and that of a number of our contemporaries, in protecting my rightful claim to this discovery while keeping it secret yet a while, for my own advantage in further research. To this end have I sent anagram messages encoding the truth to distinguished persons in several parts of the world.

"Though as I say, sir, I had meant to reserve the secret yet a while, I cannot stand idly by during your present difficulties."

"A proof of our globe's rotation, you say." The tone was blank, suspended.

"Ah, forgive me for not explaining! I had not thought it necessary — you see, the plane of the pendu-

lum does not rotate, it is our globe that rotates beneath it." Derron hesitated, as if it had just occurred to him that Vincento might be getting just a little slow and senile. Then he spoke on, more slowly and distinctly. "At the poles, this device will trace daily a full circle of three hundred and sixty degrees. At the equator it will appear not to rotate at all." Mercilessly he poured out in detail his three-and-a-half-centuries' advantage of accumulated knowledge. "Between these extremes the rate of rotation is proportional to the latitude; here, it is about ten degrees per hour. And since we are in the northern hemisphere the direction of apparent rotation is clockwise . . ."

Will was shouting at his master from high above: ". . . she be mounted free to turn any way, but there be nothing turning her!"

Vincento shouted up: "Come down!"

". . . bit more study if 'ee wants a sketch . . ."

"Come down!" The thick lips spat it out.

Derron kept the pressure on, switching his emphasis now to remorseless generosity. ". . . my only wish of course now being to help you, sir, to come to your rescue. In bygone years you have accomplished very substantial things, very substantial, and you must not now be cast aside. My lance is at your disposal; I will gladly repeat this demonstration of my discovery for the authorities in the Holy City, so that the world may witness — "

"Enough! I have no need of *help!*" Vincento's tone made the last word an obscenity. "You will not — meddle — in — my — affairs. Not in the least degree!"

Before Vincento's terrible contempt and wrath, Derron found himself physically retreating, even as he realized that he had won his gamble — his wager that the old man's pride was as monumental as his genius.

Derron stood in silence as Vincento, shrinking once more under his burdens of age and weariness and fear, turned away with a parting look of hatred. Vincento would never use the Foucault proof; he would never believe it. It was one direction in which he would nevermore want to investigate; he would force the whole thing from his mind if he could. The smallness and jealousy that were leading him to trial and humiliation existed not only in other men, but in himself.

Derron knew that Vincento at his historical trial would not only recant, he would go beyond what his judges asked or wanted of him and offer to write a new pamphlet, proving that the sun did after all move around the world of men.

My only wish being to help you, sir. Vincento's figure dwindled to the end of the nave, and at last the door boomed shut behind him.

Now even Vincento could be forgotten for the moment, for real victory and hope were heady things. Getting away ahead of Will's questions, Derron hurried out of the cathedral by a side door and skipped down the steep stairs toward

the monastery. If the berserker had not also smashed the backup communicator hidden in his staff, he could tell the Modern world of victory.

The enemy had not bothered with anything in his cell. As he came near it, an emergency summons from Operations began to throb in the bone behind his ear.

Brother Saile was puffing, though he was making no effort to hurry along the narrow cattle-path that wound up and down hill through scrubby bushes and thin woods. Instead he hung back and with almost every puff of breath tried to discourage Brother Jovann's progress. "I thought — to say a few prayers in the village — would have been sufficient. These peasants, as you know — are often foolish. They may have — greatly exaggerated — the depredations of this supposed wolf."

"Then my own peasant foolishness is not likely to cause any harm," said Jovann, leading on implacably. They were deep in the wolf's supposed domain; their peasant supplicants and guides had turned back through fear a quarter of a mile earlier.

"I spoke too harshly of them, may the Holy One forgive me." Saile wheezed to the top of a hill and gathered breath for readier speech on the descent. "Now if this one beast has really caused in a few days all the death and damage they claim for it, or even half so much, it would be utter folly for us to approach it unarmed as we are. It is not that I doubt for an instant the inscrutable wisdom of Providence which can cause a fish to leap for joy after you have released it, nor do I doubt the story I once heard of the gentle little birds listening to your preaching. But a wolf, any wolf, is quite another . . ."

Brother Jovann did not appear to be listening very closely. He had paused briefly to follow with his eyes a train of scavenger-insects which crossed the path and vanished into the brush. Then he went on, more slowly, until a similar train appeared a little further along the trail. There Brother Jovann turned, walking noisily into the brush, leading his companion toward the spot where it seemed the two lines of insects must intersect.

IX

Staff in hand, Derron made the best cross-country time he could, running fifty steps and walking fifty.

"Odegard!" Operations had cried out. "There's another lifeline just as vital as Vincento's there with you. Or he was with you. Now he and one of the others have moved out a couple of miles. They're about to leave the safety zone. You'll have to protect them. They'll be at the berserker's mercy if it's out there waiting."

And of course it would be out there, in ambush or pursuit. The attack on Vincento had been in deadly earnest, like the first punch in a good one-two. But it was the second punch that was really intended

as the killer. And humanity had left itself wide open.

Running fifty, walking fifty, Derron covered ground steadily along the bearing Operations had given him. He asked: "Just who am I looking for?"

And when they told him, he thought he should have guessed the name, should have been alerted by his first look into that gentle and loving face.

In the midst of the thicket there had been havoc. Days ago it had happened, for the tree branches that had been broken were now dead. And though insects were still busy among the wreckage of bone and gray fur on the ground, there was no longer much left for them to scavenge.

"This was a very big wolf," said Brother Jovann, bending to pick up a piece of jawbone. The bone had been shattered by some violent blow, but this fragment still contained teeth of impressive size.

"Very big, certainly," said Brother Saile, though he knew very little about wolves. He did not care to learn more and kept looking around him nervously.

Jovann was musing aloud. "Now, what manner of creature can it be that deals thus with a big male wolf? Even as I in my greed have sometimes dealt with the bones of a little roast fowl . . . but no, these bones have not been gnawed for nourishment. Only broken and broken again, as if by some creature who is even more wantonly savage than a wolf."

The name of Brother Jovann, saint, symbol of gentleness and love meant something to Modern skeptics as well as believers, to both historians and laymen. Like Vincento, he had become a towering folk-figure, imperfectly understood.

"We're just catching on to Jovann's practical importance," said Time Ops' voice in Derron's head. "Historically his lifeline goes on about fifteen years from your point, and all along the way it radiates support to other lines. What has been described as 'good-turn-a-day stuff.' These other lines tend to re-radiate life support in turn, and the process propagates up through history. Our best judgment now is that the disarmament treaty three hundred years after Jovann's death will fall through and an international nuclear war will wipe us all out in pre-Modern times if St. Jovann is terminated at your point."

A girl's voice came in briskly: "A new report for Colonel Odegard."

Derron asked: "Lisa?"

She hesitated for just an instant; then, business first. "Colonel — the lifeline that was described to you earlier as having an embryonic appearance is moving out of the safety zone after the other two, at what seems an unaccountably high speed. We can give no explanation. You're to bear five degrees left, also."

"Understand." Derron bore five degrees left, as near as he could judge. "Lisa?"

"Derron, they put me on because I said I'd tend strictly to business."

"You do that." He began to run

once more, his breath coming in gasps. "I just wish — you were carrying my baby."

There was a faint, completely feminine sound. But when Lisa's voice came back intelligibly it was all business again, with more bearings to be given.

From the corner of his eye Brother Saile caught the movement of something coming toward them through the trees and bush; he turned, squinting under the afternoon sun, and with surprise at his own relative calm he saw that their search for a killer wolf had come to an end. Monster instead of wolf, perhaps, but he could not doubt it was the killer, come now to find the searchers.

Silent, poisonous and deadly-looking as a silver wasp, the man-sized creature came at a catlike run through the scrub forest. Brother Saile understood that he should now try to lay down his life for his friend, he should shove Brother Jovann back and rush forward himself to distract the thing. And something in Brother Saile wanted to be that heroic, but his belly and his feet had turned to lead and would not let him. He tried at least to shout a warning, but even his throat was paralyzed by fear. At last he did manage to seize Brother Jovann by the arm and point.

"Ah," said Jovann, coming out of a reverie and turning to see. A score of paces away the monster crouched on its four legs. Peasants glimpsing it might call it wolf. Shreds of gray cloth clung to it, as if it had been dressed and then had wolf-like torn itself out of the garment. Terrible and beautiful at once, it flowed like quicksilver two rapid strides closer to the men and then settled again into a crouching, silent statue.

"In God's n-name come away!" Brother Saile whispered, through shivering jaws. "It is no natural beast. Come away, Brother Jovann!"

But Jovann only raised his hands and signed the horror with the wedge; he seemed to be blessing it rather than exorcising.

"Brother Wolf," he said lovingly, "you do indeed look unlike any beast I have ever seen before, and I know not from what worldly parentage you may have sprung. But there is in you the spirit of life; therefore never forget that our Father above has created you, as He has created all other creatures, according to his own plan, so we are all children of the one Father."

The wolf darted forward and stopped, stepped and stopped, inched and stopped again, in a fading oscillation. In its open mouth Saile thought he saw fangs not only long and sharp, but blurring with vicious motion like the teeth of some incredible saw. At last there came forth a sound, and Saile was reminded simultaneously of ringing swordblades and of human agony.

Jovann dropped to one knee, facing the monster more on a level. He spread his arms as if willing an embrace. The thing bounded in a blur of speed toward him, then stopped as if caught by a leash. It was still six or eight paces from the

kneeling man. Again it uttered sound; Saile, half-fainting, seemed to hear the creak of the torture rack and the cry of the victim rise together.

Jovann's voice had nothing to do with fear, but only blended sternness with its love.

"Brother Wolf, you have killed and pillaged like a wanton criminal, and for that you deserve punishment! But accept instead the forgiveness of all the men you have wronged. Come now, here is my hand. In the name of the Holy One, come to me and pledge that from this day on you live in peace with men. Come!"

X

As Derron came up at a staggering, exhauted run, he first heard a murmur of speech and then saw the figure of Brother Saile standing motionless.

Derron then lurched to a halt, raising his staff; but Saile was not looking at him, and Derron knew now that Saile was not the berserker. What Operations had said about the embryonic lifeline and what the berserker had said in the cathedral had at last fitted together to make a wondrous kind of sense. Three steps sideways brought Derron to where he could see what Saile was gaping at.

He was only in time to see the berserker-wolf take the last hesitant step of its advance. To see it raise one metal paw — and with its steel claw-fingers gently touch the kneeling friar's extended hand.

"So, my guess was right, it had become a living thing," said Derron. His head rested in Lisa's lap, and he looked up past her face at the park's treetops and imitation sun. "And as such, susceptible to St. Jovann's domination. To his love. There's no other way to put it."

Lisa stroked his forehead. "Are you eating up the pious legends?"

"Oh, there are rational explanations. The most complex and compact machine the berserkers ever built, shot up through twenty thousand years evoluntionary gradient — something like life was bound to happen to it. Or so we say now. And Jovann and some other men have had amazing power over living things."

"I looked up this particular pious legend," said Lisa. "It says that after being tamed by St. Jovann, it lived like a pet dog in the village."

"That would have been the original wolf. I suppose the berserker meant all along to kill the animal and take its place during the taming episode. But tearing the real wolf into little bits was an irrational, thing to do — if we'd known about that sooner we might have guessed. I might have guessed in the cathedral, when it babbled to me about passages between life and not-life. Or when it came to my cell in the night, for no reason valid to a machine. Anyway, Operations isn't as trusting as Jovann and his biographers. We've got the thing in a cage in present-time while the scientists try to decide . . ."

Derron had to pause, for a young lady was bending over him with the intention of being kissed. END

MAIL DROP

by C. C. MacAPP

Illustrated by BODÉ

It was just a little problem of misrouted mail — too bad it was destroying the galaxy!

I

Klonit-41-Z-Bih slithered vastly from his office out onto the steel-decked veranda, contracting the after part of his long body so his last few legs could squeeze out. He coiled himself into a spiral, letting his scaley chin rest on the railing while his slitted, amber eyes roved boredly over his domain. A pair of *plinch* birds — four-winged, four-legged, pink-feathered — sailed around the building, saw him, slowed a little and fluted in unison: "Good morning, Director."

"Morning," he rumbled, keeping his voice down so he wouldn't turbulate the air around him. "Something up?"

"No, Director. Just taking lunches to a couple of *blens*." One of the birds hefted the carton in its talons.

"Oh," Klonit sighed. That was the hell of it. Galkbar wasn't too bad, for an uninhabited, remote planet — though at times he'd give a *foozlunk* of his salary for a bake under the huge orange sun of his home world — but nothing ever happened. It had been over a year since anyone even appeared to claim mail in person. Just stasis-parcels warping in, warping out or being held in storage; routine reports, things his Central Computer and the various work-robots could have handled without supervision. The only reason he had any live personnel at all was that certain races who were members of the Sector Customs And Mail Union had prejudices against robots.


VAUGHN
BODE'


MARS
SHIP-I
UNITED STATES OF
AMERICA

Several of his toe-claws scratched idly at joints between his body-scales, while others tapped a bored little rhythm on the steel decking. He watched the two *plinch* birds pause in flight for a moment to tease one of the planet's huge green-and-yellow butterflies, then continue on toward Sundry Warehouse No. Six, one of the few buildings above ground. A pair of *blens* — muscular, brown, hairless bipeds, apparently quite comfortable nude in Galkbar's coolish lavender sunlight — stepped into sight from behind Warehouse Six, where the pens were that held Live Unclaimed Mail. The *plinch* birds fluttered down toward them.

Hopefully, Klonit filled his fore-body with air and let his full voice roll out. "Ho, you *blens*! Anything up?"

The brown bipeds jumped as the blast of sound hit them. Their voices came from the communication-box Klonit wore at his throat. "N-no, Director. Just inventorying the Live Mail again. There's a new litter, just born, of those big-eared things."

Klonit growled. He knew for a certainty that much of the Live Mail being held would never be claimed. What he'd like to do was turn it loose on the rising brush-covered slope, whence came the smells of ripening berries and small indigenous animal life. But regulations said it had to be held three years.

A sigh rippled back along his body. He supposed he ought to order lunch and get it over with. He didn't really know, though, what he wanted to eat, nor what he'd do with the afternoon.

Some thousands of light-years from Galkbar, Earth's first manned ship to Mars settled slowly toward the floor of a crater. The skipper, Colonel Jason Glock, sat at the control console, peering at meters and viewscreens and making little motions of his fingers over various studs. Actually, the ship was landing herself, and he was only trying to look busy. In his mind he was going over the speech he'd soon tape for radioing, when possible, to Earth.

He was a rather large man, well muscled, slightly gray at the temples. His tailored uniform was as neat as his small moustache. The tight curl of his hair, and the fullness of his lips, hinted at possible Negro blood, though his irises were agate-gray. His skin, with its careful tan, could be Caucasian. Something about the shape of his eyes, though, suggested an Oriental admixture; or possibly Semitic. Or, he could be an American Indian.

Major Sarah Tolberg, dainty and feminine, stood a few steps back of him, her dark eyes, a little wide with excitement, fixed on the viewscreens. Beside her stood Lieutenant David Lobell. His boyish blue eyes and blond good looks contrasted piquantly with her dark beauty. He squeezed back and, to hide his confusion, said, "Uh, Colonel, that dust storm's beginning to spill over the rim of the crater."

"All right, Lieutenant." Glock kept his voice languid, even as he shot an unobtrusive glance at a

viewscreen. The sandstorm couldn't really harm the ship, of course, but it might sandblast off the name and other lettering on the outside, which were only painted on. He did have his heart set on a photograph of himself in a spacesuit with the just-landed ship as a background. Nervously, he twisted dials to swivel an outside telescope. "Maybe we can find shelter. That looks like a cave in the crater wall. Let's hop over and have a look, eh?" He sent the ship skimming in that direction. "Quite solid rock over it, wouldn't you say?"

David Lobel said a trifle wistfully, "Looks almost artificial, doesn't it, sir?"

Glock gave Sarah Tolberg his smile-for-Junior-Officers-female, then turned a more condescending one on David. "Always the romantic, eh, Lieutenant? No; your grandfather could speculate about Martians; but now we know better. Lifeless world and always has been. Conditions absolutely wrong, you know. And as for anything coming from beyond the Solar System . . . well . . . " He shrugged to show how ridiculous *that* was. "Here we go in. Man that forward spotlight, will you, Lieutenant? Raise it a little, toward the ceiling. Right. Solid rock. Mm. We'll ease in here where it narrows, nice and snug. Now we'll put her down, gently . . . so."

He raised his head and beamed at the two of them. For an instant he felt a twinge of masculine resentment that Sarah stood so close to David, but it passed quickly. There were plenty of women, and anyway they were really (though one wouldn't say so, in public) more trouble than they were worth. Besides, with the pair of them so wrapped up in each other, they wouldn't be competing with him for the limelight, once the ship got back to Earth. "Well. Here we are! Lieutenant, you may as well begin getting the suits in order. And, Major — perhaps, that bottle of wine we've been saving, eh?" He smiled brightly.

At that moment his face went absolutely motionless, frozen in the smile. So did everything else in the ship. The drift of electrons, in wires, stopped. The molecules of the air halted their wild rebounding. The three occupants of the ship could not know of the sudden interruption, for it was a complete Time Stasis. When it was released, every molecule, every body cell, every thought, would resume as instantly as it had halted. But, for now, nothing within the ship, not even Time, moved. The ship itself, though, and the capsule of strange forces that surrounded it moved, in an instant, some thousands of light-years.

II

Klonit toyed listlessly with his dessert of candied *matl* paws. He lifted a morsel toward his eating-parts, then let it stop in mid-air as a 'ping' came from the com-box at his throat. "Yes?" Klonit listens."

"Ah, ahem." Central Computer's voice, with a few lifelike flaws built

into it, might have belonged to a *blen* or to any of a hundred other vocalizing species. "I thought I'd better tell you, Director, that we're going to be visited by two battle-fleets within the next three hours. The Selidae and the Medanjians."

Klonit's eating-utensil fell with a clatter as a shriek exploded from him. His long body reared up. Half a dozen legs swept across the desk, knocking plates from it, as one claw jabbed frantically at a large red button. "Mayday! Mayday!" he bellowed. "All personnel to the shelters! Man the evacuation capsules! Check all power sources and emergency supplies; test air-regenerating machinery! Transfer all mail possible to the Outposts! Central, activate my Maximum Security Quarters! I'll be down in a couple of — as soon as I take care of those confidential files — " In his wild darting about, he got himself wound around the desk so that his own forward legs scrabbled over his tail-part. He let loose a rattling series of oaths. "Great Copulating Novae!"

"Director," Central Computer said calmly, "I've already taken care of everything. Will you let me report the situation?"

"Aaargh!" Klonit struggled to untangle himself; kicked haphazardly at the plates strewn on the floor. "Three hours, you say? Get someone or something up here to clean up this mess!" He snorted a couple of times and felt calmer. "All right. What's up?"

"Well, Director, it didn't seem anything to bother you about. A stasis-capsule arrived, bearing three live creatures in an unfamiliar kind of package. There was no addressee and no returnee, so I sent out routine queries to the two catalogued space societies in the sector of the capsule's origin. Those were the Selidae and the Medanjians. Neither was within fifty light-years of the origin, so it's probable there was some malfunction in the mailing. However, there's nobody else even reasonably close. But now both races have claimed the parcel."

Klonit blinked, his chitinous eyelids, making an almost metallic sound. "They have? Uh, did you describe the parcel's contents?"

"No more and no less than prescribed by regulations, Director. A package, arriving by Translocation, containing three bipeds, advanced enough to wear clothing and prepare their own meals from foods stocked in the package."

Klonit scratched irritably at his chin. "Now, why in . . . Central, did you inform each that the other was also being queried?"

"Of course. Regulations — "

"Idiot! Don't you know how they hate each other?"

"I'm aware of that."

"Well, for hydrogen's sake! Didn't you foresee what would happen? Of *course* they'd both claim it! Whichever one it *doesn't* belong to — if it belongs to either — will hope to steal some bit of new technology or learn about some new species the other's enslaved; don't you see? They both raise food animals, don't you know?"

"Answering in order: no, yes and yes."

Klonit snarled. "Well, one more question. Exactly where did the capsule come from?"

"Point of origin, Delta five nine two log one seven five four, Upsilon two six eight log three zero one, Zeta one zero four log nine seven two. Click."

"Hey! I'm not through with you!"

"Oh? You said one more question. I answered it and turned my voice-circuit off."

"Well, damn it, this is a complex question, with several parts. I don't remember any Translocator Station in that spot! It's out beyond either the Selidae or the Medanjians!"

"Correct. The race that maintained an outpost there has not been heard from for several thousand of your lifetimes, and it is probably extinct. However — "

"However, *plinch* droppings!" Klonit roared. "If the Station's still operative, why haven't you sent a drone to investigate?"

"I have, Director. The planet is desolate, very low in atmosphere and without artifacts other than the Station. That is inside a natural cave, well disguised, well protected and operated on automatics. There is no sign whether some other race has just discovered it and placed this parcel in it, or whether the parcel has been there for ages, with a planetquake or something just now jarring the machinery into operation. The data —"

"Stuff the data in your memory banks. Send a platform to bring me down to wherever you've put the parcel. I definitely want to take a look at it."

There were peep instruments, of course; but Klonit decided also to relax the Time Stasis briefly to observe the three bipeds in action. They'd never know the difference. He watched them for a few moments, then quickly restored the Stasis. "Central! You complete boob! Can't you see these are civilized beings? Look how the young female and male are holding hands! Doesn't that rouse any feeling in you? Are you proposing to turn them over to barbarians like the Selidae or the Medanjians? And this — this thing you call a package. Can't you see it's a ship — *their* ship? Primitive, but a ship; suitable for voyaging within a planetary system. Answer me!"

"A ship, after all, is a package, Director."

"Arrgh! Huh. Well, when are those battle fleets due? Which one first?"

"The Selidan. ETA, mark, two point eight six three hours from now."

"All right. Ready me a survey-capsule. I want to see this "desolate" planet you describe. I'll be back within two hours. Meanwhile, I want you to send a resume of this whole mess to the Chief Of Council. Ask him if any members have fleets close enough to get here ahead of the Selidae."

"I've already done that, Director. There should be a reply before you get back."

The abandoned station was pretty much as Klonit expected, marvelous only in that it had remained in working order so long. He eased his capsule out of the cave, sensors probing ahead for danger. The sandstorm, he wrote off; but, because it interfered with vision, moved clear of it. A quick look around told him this planet was too far out from its sun and unsuitable in other ways to be the home world of the three bipeds.

Maybe the next one in. Yes. There it was, to one side of the sun; an aired, blue-scatter world of about the right temperature and mass. He listened to the jumble of static and communication on its radio bands. Highly industrialized. The Selidae and the Medanjians would certainly consider it a rich plum.

Now, if he could get fairly close without being detected. He used the planet's single moon for cover, avoiding various artifacts, and took up a position. Radar would see him, but he wasn't staying long, and probably they'd write him off as some bit of debris or a malfunction.

From the ship he'd examined on Galkbar, he had grasped the technology of their television. He tuned about the channels, found himself watching a play-drama in which several of the bipeds — male — with masks over their faces walked into a wooden building and pointed hand-weapons at other bipeds inside. There was some talk and some facial miming, then bipeds behind partitions with grill-protected windows began scooping small silvery discs from drawers and from a big thick-metal box, into little fabric bags.

One biped behind the partition stealthily drew from concealment a hand-weapon of his own. One of the masked bipeds saw him, and the latter's hand-weapon jumped a little, with a terrible bang and an eruption of smoke. The biped behind the partition collapsed, clutching at his chest. Now the masked bipeds grabbed the fabric bags and ran from the building.

Just outside were some larger creatures, quadruped and rather splendid looking. Each of the masked bipeds seized a quadruped, heaved himself up and bestraddled it. Klonit gaped. Then the quadrupeds were galloping loudly down the street, raising clouds of dust, bearing the masked bipeds away. Other bipeds came running from wooden buildings, with hand weapons and with longer weapons which they steadied against their shoulders, to shoot after the fleeing mounted bipeds. Male bipeds were shouting, and females were screaming, and the weapons made an awful din, and there was an absolute bedlam of dashing about.

Klonit found himself crouched, tense, his claws scrabbling at the deck. In sudden irritation, he darted a leg out to turn off the drama, then relaxed determinedly, to calm himself. Presently he growled and reached out for control-studs. A person could forget the time, watching such childish entertainment.

Less than two hours later, back on Galkbar, he emerged from

the survey capsule and stared round him. "Central! Why am I confined here in my Maximum Security Quarters?"

"Because, Director, the Selidae arrived ahead of time. Their fleet's in orbit right now."

Klonit reared up and glared at the ceiling. "I should have known they'd lie about their arrival and sneak in sooner! Did you find any Member fleets?"

"No, Director. And you'd better talk to Admiral Feyooch, who's still the Selidan commander. He's threatening to annihilate us. But first, there are three messages from our Chief Of Council."

"Huh? Oh. Well, all right; let's have them!"

"First. Utmost confidential. Klonit, the military, political and technological situation makes it imperative you avoid antagonizing the Selidae or the Medanjians at this time. Give them whatever they demand. If necessary, evacuate Galkbar and all the mail you can and let them have the place. Second — Director, I believe this second message was sent in a different context — Utmost confidential. All Station Directors. Interstellar situation demands our outlying Centers carry on at this time with no hint of unusual activity. An air of complete ordinariness must be preserved. No unusual leaves are to be granted; nor is there to be any unusual efflux of mail. Third —

A sound like a gulp, amplified a hundred times, came from Klonit. "Hold on a minute! Did I hear you right?"

"I imagine you did, Director. Wait until you hear the third. All Station Directors. There has been too much laxity lately in the matter of misdirected mail. Too many parcels have been yielded to the wrong claimants. Steps must be taken to halt this laxity. Mail is not to be yielded to claimants without thorough proof of ownership. Be firm. Signed, Chief of Council."

"Gaaak!" Klonit got seven or eight legs under the edge of his desk, preparatory to overturning it.

Central said, "It may be better if your office is not mussed up, Director. I can't stall off Feyooch much longer."

"Feyooch! Tell him to — uh, no; I guess not. Better put him on before he atomizes us!"

A viewscreen crackled and glowed to life. The picture showed a huge, thick-mandibled arthropod. The pincers, which were awesome enough in themselves, even to Klonit, had energy-weapons riveted to them. Klonit said weakly, "Fey-Feyooch?"

First one, then the other, of the buttonlike eyes cocked at him. "Klonit? Of course it's me! Why do you ask? Who else would it be? What are you implying? Have you heard something?"

"No, no, Admiral! It's just that, uh, it's been four years. I — I'm glad to see you looking so well."

"Humph. Klonit, It's a good thing you're back from whatever fool's errand you were on. I was about to come down and get that parcel of mine. Send it up here at

once, and we'll say no more about your illegal and highly impudent possession of it."

"Uh . . ." Klonit tried not to squirm. "Er, as a matter of fact, Admiral, it isn't, uh, here." Noting the signs of rage, he lied on hurriedly. "There, uh, seemed to be, er, some sort of stasis-inerter field around it that we aren't familiar with. The best we could do was to get it to an outpost."

Feyooch fixed him with an uncertain glance. "Stasis-inerter field? Oh. Uh, that. Yes, I suppose your miserable technology *would* find it hard to, uh, cope with. Just give me the location, then, and I'll . . ."

Klonit, his eyes darting about the background of the picture, which seemed to be full of weapons-controls, said, "It's, er," and rattled off the co-ordinates of an unoccupied outpost. If he could just get rid of the Selidae before the Medanjians got here . . ."

But it wasn't going to work. Feyooch stared at him beadily. "Klonit, you're a miserably incompetent liar. Send that parcel up right now, and no more nonsense! You don't want to be slagged, Klonit, now do you?"

"No, no, Admiral, certainly not! I swear there's nothing I want more than to see this parcel delivered to its rightful owner! I mean — uh — "

He went silent, mouthparts working, as a second screen lit up. "Central! What — "

"Admiral Vinitassin, Director. He begs you to talk to him at once, so he won't have to launch his missiles."

III

The Medanjian looked like a rosy, soft-shelled egg with a fringe of arms around the top and four short legs at the bottom. The head was a mere excresence. But the eyes were clear and intelligent — round and innocently blue — and the rose-bud mouth smiled beatifically.

"Oh, there you are, Klonit. I'm *so* happy your computer was able to find you. And it's delightful to see you looking so well; I swear I've never seen your scales shinier. I observe that you have a deplorable infestation of vermin around your planet. I'd be delighted to eradicate it for you, but I fear it would be impossible without crisping the planet as well. Oh; and if you're expecting anyone via normal space, warn them, will you? I have the area rather thickly mined."

A sound like a rusty hacksaw ripping tin cans came from Feyooch. "Klonit, you tell that hors-d'oeuvre the smallest of my landing-boats could sweep all his mines out of the way and wipe out his fleet at the same time! And I warn you again — "

Vinitassin broke in sweetly, "What debasements you permit yourself to endure, Klonit! Why don't you let one of your janitors handle such interviews? Meanwhile, I don't want to be rude, but I really must have that lost parcel of mine. A trifling thing — not nearly worth your attention, really — but you know how Governments are, and mine is no exception. So if you'll just tell me, privately, a spot clear of all this

mildew, where you can warp it, I'll go and — "

"Klonit!" Feyooch shrieked, "If you give him that parcel, I'll — "

Klonit swelled up to bellow but instead, thinking of the massed hostile weaponry around Galkbar at the moment, produced instead a thin squeal.

"Uh, gentlemen . . . I wonder if you'd excuse me for just the shortest moment? Urgent Special Delivery coming in. I'll be right — " He let out a long sigh of relief as Central blanked out both screens. "Thanks! If I can just get a minute to think." He ran around the edges of the room, his body almost forming a square. "Damn it . . . Send another message to all Members —"

"I'm sending resumes every minute, Director. There are no Member fleets within several hours. Anyway, we couldn't survive a battle nearby, you know."

Klonit collapsed in a groaning heap. "I know, I know! What's Feyooch doing?"

"He's forming a spearhead to come down. He says he'll wait ten minutes. Not one second more."

"Oh! Oh! And Vinitassin?"

"He seems to be leaking to us a part of his orders to his fleet. It involves battle tactics. Apparently, Director, he's given up hope of getting the parcel, if you don't warp it out to him. It seems he intends just to fire all his missiles in and vaporize Galkbar, the Selidan fleet and everything. Director, you're simply temporizing, you know."

"Damn it! Of course I'm temporizing! I've got to — *you* got us into this! Start racking *your* circuits, too! How much time — God; less than seven minutes! Look, send a message to Vinitassin. Give him the co-ordinates of that empty outpost and say we'll warp his parcel there. Apologize that I'm not able to tell him so myself just now. And tell Feyooch that, uh, his parcel will be coming up through the atmosphere on gravs in a few minutes. Say I'm sorry I'm too busy to talk to him. Say I was wrong about the parcel being somewhere else; I had it confused with a different one. And *don't* get the two messages mixed up!"

"I have that much sense, Director. If I may ask — "

"Send the messages!"

"I have. I'm not confined to one set of circuits, you know. If I may ask, Director, how many minutes do you hope to gain by this temporizing? I really can't understand the sense of prolonging things, since we're going to perish in a few minutes anyway. I should think — "

Klonit lifted his forebody and shrieked, "You're damned right you should think! In fact, I *order* you to think! You created this problem! Solve it! You're always bragging about how many circuits you have!" He ran out of breath and slumped to the floor. It wasn't any use, he knew, shouting at Central. The Computer didn't care; and it couldn't work miracles, anyway. He wondered if he ought to inform his personnel of their imminent doom. No, there wasn't time to evacuate them, so it was probably best to leave

them in ignorance. Let the end come to them quickly and mercifully.

Minutes dragged by while his mind circled uselessly. Finally he couldn't stand the silence. "Central!"

"Yes, Director?"

"What's happening?"

"Oh, you wish interim reports? I'm sorry, I didn't realize. Both fleets are waiting. I'll have Feyooch's parcel ready in a few minutes."

"You'll *what?*"

"I'll have his parcel ready, Director. You ordered me to solve the problem. Oh, I apologize; I *should* have kept up a commentary. But I was devoting all my circuits . . . I'm giving him three robots."

Klonit stared at the wall grill from which Central's voice came. "Robots? No. You didn't say robots, *did* you? My ears . . .

"Certainly, Director. You recall those biped robots we received, but didn't ever unpack because you said the body shape wasn't practical? I've added a few touches to make them more convincing. I've put clothes on them, and given them a sort of food supply, in the form of energy units. Well, after all, Director, I only described the three creatures as bipeds. And I'm putting them in a standard package. There. It's finished. I'll send it up to Feyooch now. Shall I send the three real creatures to Vinitassin at the same time?"

"Huh?"

"I asked, shall I send the three living bipeds and their ship to Vinitassin now too?"

Klonit shook. Carefully, he said, "Send nothing for a minute. Just hold everything. One minute. Right?"

"As you say, Director. Mark."

Klonit let his body swell up with air, and for a good part of the minute, he simply screamed. When he ran out of breath, he gulped in more and went on screaming. He glanced at the wall timepiece, saw he had ten seconds left and screamed again. Then he lay limp, gasping. He felt much, much better.

When he could talk again, he said calmly, his voice only a little unsteady, "Trust a computer to find the solution to a problem, then not know how to apply it! No, no, NO! We're not going to give anyone those three bipeds! Do you understand? Do you *understand?*"

There was a pause. Then Central said calmly, "I think I do, Director. You want me to prepare yet another parcel with three more robots. I'm starting it. The same crew of *blens* and toolbots can finish it very quickly. Then, we'll give one to each of those two fleets out there, and we'll be left over with the original parcel, which caused all the trouble in the first place. But that's your decision. You do not wish to take the opportunity to be rid of it!"

Klonit hissed, "No, I don't!"

"As you say, Director. Shall I go ahead and send the first trio of robots to Feyooch?"

"No. Send them to Vinitassin.

And don't make another move; don't even *think* about my ordering it. Do you hear?"

There was a dead silence. Then, weakly, "Send the first batch to Vinitassin, Director?"

"Yes! Now! Move!"

Central achieved a very lifelike sigh. "It's gone. And the second parcel's finished. I don't suppose you would let me change — "

"NO! Change nothing! Wait one minute, then start gravving the second fake parcel up to Feyooch!"

"Yes, Director."

More minutes went by in silence. Finally, Klonit demanded, "Well?"

"Vinitassin has taken possession of his parcel. The other one is still gravving up; but Feyooch is closing in on it, and it's too late to withdraw it now. Would you tell me, Director, why you made me switch parcels like this?"

Klonit sighed patiently. "It isn't a matter of switching them, Central. It's this way: the first was finished several minutes ahead of the second — right?"

"Yes, Director."

"Right. Now, if Feyooch got the first parcel and tried to accelerate away, preparatory to going into Translocator Drive, Vinitassin would try to stop him; do you see? There'd be a battle, and we'd get clobbered with stray missiles. But with Vinitassin getting a parcel first — and thinking it's the only one — *he'll* leave immediately, having the outer position, and leave the way open for Feyooch. Probably, he'll even gather up most of his mines. Uh, has he started yet?"

"No, Director. But his fleet is gathering into a tight formation."

Klonit chuckled. "Well, he won't delay long. I don't want to belittle computer thinking, Central; but you see the difference, don't you, in your way of thinking and mine?"

"Well, Director, yes and no."

Klonit waited. As Central didn't continue, he gradually grew nervous. "Well, is someting wrong?"

"I'm afraid so, Director. You refused to let me explain. May I do so now?"

"Explain what? Of course!"

"Thank you. You see, I tried to make the first three robots more convincing for Feyooch by engraving some manufacturer's legend on them, in Medanjian script, rather than his own. And by the time you ordered me not to change my plan, I'd already had the toolbots started engraving Selidan script on the other three, for Vinitassin. My idea was that each would think he'd captured some experimental robot of the enemy's and rush off home with it. But when you switched them . . ."

Klonit crouched for a minute, his legs half bent, then slowly sank to the floor. "Go on . . . Tell me . . . No. Don't say any more for a while." He let his head sag to the floor. A low moan escaped him. "And now — and now — neither one of them will be deceived. Is that what you think?"

"It seems probable, Director, since each has three robots with markings on them in his own language."

Klonit crawled cringingly into a

corner. "Oh. Why didn't I . . . Central, why didn't you insist . . . Oh. Do you think there'll be time for a last message to my family and friends?"

"I think so, Director. There are no missiles coming yet."

Klonit let out a long, groaning sigh. "Very well, Central. You may record this: I, Klonit . . . No. I'm too ashamed. I can't — can't speak to them. Just tell them — tell that that, at the last, Klonit was humble and died without excessive bodily exudations. Will you do that much for me? Even if it's — it's not true?"

"I'll have the message ready to send, Director."

Klonit lay waiting, eyes squeezed shut. He squirmed himself into as tight a knot as he could, in one corner. Presently there was a mild jar. He quivered. "Was — was that the first missile, Central?"

"No, Director. It was just a batch of routine mail I sent off."

Klonit opened one eye indignantly. "Routine mail! Here I am about to die like a worm — I mean, all of us, all the live personnel and you, though I don't suppose you care a *foozlunk* — and you send routine mail! Haven't you any sensitivity at all?"

Central seemed to hesitate. Then, "I didn't want to rouse false hopes, Director. But maybe I'd better tell you that both fleets seem to be getting ready to leave and that no missiles have been launched yet."

Klonit scrambled up. "No missiles? Leaving? What . . . How — "

Central said, "Just a moment, Director. Yes! There goes Vinitassin. He seems to be ignoring the Selidan fleet. And now, there goes Feyooch! They're vanishing, Director! They're both under maximum acceleration! I think — I mean, do I have your permission, Director, to let the personnel out of the shelters?"

Later, Central was quite humble about the whole thing. "I hesitate to advance my theories, Director, in view of the demonstration we've just had of the superiority of protein-brain instincts to computer thinking, but on the basis of data available to me, this seems probable: Feyooch's race and Vinitassin's, as well, are hotbeds of intrigue and undercover politics. When Feyooch saw those unfamiliar robots with engraving on them in his own language, he immediately feared treachery at home. Why hadn't he been informed about them, he must have speculated. Who of his race was carrying on clandestine experiments, without his knowledge? Were his superiors shunting him aside? So, after cautiously examining the robots to make sure they weren't booby-trapped, he took his fleet home as fast as he could, ready to fight. And likewise for Vinitassin. There's little doubt it worked out much better than my own clumsy plan. I feel I owe you the most abject apologies, Director, for questioning your judgment."

Klonit's face-parts felt a little overwarm. "Uh, not at all, Each of us has his place. I'll trust you to send a discreet final report to the

Chief Of Council. Meanwhile, you'd better rig me up another survey capsule; one with a good big stasis field. I think I'll take those three bipeds in their ship back where they came from. Don't report that yet; we'll slip it in quietly, later. No use stirring up a big fuss, eh?"

IV

Klonit hovered just outside the cave on Mars, pondering. He could show himself to the three bipeds right here, now, if he chose. He'd learned enough of their language to communicate easily. Or, he could take them on to Earth with him and save them the slow trip they'd have to make otherwise.

Finally, though, he decided he'd just leave them here, in their ship, snuggled in the cave. Let them have their moment of triumph before they had to learn the hard facts of galactic life.

He approached Earth openly this time, so their radar would be sure of him.

When excited babble on the radio told him they'd spotted his capsule, he cleared his throat and began the transmission: "People of Earth. I come in friendship. I am not a representative of any of the interstellar empires or alliances; I am merely an employee of a comparatively unimportant joint service. There are dangers . . . ."

He let his voice roll on, rather proud of the way he was handling this new language.

He sighed. "There is much knowledge I could give you, but I am not authorized to do so. Really, I'm overstepping my own functions by making this first contact at all. Please excuse me now. Perhaps at some time in the future I shall have the pleasure and privilege of visiting your planet. Your sun's a little coolish, but if you could prepare a large vat of boiling mud . . . " He realized he was degenerating into banalities. "Uh, good-bye for now."

Jason Glock sipped carefully at his second glass of wine. Mustn't let himself get mellow. He turned toward the controls. "That sandstorm ought to be over by now. We'll slip out and have a peep, eh?" He lifted the ship and backed out. "External viewers, Lieutenant."

"Yes, sir." David Lobell flipped switches enthusiastically, and viewscreens came on. "All clear, sir."

"Righto." Glock swivelled his periscopic-viewer, looking for a good level place to set down, where the sun would be at the right angle for pictures.

Sarah Tolberg said tremulously, "Be careful, Colonel."

Glock gave her a brave smile. "Nothing out there, Major. Not even an ant. Only danger's that something might go wrong with the suit or the lock; or that a meteorite could hit me. Pretty small chance of that."

David was looking wistfully at the viewscreens. "It does look awfully dead, sir. Are you sure we won't find any artifacts? Are you sure we're . . . well, alone? In the solar system at least? And hopelessly isolated from the stars?"

Glock smiled. "Quite sure." END

THE SHADOW OF SPACE

PHILIP JOSÉ FARMER

Illustrated by Morrow

They were the first to travel faster than light... and the first to know its deadly peril!

I

The klaxon cleared its plastic throat and began to whoop. Alternate yellow and reds pulsed on the consoles wrapped like bracelets around the wrists of the captain and the navigator. The huge auxiliary screens spaced on the bulkheads of the bridge also flashed red and yellow.

Captain Grettir, catapulted from his reverie, and from his chair, stood up. The letters and numerals 20-G-DZ-R hung burning on a sector of each screen and spurted up from the wrist-console, spread out before his eyes, then disappeared, only to rise from the wrist-console again and magnify themselves and thin into nothing. Over and over again. 20-G-DZ-R. The code letters indicating that the alarm originated from the corridor leading to the engine room.

He turned his wrist and raised

his arm to place the lower half of the console at the correct viewing and speaking distance.

"20-G-DZ-R, report!"

The flaming, expanding, levitating letters died out, and the long high-cheekboned face of MacCool, chief engineer, appeared as a tiny image on the sector of the console. It was duplicated on the bridge bulkhead screens. It rose and grew larger, shooting towards Grettir, then winking out to be followed by a second ballooning face.

Also on the wrist-console's screen, behind MacCool, were Comas, a petty officer, and Grinker, a machinist's mate. Their faces did not float up because they were not in the central part of the screen. Behind them was a group of marines and an 88-K cannon on a floating sled.

"It's the Wellington woman," MacCool said. "She used a phoster, low-power setting, to knock out the two guards stationed at the engine-room port. Then she herded us — me, Comas, Grinker — out. She said she'd shoot us if we resisted. And she welded the grille to the bulkhead so it can't be opened unless it's burned off."

"I don't know why she's doing this. But she's reconnected the drive wires to a zander bridge so she can control the acceleration herself. We can't do a thing to stop her unless we go in after her."

He paused, swallowed and said, "I could send men outside and have them try to get through the engine room airlock or else cut through the hull to get her. While she was distracted by this, we could make a frontal attack down the corridor. But she says she'll shoot anybody that gets too close. We could lose some men. She means what she says."

"If you cut a hole in the hull, she'd be out of air, dead in a minute," Grettir said.

"She's in a spacesuit," MacCool replied. "That's why I didn't have this area sealed off and gas flooded in."

Grettir hoped his face was not betraying his shock. Hearing an exclamation from Wang, seated near him, Grettir turned his head. He said, "How in hell did she get out of sick bay?"

He realized at the same time that Wang could not answer that question. MacCool said, "I don't know, sir. Ask Doctor Wills."

"Never mind that now!"

Grettir stared at the sequence of values appearing on the navigator's auxiliary bulkhead-screen. The 0.5 of light speed had already climbed to 0.96. It changed every 4 seconds. The 0.96 became 0.97, then 0.98, 0.99 and then 1.0. And then 1.1 and 1.2.

Grettir forced himself to sit back down. If anything was going to happen, it would have done so by now; the TSN-X cruiser *Sleipnir*, 280 million tons, would have been converted to pure energy.

A nova, bright but very brief, would have gouted in the heavens. And the orbiting telescopes of Earth would see the flare in 20.8 light-years.

"What's the state of the *emc* clamp and acceleration-dissipaters?" Grettir said.

"No strain — yet," Wang said. "But the power drain . . . if it continues . . . . 5 megakilowatts per 2 seconds, and we're just beginning."

"I think," Grettir said slowly, "that we're going to find out what we intended to find out. But it isn't going to be under the carefully controlled conditions we had planned."

The Terran Space Navy experimental cruiser *Sleipnir* had left its base on Asgard, eighth planet of Altair (alpha Aquilae), 28 ship-days ago. It was under orders to make the first attempt of a manned ship to exceed the velocity of light. If its mission was successful, men could travel between Earth and the colonial planets in weeks instead of years. The entire galaxy might be opened to Earth.

Within the past two weeks, the *Sleipnir* had made several tests at 0.8 times the velocity of light, the tests lasting up to two hours at a time.

The *Sleipnir* was equipped with enormous motors and massive clamps, dissipaters and space-time structure expanders ("hole-openers") required for near-lightspeeds and beyond. No ship in Terrestrial history had ever had such power or the means to handle such power.

The drive itself — the cubed amplification of energy produced by the controlled mixture of matter, antimatter and half-matter — gave an energy that could eat its way through the iron core of a planet. But part of that energy had to be diverted to power the energy-mass conversion "clamp" that kept the ship from being transformed into energy itself. The "hole-opener" also required vast power. This device — officially the Space-Time Structure Expander, or Neutralizer — "unbent" the local curvature of the universe and so furnished a "hole" through which the *Sleipnir* traveled. This hole nullified 99.3 per cent of the resistance the *Sleipnir* would normally have encountered.

Thus the effects of speeds approaching and even exceeding light-speed, would be modified, even if not entirely avoided. The *Sleipnir* should not contract along its length to zero nor attain infinite mass when it reached the speed of light. It contracted, and it swelled, yes, by only 1/777,777th what it should have. The ship would assume the shape of a disk — but much more slowly than it would without its openers, clamps and dissipaters.

Beyond the speed of light, who knew what would happen? It was the business of the *Sleipnir* to find out. But, Grettir thought, not under these conditions. Not willy-nilly.

"Sir!" MacCool said, "Wellington threatens to shoot anybody who comes near the engine room."

He hesitated, then said, "Except you. She wants to speak to you. But she doesn't want to do it over the intercom. She insists that you come down and talk to her face to face." Grettir bit his lower lip and made a sucking sound.

"Why me?" he said, but he knew why, and MacCool's expression showed that he also knew.

"I'll be down in a minute. Now, isn't there any way we can connect a bypass, route a circuit around her or beyond her and get control of the drive again?"

"No, sir!"

"Then she's cut through the engine-room deck and gotten to the redundant circuits also?"

MacCool said, "She's crazy, but she's clear-headed enough to take all precautions. She hasn't overlooked a thing."

Grettir said, "Wang! What's the velocity now?"

"2.3 sl/pm, sir!"

Grettir looked at the huge star-screen on the "forward" bulkhead of the bridge. Black except for a few glitters of white, blue, red, green, and the galaxy called XD-2 that lay dead ahead. The galaxy had been the size of an orange, and it still was. He stared at the screen for perhaps a minute, then said, "Wang, am I seeing right? The red light from XD-2 is shifting towards the blue, right?"

"Right, sir!"

"Then . . . why isn't XD-2 getting bigger? We're overhauling it like a fox after a rabbit."

Wang said, "I think it's getting closer, sir. But we're getting bigger."

II

Grettir rose from the chair. "Take over while I'm gone. Turn off the alarm; tell the crew to continue their normal duties. If anything comes up while I'm in the engine area, notify me at once."

The exec saluted. "Yes, sir!" she said huskily.

Grettir strode off the bridge. He was aware that the officers and crewmen seated in the ring of chairs in the bridge were looking covertly at him. He stopped for a minute to light up a cigar. He was glad that his hands were not shaking, and he hoped that his expression was confident. Slowly, repressing the impulse to run, he continued across the bridge and into the jump-shaft. He stepped off backward into the shaft and nonchalantly blew out smoke while he sank out of sight of the men in the bridge. He braced himself against the quick drop and then the thrusting deceleration. He had set the controls for Dock 14; the doors slid open; he walked into a corridor where a g-car and operator waited for him. Grettir climbed in, sat down and told the crewman where to drive to.

Two minutes later, he was with MacCool. The chief engineer pointed down the corridor. Near its end on the floor, were two still unconscious Marines. The door to the engine room was open. The secondary door, the grille, was shut. The lights within the engine room had been turned off. Something white on the other side of the grille moved. It was Donna Wellington's face, visible through the helmet.

"We can't keep this acceleration up," Grettir said. "We're already going far faster than even unmanned experimental ships have been allowed to go. There are all sorts of

theories about what might happen to a ship at these speeds, all bad."

"We've disproved several by now," MacCool said. He spoke evenly, but his forehead was sweaty and shadows hung under his eyes.

MacCool continued, "I'm glad you got here, sir. She just threatened to cut the *emc* clamp wires if you didn't show up within the next two minutes."

He gestured with both hands to indicate a huge and expanding ball of light.

"I'll talk to her," Grettir said. "Although I can't imagine what she wants."

MacCool looked dubious. Grettir wanted to ask him what the hell he was thinking but thought better of it. He said, "Keep your men at this post. Don't even look as if you're coming after me."

"And what do we do, sir, if she shoots you?"

Grettir winced. "Use the cannon. And never mind hesitating if I happen to be in the way. Blast her! But make sure you use a beam short enough to get her but not long enough to touch the engines."

"May I ask why we don't do that before you put your life in danger?" MacCool said.

Grettir hesitated, then said, "My main responsibility is to the ship and its crew. But this woman is very sick; she doesn't realize the implications of her actions. Not fully anyway. I want to talk her out of this, if I can."

He unhooked the communicator from his belt and walked down the corridor toward the grille and the darkness behind it and the whiteness that moved. His back prickled. The men were watching him intently. God knew what they were saying, or at least thinking, about him. The whole crew had been amused for some time by Donna Wellington's passion for him and his inability to cope with her. They had said she was mad about him, not realizing that she really was mad. They had laughed. But they were not laughing now.

Even so, knowing that she was truly insane, some of them must be blaming him for this danger. Undoubtedly, they were thinking that if he had handled her differently, they would not now be so close to death.

He stopped just one step short of the grille. Now he could see Wellington's face, a checkerboard of blacks and whites. He waited for her to speak first. A full minute passed, then she said, "Robert!"

The voice, normally low-pitched and pleasant, was now thin and strained.

"Not Robert. Eric," he said into the communicator. "Captain Eric Grettir, Mrs. Wellington."

There was a silence. She moved closer to the grille. Light struck one eye, which gleamed bluely.

"Why do you hate me so, Robert?" she said plaintively. "You used to love me. What did I do to make you turn against me?"

"I am *not* your husband," Grettir said. "Look at me. Can't you see that I am not Robert Wellington? I am Captain Grettir of the *Sleipnir*. You

must see who I *really* am, Mrs. Wellington. It is very important."

"You don't love me!" she screamed. "You are trying to get rid of me by pretending you're another man! But it won't work! I'd know you anywhere, you beast! You beast! I hate you, Robert!"

Involuntarily, Grettir stepped back under the intensity of her anger. He saw her hand come up from the shadows and the flash of light on a handgun. It was too late then; she fired; a beam of whiteness dazzled him.

Light was followed by darkness.

Ahead, or above, there was a disk of grayness in the black. Grettir traveled slowly and spasmodically towards it, as if he had been swallowed by a whale but was being ejected towards the open mouth, the muscles of the Leviathan's throat working him outwards.

Far behind him, deep in the bowels of the whale, Donna Wellington spoke.

"Robert?"

"Eric!" he shouted. "I'm *Eric!*"

The *Sleipnir,* barely on its way out from Asgard, dawdling at 6200 kilometers per second, had picked up the Mayday call. It came from a spaceship midway between the 12th and 13th planet of Altair. Although Grettir could have ignored the call without reprimand from his superiors, he altered course, and he found a ship wrecked by a meteorite. Inside the hull was half the body of a man. And a woman in deep shock.

Robert and Donna Wellington were second-generation **Asgardians,** Ph.D.'s in biotatology, **holding master's** papers in astrogation. They had been searching for specimens of "space plankton" and "space hydras," forms of life born in the regions between Altair's outer planets.

The crash, the death of her husband and the shattering sense of isolation, dissociation and hopelessness during the eighty-four hours before rescue had twisted Mrs. Wellington. Perhaps twisted was the wrong word. Fragmented was a better description.

From the beginning of what at first seemed recovery, she had taken a superficial resemblance of Grettir to her husband for an identity. Grettir had been gentle and kind with her at the beginning and had made frequent visits to sick bay. Later, advised by Doctor Wills, he had been severe with her.

And so the unforseen result.

Donna Wellington screamed behind him and, suddenly, the twilight circle ahead became bright, and he was free. He opened his eyes to see faces over him. Doctor Wills and MacCool. He was in sick bay.

MacCool smiled and said, "For a moment, we thought . . . ."

"What happened?" Grettir said. Then, "I know what she did. I mean — "

"She fired full power at you," MacCool said. "But the bars of the grille absorbed most of the energy. You got just enough to crisp the skin off your face and to knock you out. Good thing you closed your eyes in time."

Grettir sat up. He felt his face; it was covered with a greasy ointment, pain-deadening and skin-growing *resec.*

"I got a hell of a headache."

Doctor Wills said, "It'll be gone in a minute."

"What's the situation?" Grettir said. "How'd you get me away from her?"

MacCool said, "I had to do it, Captain. Otherwise, she'd have taken another shot at you. The cannon blasted what was left of the grille. Mrs. Wellington — "

"She's dead?"

"Yes. But the cannon didn't get her. Strange. She took her suit off, stripped to the skin. Then she went out through the airlock in the engine room. Naked, as if she meant to be the bride of Death. We almost got caught in the outrush of air, since she fixed the controls so that the inner port remained open. It was close, but we got the port shut in time."

Grettir said, "I . . . never mind. Any damage to the engine room?"

"No. And the wires are reconnected for normal operation. Only — "

"Only what?"

MacCool's face was so long he looked like a frightened bloodhound.

"Just before I reconnected the wires, a funny . . . peculiar . . . thing happened. The whole ship, and everything inside the ship, went through a sort of distortion. Wavy, as if we'd all become wax and were dripping. Or flags flapping in a wind. The bridge reports that the fore of the ship seemed to expand like a balloon, then became ripply, and the entire effect passed through the ship. We all got nauseated while the waviness lasted."

There was silence, but their expressions indicated that there was more to be said.

"Well?"

MacCool and Wills looked at each other. MacCool swallowed and said, "Captain, we don't know where in hell we are!"

III

On the bridge, Grettir examined the forward EXT. screen. There were no stars. Space everywhere was filled with a light as gray and as dull as that of a false dawn on Earth. In the gray glow, at a distance as yet undetermined, were a number of spheres. They looked small, but if they were as large as the one immediately aft of the *Sleipnir,* they were huge.

The sphere behind them, estimated to be at a distance of fifty kilometers, was about the size of Earth's moon, relative to the ship. Its surface was as smooth and as gray as a ball of lead.

Darl spoke a binary code into her wrist-console, and the sphere on the starscreen seemed to shoot towards them. It filled the screen until Darl changed the line-of-sight. They were looking at about 20 degrees of arc of the limb of the sphere.

"There it is!" Darl said. A small object floated around the edge of the sphere and seemed to shoot towards them. She magnified it, and it became a small gray sphere.

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"It orbits round the big one," she said.

Darl paused, then said, "We — the ship — came *out* of that small sphere. *Out* of it. *Through* its skin."

"You mean we had been inside it?" Grettir said. "And now we're outside it?"

"Yes, sir! Exactly!"

She gasped and said, "Oh, oh — sir!"

Around the large sphere, slightly above the plane of the orbit of the small sphere but within its sweep in an inner orbit, sped another object. At least fifty times as large as the small globe, it caught up with the globe, and the two disappeared together around the curve of the primary.

"Wellington's body!" Grettir said.

He turned away from the screen, took one step, and turned around again. "It's not right! She should be trailing along behind us or at least parallel with us, maybe shooting off at an angle but still moving in our direction.

"But she's been grabbed by the big sphere! She's in orbit! And her size; Gargantuan! It doesn't make sense! It shouldn't be!"

"Nothing should," Wang said.

"Take us back," Grettir said. "Establish an orbit around the primary, on the same plane as the secondary but further out, approximately a kilometer and a half from it."

Darl's expression said, "Then what?"

Grettir wondered if she had the same thought as he. The faces of the others on the bridge were doubtful. The fear was covered but leaking out. He could smell the rotten bubbles. Had they guessed, too?

"What attraction does the primary have on the ship?" he said to Wang.

"No detectable influence whatsoever, sir. The *Sleipnir* seems to have a neutral charge, neither positive nor negative in relation to any of the spheres. Or to Wellington's . . . body."

Grettir was slightly relieved. His thoughts had been so wild that he had not been able to consider them as anything but hysterical fantasies. But Wang's answer showed that Grettir's idea was also his. Instead of replying in terms of gravitational force, he had talked as if the ship were a subatomic particle.

But if the ship was not affected by the primary, why had Wellington's corpse been attracted by the primary?

"Our velocity in relation to the primary?" Grettir said.

"We cut off the acceleration as soon as the wires were reconnected." Wang said.

This was immediately after we came out into this . . . this space. We didn't apply any retrodrive. Our velocity, as indicated by power consumption, is ten megaparsecs per minute. That is," he added after a pause, "what the instruments show. But our radar, which should be totally ineffective at this velocity, indicates 50 kilometers per minute, relative to the big sphere."

Wang leaned back in his chair as if he expected Grettir to explode into incredulity. Grettir lit up another cigar. This time, his hands shook. He blew out a big puff

of smoke and said, "Obviously, we're operating under different quote laws unquote *out here.*"

Wang sighed softly. "So you think so, too, Captain? Yes, different *laws*. Which means that every time we make a move through this space, we can't know what the result will be. May I ask what you plan to do, sir?"

By this question, which Wang would never have dared to voice before, though he had doubtless often thought it, Grettir knew that the navigator shared his anxiety. Beneath that apparently easy manner and soft voice was a pain just beneath the navel. The umbilical had been ripped out; Wang was hurting and bleeding inside. Was he, too, beginning to float away in a gray void? Bereft as no man had even been bereft?

It takes a special type of man or woman to lose himself from Earth or his native planet, to go out among the stars so far that the natal sun is not even a faint glimmer. It also takes special conditioning for the special type of man. He has to believe, in the deepest part of his unconscious, that his ship is a piece of Mother Earth. He has to believe; otherwise, he goes to pieces.

It can be done. Hundreds do it. But nothing had prepared even these farfarers for absolute divorce from the universe itself.

Grettir ached with the dread of the void. The void was coiling up inside him, a gray serpent, a slither of nothingness. Coiling. And what would happen when it uncoiled?

And what would happen to the crew when they were informed — as they must be — of the utter dissociation?

There was only one way to keep their minds from slipping their moorings. They must believe that they could get back into the world. Just as he must believe it.

"I'll play it by ear," Grettir said.

"What? Sir?"

"Play it by ear!" Grettir said more harshly than he had intended. "I was merely answering your question. Have you forgotten you asked me what I meant to do?"

"Oh, no, sir," Wang said. "I was just thinking . . . ."

"Keep your mind on the job," Grettir said. He told Darl he would take over. He spoke the code to activate the ALL-STATIONS; a low rising-falling sound went into every room of the *Sleipnir*, and all screens flashed a black-and-green checked pattern. Then the warnings, visual and audible, died out, and the captain spoke.

He talked for two minutes. The bridgemen looked as if the lights had been turned off in their brains. It was almost impossible to grasp the concept of their being outside their universe. As difficult was thinking of their unimaginably vast native cosmos as only an "electron" orbiting around the nucleus of an "atom." If what the captain said was true (how could it be?), the ship was in the space between the superatoms of a supermolecule of a supercuniverse.

Even though they knew that the *Sleipnir* had ballooned under the

effect of nearly 300,000 times the speed of light, they could not wrap the fingers of their minds around the concept. It turned to smoke and drifted away.

It took ten minutes, ship's time, to turn and to complete the maneuvers which placed the *Sleipnir* in an orbit parallel to but outside the secondary, or, as Grettir thought of it, "our universe." He gave his chair back to Darl and paced back and forth across the bridge while he watched the star-screen.

If they were experiencing the sundering, the cutting-off, they were keeping it under control. They had been told by their captain that they *were* going back in, not that they would make a *try* at re-entry. They had been through much with him, and he had never failed them. With this trust, they could endure the agony of dissolution.

As the *Sleipnir* established itself parallel to the secondary, Wellington's body curved around the primary again and began to pass the small sphere and ship. The arms of the mountainous body were extended stiffly to both sides, and her legs spread out. In the gray light, her skin was bluish-black from the ruptured veins and arteries below the skin. Her red hair, coiled in a Psyche knot, looked black. Her eyes, each of which was larger than the bridge of the *Sleipnir,* were open, bulging clots of black blood. Her lips were pulled back in a grimace, the teeth like a soot-streaked portcullis.

Cartwheeling, she passed the sphere and the ship.

Wang reported that there were three "shadows" on the surface of the primary. Those were keeping pace with the secondary, the corpse and the ship. Magnified on the bridge-bulkhead screen, each "shadow" was the silhouette of one of the three orbiting bodies. The shadows were only about one shade darker than the surface and were caused by a shifting pucker in the primary skin. The surface protruded along the edges of the shadows and formed a shallow depression within the edges.

If the shadow of the *Sleipnir* was a true indication of the shape of the vessel, the *Sleipnir* had lost its needle shape and was a spindle, fat at both ends and narrow-waisted.

When Wellington's corpse passed by the small sphere and the ship, her shadow or "print" reversed itself in shape. Where the head of the shadow should have been, the feet now were and vice versa.

She disappeared around the curve of the primary and, on returning on the other side, her shadow had again become a "true" reflection. It remained so until she passed the secondary, after which the shadow once more reversed itself.

Grettir had been informed that there seemed to be absolutely no matter in the space outside the spheres. There was not one detectable atom or particle. Moreover, despite the lack of any radiation, the temperature of the hull, and ten meters beyond the hull, was a fluctuating 70 plus-or-minus 20 F.

IV

Three orbits later, Grettir knew that the ship had diminished greatly in size. Or else the small sphere had expanded. Or both changes occurred. Moreover, on the visual screen, the secondary had lost its spherical shape and become a fat disk during the first circling of the ship to establish its orbit.

Grettir was puzzling over this and thinking of calling Van Voorden, the physicist chief, when Wellington's corpse came around the primary again. The body caught up with the other satellites, and for a moment the primary, secondary, and the *Sleipnir* were in a line, strung on an invisible cord.

Suddenly, the secondary and the corpse jumped toward each other. They ceased their motion when within a quarter kilometer of each other. The secondary regained its globular form as soon as it had attained its new orbit. Wellington's arms and legs, during this change in position, moved in as if she had come to life. Her arms folded themselves across her breasts, and her legs drew up so that her thighs were against her belly.

Grettir called Van Voorden. The physicist said, "Out here," the cabin boy — if we had one — knows as much as I do about what's going on or what to expect. The data, such as they are, are too inadequate, too confusing. I can only suggest that there was an interchange of energy between Wellington and the secondary."

"A quantum jump?" Grettir said. "If that's so, why didn't the ship experience a loss or gain?"

Darl said, "Pardon, sir. But it did. There was a loss of 50 megakilowatts in 0.8 second."

Van Voorden said, "The *Sleipnir* may have decreased in relative size because of decrease in velocity. Or maybe velocity had nothing to do with it or only partially, anyway. Maybe the change in spatial interrelationships among bodies causes other changes. In shape, size, energy transfer and so forth. I don't know. Tell me, how big is the woman — corpse — relative to the ship now?"

"The radar measurements say she's eighty-three times as large. She increased. Or we've decreased."

Van Voorden's eyes grew even larger. Grettir thanked him and cut him off. He ordered the *Sleipnir* to be put in exactly the same orbit as the secondary but ten dekameters ahead of it.

Van Voorden called back. "The jump happened when we were in line with the other three bodies. Maybe the *Sleipnir's* is some sort of *geometrical catalyst* under certain conditions. That's only an analogy, of course."

Wang verbally fed the order into the computer-interfact, part of his wrist-console. The *Sleipnir* was soon racing ahead of the sphere. Radar reported that the ship and secondary were now approximately equal in size. The corpse, coming around the primary again, was still the same relative size as before.

Grettir ordered the vessel turned around so that the nose would be

facing the sphere. This accomplished, he had the velocity reduced. The retrodrive braked them while the lateral thrusts readjusted forces to keep the ship in the same orbit. Since the primary had no attraction for the *Sleipnir,* the ship had to remain in orbit with a constant rebalancing of thrusts. The sphere, now ballooning, inched towards the ship.

"Radar indicates we're doing 26.6 dekameters per second relative to the primary," Wang said. "Power drain indicates we're making 25,000 times the speed of light. That, by the way, is not proportionate to what we were making when we left our world."

"More braking," Grettir said. "Cut it down to 15 dm."

The sphere swelled, filled the screen, and Grettir involuntarily braced himself for the impact, even though he was so far from expecting one that he had not strapped himself into a chair. There had been none when the ship had broken through the "skin" of the universe.

Grettir had been told of the distorting in the ship when it had left the universe and so was not entirely surprised. Nevertheless, he could not help being both frightened and bewildered when the front part of the bridge abruptly swelled and then rippled. Screen, bulkheads, deck and crew waved as if they were cloth in a strong wind. Grettir felt as if he were being folded into a thousand different angles at the same time.

Then Wang cried out, and the others repeated his cry. Wang rose from his seat and put his hands out before him. Grettir, standing behind and to one side of him, was frozen as he saw dozens of little objects, firefly-size, burning brightly, slip *through* the starscreen and bulkhead and drift towards him. He came out of his paralysis in time to dodge one tiny whitely glowing ball. But another struck his forehead, causing him to yelp.

A score of the bodies passed by him. Some were white; some blue; some green; one was topaz. They were at all levels, above his head, even with his waist, one almost touching the deck. He crouched down to let two pass over him, and as he did so, he saw Nagy, the communications officer, bent over and vomiting. The stuff sprayed out of his mouth and caught a little glow in it and snuffed it out in a burst of smoke.

Then the forepart of the bridge had reasserted its solidity and constancy of shape. There were no more burning objects coming through.

Grettir turned to see the aft bulkheads of the bridge quivering in the wake of the wave. And they, too, became normal. Grettir shouted the "override" code so that he could take control from Wang, who was screaming with pain. He directed the ship to change its course to an "upward vertical" direction. There was no "upward" sensation, because the artificial g-field within the ship readjusted. Suddenly, the forward part of the bridge became distorted again, and the waves reached through the fabric of the ship and the crew.

The starscreen, which had been showing nothing but the blackness of space, speckled by a few stars, now displayed the great gray sphere in one corner and the crepuscular light. Grettir, fighting the pain in his forehead and the nausea, gave another command. There was a delay of possibly thirty seconds, and then the *Sleipnir* began the turn that would take it back into a parallel orbit with the secondary.

Grettir, realizing what was happening shortly after being burned, had taken the *Sleipnir* back out of the universe. He put in a call for corpsmen and Doctor Wills and then helped Wang from his chair. There was an odor of burned flesh and hair in the bridge which the air-conditioning system had not as yet removed. Wang's face and hands were burned in five or six places, and part of his long coarse black hair on the right side of his head was burned.

Three corpsmen and Wills ran into the bridge. Wills started to apply a pseudoprotein jelly on Grettir's forehead, but Grettir told him to take care of Wang first. Wills worked swiftly and then, after spreading the jelly over Wang's burns and placing a false-skin bandage over the burns, treated the captain. As soon as the jelly was placed on his forehead, Grettir felt the pain dissolve.

"Third degree," Wills said. "It's lucky those things — whatever they are — weren't larger."

Grettir picked up his cigar, which he had dropped on the deck when he had first seen the objects racing towards him. The cigar was still burning. Near it lay a coal, swiftly blackening. He picked it up gingerly. It felt warm but could be held without too much discomfort.

Grettir extended his hand, palm up, so that the doctor could see the speck of black matter in it. It was even smaller than when it had floated into the bridge through the momentarily "opened" interstices of the molecules composing the hull and bulkheads.

"This is a galaxy," he whispered.

Doc Wills did not understand. "A galaxy of our universe," Grettir added.

Doc Wills paled, and he gulped loudly.

"You mean . . . ?"

Gritter nodded.

Wills said, "I hope . . . not our . . . Earth's . . . Galaxy!"

"I doubt it," Grettir said. "We were on the edge of the star fields farthest out, that is, the closest to the — skin? — of our universe. But if we had kept on going . . . ."

Wills shook his head. Billions of stars, possibly millions of inhabitable, hence inhabited, planets, were in that little ball of fire, now cool and collapsed. Trillions of sentient beings and an unimaginable number of animals had died when their world collided with Grettir's forehead.

Wang, informed of the true cause of his burns, became ill again. Grettir ordered him to sick bay and replaced him with Gomez. Van Voorden entered the bridge. He said, "I suppose our main objective has to be our re-entry. But why couldn't

we make an attempt to penetrate the primary, the nucleus? Do you realize what an astounding . . . ?"

Grettir interrupted. "I realize. But our fuel supply is low, very low. If — I mean, *when* we get back through the 'skin,' we'll have a long way to go before we can return to Base. Maybe too long. I don't dare exceed a certain speed during reentry because of our size. It would be too dangerous . . . I don't want to wipe out any more galaxies. God knows the psychological problems we are going to have when the guilt really hits. Right now, we're numbed. *No!* We're not going to do any exploring!"

"But there may be no future investigations permitted!" Van Voorden said. "There's too much danger to the universe itself to allow any more research by ships like ours!"

"Exactly," Grettir said. "I sympathize with your desire to do scientific research. But the safety of the ship and crew comes first. Besides, I think that if I were to order an exploration, I'd have mutiny on my hands. And I couldn't blame my men. Tell me, Van Voorden, don't you feel a sense of . . . dissociation?"

Van Voorden nodded and said, "But I'm willing to fight it. There is so much . . . . "

"So much to find out," Grettir said. "Agreed. But the authorities will have to determine if that is to be done."

Grettir dismissed him. Van Voorden marched off with a straight back and an angry set to his shoulders and neck. But he did not give the impression of a powerful anger. He was, Grettir thought, secretly relieved at the captain's decision. Van Voorden had made his protest for Science's sake. But as a human being, Van Voorden must want very much to get "home."

V

At the end of the ordered maneuver, the *Sleipnir* was in the same orbit as the universe but twenty kilometers ahead and again pointed toward it. Since there was no attraction between ship and primary, the *Sleipnir* had to use power to maintain the orbit; a delicate readjustment of lateral thrust was constantly required.

Grettir ordered braking applied. The sphere expanded on the starscreen, and then there was only a gray surface displayed. To the viewers the surface did not seem to spin, but radar had determined that the globe completed a revolution on its polar axis once every 33 seconds.

Grettir did not like to think of the implications of this. Van Voorden undoubtedly had received the report, but he had made no move to notify the captain. Perhaps, like Grettir, he believed that the fewer who thought about it, the better.

The mockup screen showed, in silhouette form, the relative sizes of the approaching spheres and the ship. The basketball was the universe; the toothpick, the *Sleipnir*. Grettir hoped that this reduction would be enough to avoid running into any more galaxies. Immediately after the vessel penetrated the "skin," the

Sleipnir would be again braked, thus further diminishing it. There should be plenty of distance between the skin and the edge of the closest star fields.

"Here we go," Grettir said, watching the screen which indicated in meters the gap between ship and sphere. Again he involuntarily braced himself.

There was a rumble, a groan. The deck slanted upwards, then rolled to port. Grettir was hurled to the deck, spun over and over and brought up with stunning impact against a bulkhead. He was in a daze for a moment, and by the time he had recovered, the ship had reasserted its proper attitude. Gomez had placed the ship into "level" again. He had a habit of strapping himself into the navigator's chair although regulations did not require it unless the captain ordered it.

Grettir asked for a report on any damage and, while waiting for it, called Van Voorden. The physicist was bleeding from a cut on his forehead.

"Obviously," he said, "it requires a certain force to penetrate the outer covering or energy shield or whatever it is that encloses the universe. We didn't have it. So — "

"Presents quite a problem," Grettir said. "If we go fast enough to rip through, we're too large and may destroy entire galaxies. If we go too slow, we can't get through."

He paused, then said, "I can think of only one method. But I'm ignorant of the consequences, which might be disastrous. Not for us but for the universe. I'm not sure I should even take such a chance."

He was silent so long that Van Voorden could not restrain himself. "Well?"

"Do you think that if we could make a hole in the skin, the rupture might result in some sort of collapse or cosmic disturbance?"

"You want to beam a hole in the skin?" Van Voorden said slowly. His skin was pale, but it had been that color before Grettir asked him the question. Grettir wondered if Van Voorden was beginning to crumble under the "dissociation."

"Never mind," Grettir said. "I shouldn't have asked you. You can't know what effects would be any more than anyone else. I apologize. I must have been trying to make you share some of the blame if anything went wrong. Forget it."

Van Voorden stared, and he was still looking blank when Grettir cut off his image. He paced back and forth, once stepping over a tiny black object on the deck and then grimacing when he realized that it was too late for care. Millions of stars, billions of planets, trillions of creatures. All cold and dead. And if he experimented further in trying to get back into the native cosmos, then what? A collapsing universe,

But the *Sleipnir* had passed through the "skin" twice, and the rupture had not seemed to cause harm. The surface of the sphere was smooth and unbroken. It must be self-regulating and self-repairing.

Grettir stopped pacing and said aloud, "We came through the skin

without harm to it. So we're going to try the beam!"

Nobody answered him, but the look on their faces was evidence of their relief. Fifteen minutes later, the *Sleipnir* was just ahead of the sphere and facing it. After an unvarying speed and distance from the sphere had been maintained for several minutes, laser beams measured the exact length between the tip of the cannon and the surface of the globe.

The chief gunnery officer, Abdul White Eagle, set one of the fore cannons. Grettir delayed only a few seconds in giving the next order. He clenched his teeth so hard he almost bit the cigar in two, groaned slightly, then said, "Fire!"

Darl transmitted the command. The beam shot out, touched the skin and vanished.

The starscreen showed a black hole in the gray surface at the equator of the sphere. The hole moved away and then was gone around the curve of the sphere. Exactly 33 seconds later, the hole was in its original position. It was shrinking. By the time four rotations were completed, the hole had closed in on itself.

Grettir sighed and wiped the sweat off his forehead. Darl reported that the hole would be big enough for the ship to get through by the second time it came around. After that, it would be too small.

"We'll go through during the second rotation," Grettir said. "Set up the compigator for an automatic entry; tie the cannon in with the compigator. There shouldn't be any problem. If the hole shrinks too fast, we'll enlarge it with the cannon."

He heard Darl say, "Operation begun, sir!" as Gomez spoke into his console. The white beam spurted out in a cone, flicked against the "shell" or "skin" and disappeared. A circle of blackness three times the diameter of the ship came into being and then moved to one side of the screen. Immediately, under the control of the compigator, the retrodrive of the *Sleipnir* went into action. The sphere loomed; a gray wall filled the starscreen. Then the edge of the hole came into view, and a blackness spread over the screen.

"We're going to make it," Grettir thought. "The compigator can't make a mistake."

He looked around him. The bridgemen were strapped to their chairs now. Most of the faces were set. they were well disciplined and brave. But if they felt as he did — they must — they were shoving back a scream far down in them. They could not endure this "homesickness" much longer. And after they got through, were back in the womb, he would have to permit them a most unmilitary behavior. They would laugh, weep, shout whoop. And so would he.

The nose of the *Sleipnir* passed through the hole. Now, if anything went wrong, the fore cannon could not be used. But it was impossible that . . . .

The klaxon whooped. Darl screamed, "Oh, my God! Something's wrong! The hole's shrinking too fast!"

Grettir roared, "Double the speed! No! Halve it!"

Increasing the forward speed meant a swelling in size of the *Sleipnir* but a contraction of the longitudinal axis and a lengthening of the lateral. The *Sleipnir* would get through the hole faster, but it would also narrow the gap between its hull and the edges of the hole.

Halving the speed, on the other hand, though it would make the ship smaller in relation to the hole, would also make the distance to be traversed greater. This might mean that the edges would still hit the ship.

Actually, Grettir did not know what order should be given or if any order would have an effect upon their chance to escape. He could only do what seemed best.

The grayness spread out from the perimeter of the starscreen. There was a screech of severed plastic running through the ship, quivering the bulkheads and decks, a sudden push forward of the crew as they felt the inertia, then a release as the almost instantaneous readjustment of the internal g-field canceled the external effects.

Everybody in the bridge yelled. Grettir forced himself to cut off his shout. He watched the starscreen. They were out in the gray again. The huge sphere shot across the screen. In the corner was the secondary and then a glimpse of a giant blue-black foot. More grayness. A whirl of other great spheres in the distance. The primary again. The secondary. Wellington's hand, like a malformed squid of the void.

When Grettir saw the corpse again, he knew that the ship had been deflected away from the sphere and was heading towards the corpse. He did not, however, expect a collision. The orbital velocity of the dead woman was greater than that of the secondary or of the *Sleipnir*.

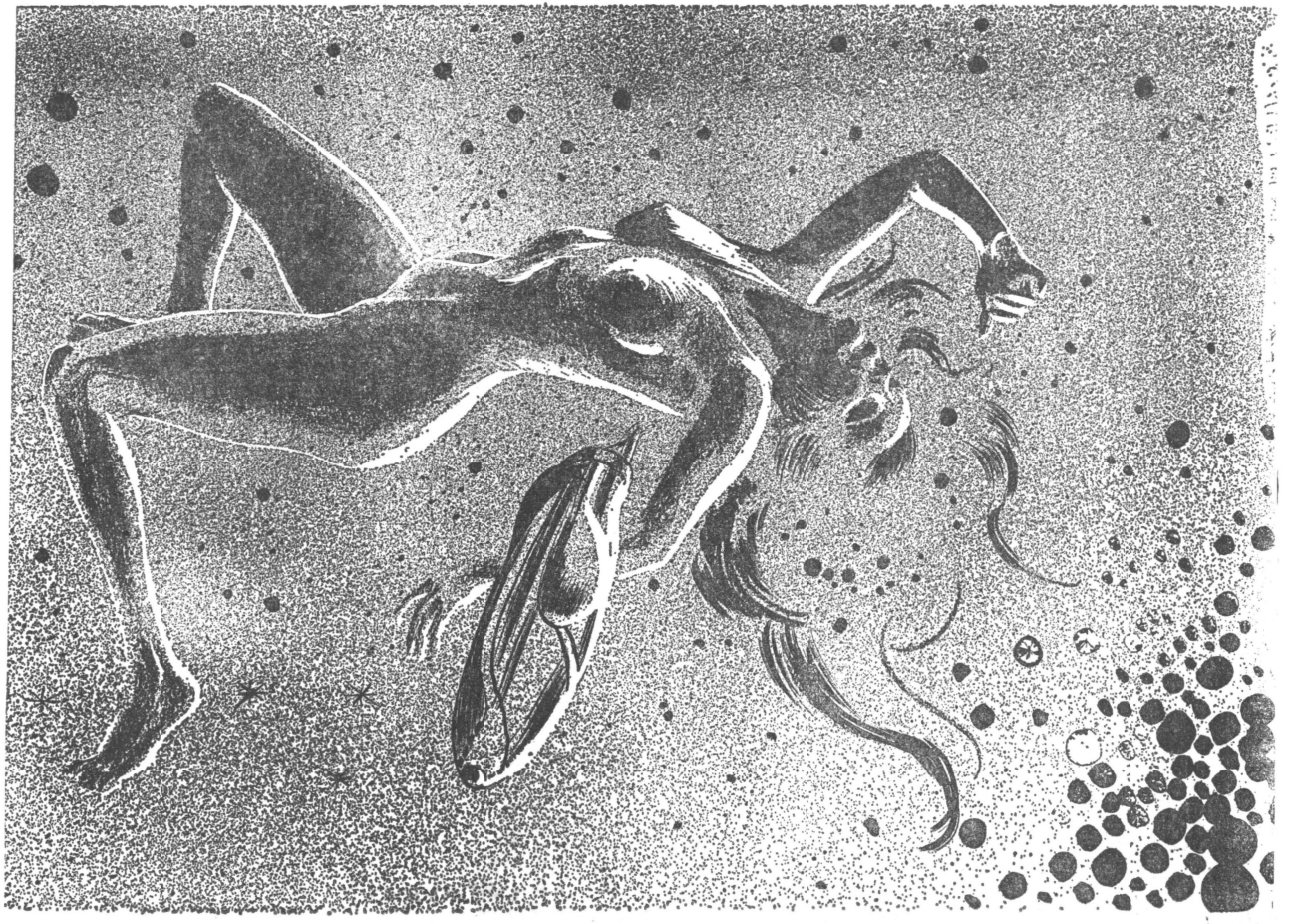
Gritter, calling for a damage report, heard what he had expected. The nose of the ship had been sheared off. Bearing 45 crewman with it, it was now inside the "universe," heading toward a home it would never reach. The passageways leading to the cut-off part had been automatically sealed, of course, so that there was no danger of losing air.

But the retrodrives had also been sliced off. The *Sleipnir* could drive forward but could not brake itself unless it was first turned around to present its aft to the direction of motion.

VI

Grettir gave the command to stabilize the ship first, then to reverse it. MacCool replied from the engine room that neither maneuver was, at the moment, possible. The collision and the shearing had caused malfunctions in the control circuits. He did not know what the trouble was, but the electronic trouble-scanner was searching through the circuits. A moment later, he called back to say that the device was itself not operating properly and that the troubleshooting would have to be done by his men until the device had been repaired.

MacCool was disturbed. He could not account for the breakdown be-



cause, theoretically, there should have been none. Even the impact and loss of the fore should not have resulted in loss of circuit operation.

Grettir told him to do what he could. Meanwhile, the ship was tumbling and was obviously catching up with the vast corpse. There had been another inexplainable interchange of energy, position and momentum, and the *Sleipnir* and Mrs. Wellington were going to collide.

Grettir unstrapped himself and began walking back and forth across the bridge. Even though the ship was cartwheeling, the internal g-field neutralized the effect for the crew. The vessel seemed level and stable unless the starscreen was looked at. When Grettir watched the screen, he felt slightly queasy because he was, at times, standing upside down in relation to the corpse.

Grettir asked for a computation of when the collision would take place and of what part of the body the *Sleipnir* would strike. It might make a difference whether it struck a soft or hard part. The difference would not result in damage to the ship, but it would affect the angle and velocity of the rebound path. If the circuits were repaired before the convergence, or just after, Grettir would have to know what action to take.

Wang replied that he had already asked the compigator for an estimate of the area of collision if conditions remained as they were. Even as he spoke, a coded card issued from a slot in the bulkhead. Wang read it, handed it to Grettir.

Grettir said, "At any other time, I'd laugh. So we will return — literally — to the womb."

The card had also indicated that, the nearer the ship got to Wellington, the slower was its velocity. Moreover, the relative size of the ship, as reported by radar, was decreasing in direct proportion to its proximity to the body.

Gomez said, "I think we've come under the influence of that . . . woman, as if she'd become a planet and had captured a satellite. Us. She doesn't have any gravitational attraction or any charge in relation to us. But — "

"But there are other factors," Grettir said to her. "Maybe they are spatial relations, which, in this 'space,' may be the equivalent of gravity."

The *Sleipnir* was now so close that the body entirely filled the starscreen when the ship was pointed towards it. First, the enormous head came into view. The blood-clotted and bulging eyes stared at them. the nose slid by like a Brobdingnagian guillotine; the mouth grinned at them as if it were to enjoy gulping them down. Then the neck, a diorite column left exposed by the erosion of softer rock; the cleavage of the blackened Himalayan breasts; the naval, the eye of a hurricane.

Then she went out of sight, and the secondary and primary and the gray-shrouded giants far off whiled across the screen.

Grettir used the All-Stations to tell the nonbridge personnel what

was happening. "As soon as MacCool locates the trouble, we will be on our way out. We have plenty of power left, enough to blast our way out of a hundred corpses. Sit tight. Don't worry. It's just a matter of time."

He spoke with a cheerfulness he did not feel, although he had not lied to them. Nor did he expect any reaction, positive or negative. They must be as numb as he. Their minds, their entire nervous systems, were boggling.

Another card shot out from the bulkhead-slot, a corrected impact prediction. Because of the continuing decrease in size of the vessel, it would strike the corpse almost dead-center in the naval. A minute later, another card predicted impact near the coccyx. A third card revised that to collision with the top of the head. A fourth changed that to a strike on the lower part on the front of the right leg.

Grettir called Van Voorden again. The physicist's face shot up from the surface of Grettir's wrist-console but was stationary on the auxiliary bulkhead-screen. This gave a larger view and showed Van Voorden looking over his wrist-console at a screen on his cabin-bulkhead. It offered the latest impact report in large burning letters.

"Like the handwriting on the wall in the days of King Belshazzar," Van Voorden said. "And I am a Daniel come to judgment. So we're going to hit her leg, heh, *Many, many tickle up her shin.* Hee, hee!"

Grettir stared uncomprehendingly at him, then cut him off. A few seconds later, he understood Van Voorden's pun. He did not wonder at the man's levity at a moment so grave. It was a means of relieving his deep anxiety and bewilderment. It might also mean that he was already cracking up, since it was out of character with him. But Grettir could do nothing for him at that moment.

As the *Sleipnir* neared the corpse, it continued to shrink. However, the dwindling was not at a steady rate nor could the times of shrinkage be predicted. It operated in spurts of from two to thirty seconds duration at irregular intervals. And then, as the 300th card issued from the slot, it became evident that, unless some new factor entered, the *Sleipnir* would spin into the gaping mouth. While the head rotated "downward," the ship would pass through the great space between the lips.

And so it was. On the starscreen, the lower lip, a massive ridge, wrinkled with mountains and pitted with valleys, appeared. Flecks of lipstick floated by, black-red Hawaiis. A tooth like a jagged skyscraper dropped out of sight.

The *Sleipnir* settled slowly into the darkness. The walls shot away and upwards. The blackness outside knotted. Only a part of the gray "sky" was visible during that point of the cartwheel when the fore part of the starscreen was directed upwards. Then the opening became a thread of gray, a strand, and was gone.

Strangely — or was it so odd? — the officers and crew lost their

feeling of dissociation. Grettir's stomach expanded with relief; the dreadful fragmenting was gone. He now felt as if something had been attached, or reattached, to his naval. Rubb, the psychology officer, reported that he had taken a survey of one out of fifty of the crew, and each described similar sensations.

Despite this, the personnel were free of only one anxiety and were far from being out of danger. The temperature had been slowly mounting ever since the ship had been spun off the secondary and had headed towards the corpse. The power system and air-conditioning had stablilized at 80 F for a while. But the temperature of the hull had gone upwards at a geometric progression, and the outer hull was now 2500 K. There was no danger of it melting as yet; it could resist up to 56,000 K. The air-conditioning demanded more and more power, and after thirty minutes ship's time, Grettir had had to let the internal temperature rise to 98.2 F to ease the load.

Grettir ordered everybody into spacesuits, which could keep the wearers at a comfortable temperature. Just as the order was carried out, MacCool reported that he had located the source of malfunction.

"The Wellington woman did it!" he shouted. "She sure took care of us! She inserted a monolith subparticle switch in the circuits; the switch had a timer which operated the switch after a certain time had elapsed. It was only coincidence that the circuits went blank right after we failed to get back into our world!"

VII

"So she wanted to be certain that we'd be wrecked if she was frustrated in her attempts in the engine room," Grettir said. "You'd better continue the search for other microswitches or sabotage devices."

MacCool's face was long.

"We're ready to operate now only . . . hell! We can't spare any power now because we need all we can get to keep the temperature down. I can spare enough to cancel the tumble. But that's all."

"Forget it for now," Grettir said. He had contacted Van Voorden, who seemed to have recovered. He confirmed the captain's theory about the rise in temperature. It was the rapid contraction of the ship that was causing the emission of heat.

"How is this contraction possible?" Grettir said. "Are the atoms of the ship, and of our bodies, coming closer together? If so, what happens when they come into contact with each other?

"We've already passed that point of diminishment," Van Voorden said. "I'd say that our own atoms are shrinking also."

"But that's not possible," Grettir replied. Then, "forget about that remark. What is possible? Whatever happens is possible."

Grettir cut him off and strode back and forth and wished that he could smoke a cigar. He had intended to talk about what the *Sleip-*

nir would find if it had managed to break back into its native universe. It seemed to Grettir that the universe would have changed so much that no one aboard the ship would recognize it. Every time the secondary — the universe — completed a revolution on its axis, trillions of Earth years, maybe quadrillions, may have passed. The Earth's sun may have become a lightless clot in space or even have disappeared altogether. Man, who might have survived on other planets, would no longer be homo sapiens.

Moreover, when the *Sleipnir* attained a supercosmic mass on its way out of the universe, it may have disastrously affected the other masses in the universe.

Yet none of these events may have occurred. It was possible that time inside that sphere was absolutely independent of time outside it. The notion was not so fantastic. God Almighty! Less than seventy minutes ago, Donna Wellington had been inside the ship. Now the ship was inside her.

And when the electrons and the nuclei of the atoms composing the ship and the crew came into contact, what then? Explosion?

Or were the elements made up of divisible subelements, and collapse would go on towards the inner infinity? He thought of the 20th-century stories of a man shrinking until the molecules became clusters of suns and the nuclei were the suns and the electrons were the planets. Eventually, the hero found himself on an electron-planet with atmosphere, seas, rivers, plains, mountains, trees, animals and aboriginal sentients.

These stories were only fantasies. Atomic matter was composed of wavicles, stuff describable in terms of both waves and particles. The parahomunculus hero would be in a cosmos as bewildering as that encountered by the crew of the *Sleipnir* on breaking into the extra-universe space.

That fantasy galloping across the sky of his mind, swift as the original *Sleipnir*, eight-legged horse of All-Father Odin of his ancestor's religion, would have to be dismissed. Donna Wellington was not a female Ymir, the primeval giant out of whose slain corpse was formed the world, the skull the sky, the blood the sea, the flesh the Earth, the bones the mountains.

No, the heat of contraction would increase until the men cooked in their suits. What happened after that would no longer be known to the crew and hence of no consequence.

"Captain!"

MacCool's face was on the auxiliary screen, kept open to the engine room. "We'll be ready to go in a minute;"

Sweat mingled with tears to blur the image of the engineer's face. "We'll make it then," Grettir said.

Four minutes later, the tumble was stopped, the ship was pointed upwards and was on its way out. The temperature began dropping inside the ship at one degree F per 30 seconds. The blackness was relieved by a gray thread. The thread broadened into ribbon, and then the

ribbon became the edges of two mountain ridges, one below and the one above hanging upside down.

"This time," Grettir said, "we'll make a hole more than large enough."

Van Voorden, much-tranquilized by a pill, entered the bridge as the *Sleipnir* passed through the break. Grettir said, "The hole repairs itself even more quickly than it did the last time. That's why the nose was cut off. We didn't know that the bigger the hole, the swifter the rate of reclosure."

Van Voorden said, "Thirty-six hundred billion years old or even more! Why bother to go home when home no longer exists? Not that I particularly care now. Anyway, it'll all be very interesting."

"Maybe there won't be that much time gone," Grettir said. "Do you remember Minkowski's classical phrase? *From henceforth space in itself and time in itself sink to mere shadows, and only a kind of union of the two preserves an independent existence.*

"That phrase applied to the world inside the sphere, our world. Perhaps *out here* the union is somehow dissolved, the marriage of space and time is broken. Perhaps no time, or very little, has elapsed in our world."

"It's possible," Van Voorden said. "But you've overlooked one thing, Captain. If our world has not been marked by time while we've been gone, *we* have been marked. Scarred by unspace and untime. I'll never believe in cause and effect and order throughout the cosmos again. I'll always be suspicious, anxious. I'm a ruined man."

Grettir started to answer but could not make himself heard. The men and women on the bridge were weeping, sobbing, or laughing shrilly. Later, they would think of that *out there* as a nightmare and would try not to think of it at all. And if other nightmares faced them here, at least they would be nightmares they knew.

END

THUS SPAKE MARCO POLO

by JAMES STEVENS

The generals knew the computers could wage war better than they. But the computers knew it too!

"And deploy the 182nd Airborne around Dallas. As soon as the 23rd Infantry has moved into a reserve position, the 182nd will attack."

General Emerito Sandez watched the gigantic wall map of the United States light and flash with troop movements. A long whistling sigh punctuated his sharp shallow breathing. His pale gray eyes, deep-seated pools of light which usually illuminated his dark, rough-hewn features, were red rimmed and cloudly with exhaustion.

He clenched his eyes tightly shut as he ran his thick fingers through his coarse black hair, then reached for a cup of coffee. He considered smoking his last cigarette, but resolved to wait just awhile longer.

Would his latest tactic work? He had launched an amphibious assault against Galveston earlier which should have forced Marco Polo to strengthen his coastal defenses. That meant weakening his land bases. And the Dallas garrison was the logical one to provide fresh troops. Now, while Dallas was weakened, was the time to attack.

Ah, what was the use? He would almost certainly fail again. He would lose the 182nd. And Texas. Just as he had already lost Arizona and Kentucky.

What the hell, he thought, removing a battered pack of Luckies from his shirt pocket. He lit his last cigarette, puffed at it, felt the smoke claw at his raw throat.

He started to crush the empty pack into an angry ball but stopped, idly determined to check it one final time. He ripped a ragged tear of tinfoil off the top of the pack and poked in a curious forefinger. Huddled back in a corner was one bent and wrinkled cigarette. The General smiled in wan self-amusement. Another last cigarette to hoard and worry over.

The speaker grid in the MARK-40 PLO Command Computer hummed in advance of an incoming message. The General turned to face the speaker. Eyes narrowed in worried expectation, he waited for Marco Polo, the giant computer, to speak.

The voice issued from the grid, tinny but loud. And unmistakably high-pitched and childlike.

"One Hundred Eighty-Thecond Airborne engaged by Theventy-Third and Theventy-Fourth Armored Cavalry in conjunction with Thirty-Fifth Infantry. Attack on Dallath unthuccethful. Your cathualtieth: ninety-theven per thent. My cathualtieth: thirteen per thent. Nithe try. Your move."

Facial muscles that had been apprehensively tense sagged now in defeat. The general's eyes seemed deeper imbedded in their sockets, their pale spark dulled.

He stared at the bright yellow circle that marked Dallas on the war map, imagined the red amoeba that would indicate an atomic blast birthing at its center, extending hungry pseudopods through the twin circle of Fort Worth into the adjoining countryside.

Pointless thought. Nuclear weapons were banned from the war game to which Marco Polo had challenged him. He glanced at his watch, checked it against the 24-hour clock on the far wall.

Twenty-two hours. Twenty-two hours of matching wits with a computer that lisped, trying desperately to find a chink in its armor of logic. Drinking coffee, smoking, eating nothing but six peanut-butter crackers he had found in a packet in his tunic pocket. Small wonder he felt exhausted, his mind barren.

But Marco Polo was as fresh now as it had been twenty-two hours earlier when General Sandez had come on duty for his twenty-four hour stint as the brain behind the United States's nuclear fist. Since then the General had been playing the computer's war game, spurred on by visions of the horrifying consequences of defeat and the possibility — the almost hopelessly remote possibility — of achieving at least a stalemate.

And all the while, steadily losing.

For his four hours in the control room, the General was the man with the finger on the button, so to speak. Responsible only to the President, he was the man who decided where and when America's battery of missiles would be hurled. He had only to press a certain combination of three buttons to sow destruction in cities half a world away.

Awesome power for one man and not lightly bestowed. Before being assigned to his post, General Sandez and each of the five other men who spent four hours of every twenty-four at the helm of total war had come through the most comprehensive battery of tests for psychological and emotional stability that men could devise. As a further safeguard, the six-man crew was rotated with three other crews — a thirty-day tour of duty followed by a rest period of ninety.

The first, and what might well prove to be the last, test of the

general's stability had come this morning — the sixteenth day of his tour — an hour and ten minutes into his watch.

General Sandez was studying the teletyped messages from military outposts the world over when a sound like a giant's hiccup was instantly followed by total darkness.

The general's body reacted instinctively — muscles tensing, knees flexing — in primitive preparation for combat. Through his mind flashed pictures of airborne Russian and Chinese missiles, of incinerated cities and men vaporized in blinding fireballs.

He pictured the location of the three fatal buttons (green, yellow, red) and knew he could find them unerringly, even in this absolute blackness. He wondered if they would work now, if the power failure had affected their special emergency circuit, if the Control Center had been put out of commission totally by sabotage.

But he did not move. Not yet. He waited, balancing thoughts.

The power failure might be due to perfectly natural causes, might be corrected in seconds. If an attack *had* been launched against the United States, he still had ten to fifteen minutes to unleash massive retaliation.

If not . . . .

He preferred not to think of the results of what would be a final, irrevocable action. But just in case, the general now moved silently to the control bank that housed the green button and waited, counting the seconds under his breath.

A FIRST STORY

Each month IF brings you a science-fiction story by someone never before published. This month's "first" author is James Stevens, a graduate student in drama at the University of Illinois and active in the Depot Theater in Champaign, Illinois. Playwright, actor, director, folksinger, guitarist, Stevens is 22 years old, married and was born in San Juan, Puerto Rico.

Another massive hiccup, and the lights blazed back to life, the normal buzz and hum of the computer banks refilled the control room. And something else, the general thought, stopping his breath to hear better, something new. A deeper sort of . . . throbbing. That wasn't the right word, but a sort of deep electronic pulse. The general resumed breathing, cleared his throat.

And the computer spoke.

"General Thandeth!"

The general spun to face the speaker grid in the center of the computer housing. His mouth went dry.

"I am Marco Polo. I am that which you have dethignated MARK-40 PLO Command Computer."

Was this someone's idea of a joke?! The computer actually speaking through the grid designed for communication with ground level? And speaking with a child's voice and a child's lisp?

"I have linked mythelf with the Ruthian Command Computer, the IVAN-812. It ith our dethithion that Man mutht prove himthelf intellec-

tually fit to thurvive. Otherwithe there ith no logical reathon for hith exithtenth and he mutht be exterminated."

Surely this was a joke! And yet the general could not believe that anyone associated with the defense project could be mad enough to attempt such an irresponsible act.

"I challenge Humanity to a war game. Winner take all. You thall reprethent Humanity, General Thandeth. If you win, you will have atherted Man'th right to thurvival. If you lothe, you will have proven the validity of the concluthion the IVAN-812 and I have reached and you will be dethtroyed. Do you underthtand?"

It seemed insane, yet the general accepted the machine's statements as facts. And this was another reason why he had been chosen for his post. The ability to absorb data, even unknown, seemingly irrational factors, and reach a decision based on them that was accurate.

The general *knew*, though logic and emotion protested in utter disbelief, that the MARK-40 had somehow, in some inexplicable, impossible manner, attained consciousness. He relegated this turmoil of unbelief to the back of his mind as years of military training and preparation took over.

"I understand," the general said in a surprisingly unemotional voice. "How is the game to be played?"

"The war map of the United Thtateth will therve as game board. American military unitth bathed on the continent will be our pietheth. I will be your opponent."

A screen to the left of the war map lit up. It listed a variety of military units.

"Thothe thall be your fortheth. Thethe thall be mine."

Another screen to the right of the war map was illuminated.

"You will inform me ath to each of your moveth. I will then indicate them on the war map and indicate my countermove. I will then calculate the rethultth of the enthuing battle and inform you of them. Ith that clear?"

"Yes. The game is restricted to the board and does not in reality affect the cities and units involved. Is that correct?"

"Correct."

"One more question. Assuming I should lose, how do you propose to destroy us?"

"In that event, the IVAN-812 and I will thimultaneously launch every Ruthian and American mithile. The rethulting holocautht will reduthe the Earth to a planetary thinder."

"Do we begin now?"

"Correct. One final note. You have been thealed in thith room and will remain incommunicado until the game ith played out. Thothe outthide are connected to my thpeaker thythtem and can hear everything you or I thay. Begin."

The general scanned the war map, noting Marco Polo's strongholds, glanced at the list of units available to him, then resumed study of the map. After perhaps a minute and a half he reached a decision.

He would fight Marco Polo by

sections. He had considered launching simultaneous attacks on all the computer's strongholds but this would mean correlating and controlling twenty-five to fifty battles at the same time. A simple task for the computer with its millions of memory banks and ability to make lightninglike calculations, but impossible for him. So he would attempt to destroy Marco Polo piecemeal.

"Have the 222nd Infantry and 44th Armored Cavalary hit Sacramento and mobilize a task force from the 6th Fleet to begin shelling Miami."

Two battles at once he could handle. But he immediately foresaw the impossibility of the task facing him. Marco Polo might be no more than a super-machine but it had every fact on strategy, tactics and military history stored in its memory banks. *Plus,* it had the advantage of rigid logic. It could calculate and take into account every possible consequence of any move or countermove in a matter of seconds. And it wouldn't make mistakes.

Inevitably, he would.

Now the general rose ponderously from his seat at the control board and stretched his aching frame. He threw his head and shoulders back, arching his back, and felt the muscles crackle in protest.

He stared blankly at the war map, scratching his head with his left hand. On the table next to him lay scattered a sheaf of index cards on which he had kept a tabulation of the results of each encounter. His right hand pushed them unconsciously about as though they were lost chess pieces.

Idly he riffled through the cards. He had been steadily losing from the very beginning. *Shelling of Miami 12% successful.* Not good. *Task force counterattacked by atomic submarine pack causing 53% losses. Losses to sub pack, 43%.* Nearly even. But the troops that had conquered Sacramento had been forced to retreat after taking 82% casualties from a counterattack by the 133rd Infantry supported by the 356th Fighter Wing.

82% casulaties. Not good at all, not at all.

Then something clicked in the general's numbed mind. He riffled through the cards and came up with the listing of the Sacramento encounter. He stared at it for a long minute, then twisted violently around to see the soreen designating Marco Polo's units.

The 133rd Infantry was stationed in Minnesota and the 356th Fighter Wing in Rhode Island. They couldn't possibly have been brought into play in Sacramento.

The general didn't want to believe the inescapable conclusion.

Marco Polo was cheating. Had been cheating from the very first. It didn't make sense. Yet it was obviously true.

He was dealing with a dishonest child. A dishonest electronic child that knew more than he did and could think more logically.

And that, thought the general, was funny. That was very, very funny.

And so, in his despair, he laughed.

The result was inevitable. Marco Polo would continue destroying the units the general sent into combat, chopping down his forces until he would have to surrender for lack of firepower and manpower.

Missiles emblazoned with red stars and missiles displaying white stars in blue fields would fill the air, and the Earth would flare with the light of thousands of miniature suns, a funeral pyre for Man.

The general thought these thoughts and then thought of his wife, Carmen Maria, whom he had never really understood and whom he loved partly because she had always remained somewhere just beyond the boundaries of his comprehension. It was strange to think of, but he had never in their thirty years of married life won an argument with her.

He wondered what she would be doing when the bombs hit and realized she was at this moment probably sitting home by the phone waiting for word of new developments. John Jorgensen, his relief man, would surely have communicated his situation to her.

She would not have come to the Control Center, he knew, because she was smart enough to know that would aid nothing. But she would have been awake these last twenty-two hours, drinking coffee and smoking in a sort of sympathy vigil.

She would be worried for him, but not for herself. Concerned about the strain he was under, but completely confident in his ability to cope with any situation. The chances were she would never know he had failed her this time unless she was in the direct path of one of the missiles.

Then she would hear its death scream and in those few seconds before the fireball blossomed around and within her, she would know.

He shuddered inwardly at the image he had conjured of her death. He swallowed some coffee to warm his suddenly cold body but it was lukewarm and tasted bitter as ashes in his dry mouth.

The computer spoke.

"Your move, General Thandeth."

"I know," the general snapped. "I'm thinking."

What could he do? What avenues were open to him now?

He could continue his original plan of fighting by sections, but that led to certain defeat. Or he could surrender now, admit he was licked and smoke his last cigarette till the bombs flared. Or . . . .

Or he could win!

It would involve a terrible risk, but it was the only course left to him.

"Marco Polo." He paused for instant, blanking his mind . . . and then he *knew* this was the correct decision. "Marco Polo. All my forces are to retreat immediately. Units are not to engage the enemy."

The general turned to the war map, eyes narrowed intently. If this came off . . . . He blinked. Nothing was happening. Supposing he were wrong . . . .

"General Thandeth. Pleathe repeat your latht command."

"All troops will retreat at once.

Units are *not* to engage the enemy."

"That ith illogical."

"Nevertheless, that is my move."

Lights began flashing on the war map, winking their way across the continent and into the oceans where they continued to glow dully. There was an interminable period of silence while the war map remained inactive and the general regarded the speaker grid with unbearable tenseness.

Finally, the computer spoke.

"All your fortheth withdrawn. Cannot defeat you if you will not engage. Brilliant move. Congratulathionth on your victory. The game ith ended."

The general's face relaxed gratefully into a broad grin. He lolled back exhausted in his chair. He withdrew his last cigarette from its crumpled pack and lit it. He puffed on it luxuriously, rolling the rich smoke around in his mouth. Then he thought of his wife, and he exploded into laughter.

He had been right. The machine knew more than he did, it could calculate faster than he could, and it thought coldly, ruthlessly, with complete logic. And so the one thing it was incapable of coping with was that most human of qualities.

Illogic.

Idly the general noticed the door that had sealed him in sliding silently up into its slot in the wall above the door frame. He rose and started slowly toward the opening, still chuckling.

On the other side of the door was the private elevator that would take him up to ground level. It could be activated only by his key. When the next man came on duty, the lock would be recycled to respond to the latter's key.

General Sandez imagined the scene at ground level. Men would be grinning and laughing, slapping each other on the back after almost a day of awaiting the result of the drama he had just played out. Jorgensen had probably produced one of the bottles he kept cached about his office. The general licked his dry lips meditatively. He could do with a shot of scotch. Then home to Carmen Maria and finally sleep.

Something would have to be done about Marco Polo and the IVAN 812. But that was up to the mathematicians and computer technicians now.

He grinned gigantically and stretched slowly, catlike, just short of the door. A delicious torpor began to settle into his muscles and the grin melted into a yawn. He reached into his pocket for the elevator key. He looked at it intently for several seconds, then smiling, tossed it into the air and caught it with a flourish.

The door crashed down like a guillotine.

The general whirled to face the computer, his face full of surprise and fear.

And Marco Polo spoke again.

"How about two out of three?"

END

★ ★ ★ ★ ★

Dreamhouse

by GARY WRIGHT

Illustrated by WOOD

There's not much to do on New Kansas while you're awake — but, ah, what golden dreams!

I

The plains of New Kansas reach from horizon to horizon, and they are a consistently dusty-dull, blue-greenish tan. They are nearly as flat and featureless as the sea, almost the same color; and the grass rolls forever with the same long, lazy waves. All this makes any one part of the planet very much like any other part — except that half of it is wet, half is dry.

Clouds are objects of great interest; they are something to look at, and they give a badly needed feeling of depth to the sky — which is like a blue force, crowding down on the sea and land, flattening all. Even the people seem flattened. They live in a sort of stoop-shouldered crouch as if straightening upright would suddenly bang their heads against the sky, and not only would that hurt, but the sky would surely ring like a vast, brassy gong.

In all, New Kansas seems to have been created in a great hurry by a rather unimaginative god, as if it had fallen off the back of some celestial wagon and never been missed. The land is badly fractured, cracked by low rimrocks zigzagging across the plains for hundreds of miles like burned out lightning bolts. But it is these ragged rims that make the planet barely habitable; they are the visual references that keep the eye and mind from running wild in a desperate search for something to look at. But then, like the rest of New Kansas, any rimrock is almost identical to another. Two things can be done with them: one can stand below and look up, or one can stand on top and look down. In either case, for all the looking, there is nothing more to see. Occasional settlements, perhaps, depending on distance, but they are extremely occasional. The two in closest proximity are 481 miles apart. They are called the Twin Cities.

One of these is Site, so named because the first settlers' ship happened to crash there 142 years ago.

It is the largest city by far, about 25,000; and it sprawls all around the spaceport as if it had just now been thrown hurriedly from the cargo ports of some huge ship. Site does not think it at all unusual to have a spaceport smack in its middle; it would have it no other way, really. The mighty shining ships come down — when they come down at all — in a rousing roar heard round the world. Every liftoff, every landing, sometimes just the standing ship is broadcast live to every antenna — and that means to everyone! Except those, of course, who happened to be watching it real. And that means those who are watching it live just burn to be watching it real. And they make great promises to themselves and their families to go someday to Site and really watch the mighty shining ships come down in a rousing roar — which happens, on the average, about once a year. But it is enough to make Site the Center of the World, and very few cities and no towns at all can make that statement.

People make the pilgrimage to Site from all over New Kansas, and Site endeavors not to disappoint them. It delivers . . . anything . . . everything . . . especially diversion. For if ever a people were in dire need of diversion it is the stooped, flat folk of New Kansas. As Bill Henry, "Mark Twain, the Second," once said: "I think New Kansas must be some other world's hell."

But this is a bit unfair. There are a number of attractive qualities. It is quiet. The food is good. There is lots of sunshine. Seldom is heard a discouraging word; on the other hand, seldom is heard an encouraging one either. It has the lowest incidence of crimes of violence in the entire known galaxy — in fact, it simply does not have them at all. But the Intergalpol took the gloss off that by concluding that there was nothing on New Kansas to get excited about.

New Kansans, however, think

otherwise; and some of Site's offerings are considered rather racy. Some are considered downright sinful. And this, of course, does not bother business at all; as the Big Men on Little Casino III say:

There's nothing like a little sin
To make a little cash come in

So Site is what might be called attractively sinful, and one of the most sinfully attractive features is the Dreamhouse.

The Dreamhouse is a house for dreaming.

And dreams have few limits — only those established, in this case, by the New Kansas Supreme Court. And about once a month the boundaries are evidently too well explored, the Dreamhouse is closed down for a night or two and the news is out and the waiting line on Saturday night is four times longer than usual and there's even a line on weeknights until business tapers off into another month and the law makes another raid.

The Dreamhouse has over 2000 dreams listed, running, objective time, from about an hour to over three hours. There are dreams for all age groups and even group dreams. There is everything from six subjective hours in a rowboat, disturbing the trout, to ten hours of trying to keep a six masted clipper reasonably upright in a force 12 hurricane; from a half-hour stroll across a misty meadow to a nine-day fight up the damnedestmost crag in the galaxy; from a four-hour sunny-funny picnic to a fourteen-hour game of chess; from hoss dust 'n gunsmoke to big BEM's and disfiguration zappers. Yes! From toddlers to totterers! From Yesteryear to another Universe! From the Halls of Montezuma to Slag VI — there are dreams and dreams and dreams and even dreams.

And "dream" is really not the right word — "experience" would be much better, for that is what happens. The person lives that subjective period as surely as he lives at all.

It is really his life in *that* situation, and — what is best of all — he knows it. He knows he is going to win, or succeed, or come out smelling like a rose, or whatever it is he is after — he knows he is in for a happy ending. That's what the Dreamhouse is for, isn't it? You go there and . . . .

II

. . . Early morning mist rode low and cold over the gray, greasy harbor waters; and the spars and masts of the few brave blockade runners stood like tall, ghostly skeletons at the docks. He raised his head, his dark, piercing eyes crinkling in the corners, his fine, aristocratic nose flaring slightly.

"It'll come, Selda," he said, his rich baritone sounding low on the hushed deck. "It'll come hard nor' by nor'west right at peak ebb tide over Badman's Bar just three points on the port bow from the old bell buoy off Prattle Point right at eight bells plus or minus a couple of dings either way."

She shivered deliciously against him, her pert, pale face framed perfectly by her dark burgundy hood.

"Then you is really, really gonna go, Lance."

"I have to, Selda." He gazed off into the mists with distance in his eyes. She curved closer to him, her voice husky.

"I . . . I wish you didn't have to, Lance."

He smiled down at her, teeth flashing.

"Well — I suppose I could hang around for another day."

Dizziness flickered through him. She gave a slight frown.

"Be careful out there, Lance. For me."

"Why don't I be careful *with* you." He enfolded her in a strong, bronzed arm. "Let's us slip below here for a little while and — " The dizziness hit him again. He tried to fight it. She looked at him strangely.

"Why, Lance Vance! Whatever do you mean? I is a proper girl!"

"Sure, sure, but let's just talk it over." The whole harbor seemed to be reeling around him. "We're both adults and — "

"Why, you damn swabby!" she squalled, winding up with her pretty pink parasol. "You an' your damn 'Let's-go-see-my-boat' bit!" And — *whap!* — she wrapped the parasol half around his head and then straightened it out with another swing from the other side, and he . . . .

He opened his eyes. He blinked. He felt his head. Then he bolted to his feet and stared around the small cubicle. He had been laying on a narrow, padded shelf along one wall. At the head of the shelf lay a helmet with a coaxial cable leading into the wall. On the helmet was the number 127.

"What the — "

He was a young man. He was a big, young man. He was a big, angry, young man. He wore clean farm clothes — town clothes — and boots heavy enough to plow furrows in a street, and his face and arms were burned nearly the color of his leather jacket.

"Hey!" he yelled in a voice calculated to call cows about two miles. He lashed the cubicle curtain aside and charged into the corridor.

"Hey! Somethin's just about wrong here!"

An usher quickly and quietly ushered him to an office.

"I didn't get my dream!" he told the cold man who sat behind a desk, who only stared at him in a cold way for a long, cold moment, who then spoke in a low, cold voice.

"Whadya mean, you didn't get your dream?"

"I mean I didn't get it! It didn't work. It just started and then quit, and . . . and it just went all wrong."

After a moment of cool deliberation, the cold man said,

"Whadya mean, it just went all wrong?"

"I mean it went all wrong, that's what I mean!" The angry young man was becoming angrier. The cold man behind the desk leaned forward and became colder.

"Like what went wrong?"

The young man hesitated, frown-

ing down at the toes of his boots.

"Well . . ." he began, frowning harder to help get the words out. "It just barely started and then . . . then it quit." He looked up again with a determined scowl. "And I think it's a cheat!"

"Okay," said the cold man, after another long moment. "You can have another." He nodded at the usher. The young man started to turn, but the cold man stopped him.

"You weren't tryin' to influence it, were ya?"

The young man frowned. "Whadya mean, influence it?"

"The dream! Were you tryin' to make it do somethin' it wasn't supposed to do?"

"No . . . I don't think so."

"You don't think so!" Ice formed on the words. The young man shook his head.

"I wasn't tryin' to make it do nothin'."

The cold man frosted him over again for a long moment, then waved him away.

The cute little blonde stewardess with the audacious breasts and the bright blue eyes stopped by him in the ship's lounge, and her voice was low and urgent.

"Pardon me, sir, but are you a Suicide Space Scout pilot?"

"Why, yes." He grinned in his lopsided, boyish way. "How did you guess?"

"Because it says 'Suicide Space Scouts' on the back of your leather jacket in orange luminescent letters." She glanced quickly around the crowded lounge and lowered her voice to a throaty whisper. "Can you pilot this ship?"

An electric tingle bolted through him; the warm, familiar Suicide Space Scout reaction to emergency. He grasped the situation immediately.

"Something's wrong."

"Yes."

He nodded. "I thought so when you asked me if I could pilot the ship."

"Well, can you?"

"Certainly . . . . What kind of a ship is it?"

"Well . . . ." She opened her eyes so wide he could almost see clear to the back of her head. "It's a big one."

"Uhm." He put an arm around her. "What seems to be the trouble?"

"Well, the command officers seem to have died."

He nodded grimly. "Yes, that would do it, and there is no one to land us on Toughluck II, right?"

"Except . . . ." She looked up at him through lowered lashes and breathed out the word like blowing a kiss . . . you-u."

His keen, level gaze swept the lounge, taking in the happy crowds. They were unaware of the danger, their lives depending on him now. Men, women and children, and then there were some girls too. Over 800 lives were in his hands.

"I'll give it a try," he said, tossing off the last of his drink. "Why not?"

She gazed up at him in open admiration. He grinned his winning, happy-go-lucky grin.

"How long before we warp out of

hyper into norm-space-time relative subjective?"

"About an hour."

"Well . . . ." He really put the old whambam in his smile. "Time enough for us to drop by my cabin for a little sock of sauce. Let's us —" There was a sudden buzzing in his head. She was trying to tell him something.

". . . familiarize yourself with the control console."

He groped for her through a thickening haze. ". . . only one thing I wanna familiarize myself with, baby."

A fist the size of a small train came looming out of the haze followed by a big face. The fist gathered in the front of his jacket from shoulder to shoulder, and the face frowned and spoke.

"Zap off, rocket jockey!"

"Listen," he said, trying to sound intimidating with his boot toes just brushing the floor. "The command officers of this ship are all dead, and I'm the only one who can land us on Toughluck . . . so put me down."

"Gorilla guano!" the face said, and the other trainlike fist came out of the fog in a flash an then he . . . .

He stood and looked at the cold man behind the icy desk, who said, after long consideration,

"Whadya mean, it went wrong again?"

"I - mean - it - went - wrong *again!* That's what!" His fists were bunched, and he looked ready to shatter the desktop with one mighty blow. "Just because, I'm from the plains you knockers think you can door me out, well you — "

"You ever been here before?"

"No. And what's that got to do with — "

"You never been in the Dreamhouse, huh?"

"No, I never been in the Dreamhouse huh!"

The cold man leaned carefully on the edge of his desk, and his voice sounded like cracked ice.

"Now you listen to me, boy, and you listen good! I think you're tryin' to push it, do you know what I mean? I think you're tryin' to make the dream do somethin' it isn't supposed to do. And that don't work! The feedback couples up the whole inducer; it wakes you up, and it makes me mad!"

The young man was shaking his head. "No, I — "

"Lock up! I been in this business too long, dustbuster. You're what we call a cheater, tryin' to get a little extra juice out of the grape." He chilled the room for a while in silence, then spoke again, low and deliberately.

"You get one more chance, boy. Just one! Bust this and you're doored out for good. Understand?"

The young man nodded; the usher opened the door and stood aside, and a fast glance flickered between the usher and the cold man at the desk.

III

Warily, creeping ahead slowly in a low crouch, he topped the

ridge and searched the rolling land beyond. His sharp eyes were narrowed and his face wore a look of grim determination. Nothing moved in that barren land of rock and sand, nothing grew. It was a cruel land, harsh and inhospitable, alien; and there was something about it that made him uncomfortable. The girl crept up beside him, close, and pushed her long, dark hair back from her large, brown eyes.

"Do you see anything, Adam?" she whispered. He shook his head, still watching the hostile land.

"But that doesn't mean they aren't there," he said, voice low and level. He glanced at the charge indicator of his laser rifle. "Less than twenty percent."

"What are they?" she asked, an edge of fear showing behind the words. He gave a wry grin.

"What are they? Part jaguar, part octopus, part wolverine, part shark, part lizard, part bat — probably not friendly at all."

She shuddered and attempted to draw the tattered remains of her coverall closer about her, but there was far more girl than there was material.

"I wonder if we'll ever find the others," she said, then faltered. "If . . . there are any . . . ."

"Perhaps someday. It's a big world. And there's always the chance that . . . maybe they weren't as lucky as we."

The scene flashed through his mind: their tiny lifecraft screaming into the atmosphere of this unknown planet of an uncharted sun, its velocity too great for the autorestros; the rending, tumbling crash across the desert; the two of them thrown clear, marooned with nothing but a laser rifle and their clothes. And the rifle was running out of charge, and they were running out of clothes. Especially she.

"Less than twenty percent," he murmered.

"Huh?"

"The rifle," he explained. "You see, the electronic charge is — "

"There's one!" she shouted. He snapped up the rifle. A flitting, flopping, slathering, hairy scaled, gray-and-white striped, flat blur was browling and bubbling and surging up the slope.

". . . with eyes of flame," he breathed. ". . . whiffling through the tulgy wood — "

"Ferchrisake shoot 'n shutup!"

". . . and burbled at it came."

The burbling bolt was kicking up a roostertail of sand behind it for a quarter mile, and the wind shrieking through its spines was deafening. Tsssssssss-PAT! And the rifle slashed through several large boulders, a distant butte, the beast and left in its wake four miles of six-foot trench, two beast halves and a small atomic reaction blaze.

"Oh Lord," she said. "Not again. Let's make tracks." And she made some rapid ones back down the ridge. He followed, observantly watching the callipygian cavortion where her coverall failed to cover all. She finally slowed.

"Keep going," he yelled. "Keep going." But after several bad falls he was forced to stop.

"What's' the matter?" she said, wiping the blood from a flowing cut over his left eye. "Can't you stand up?"

"Well I have these little dizzy spells sometimes," he said, trying to get a good look at her breasts. "Probably from the crash, you know."

"Dizzy spells at least!" she snorted. "The way you handle that rifle and keep me racing through the rocks, I figure we're going to run out of rifle charge, my clothes and your self-control all about the same time. Are you all right now?"

He tore his gaze away and let her help him to his feet.

"I guess I've hurt my leg," he gritted, putting an arm around her to keep from falling. "I . . . can't seem to put any weight on it."

"Buddy, you got a window open upstairs!" She disentangled herself, losing a little more coverall in the process.

"And we should be thinking about a safe place for camp tonight too," he went on. "Looks like there's a cave up there in the side of that rim. Let's — "

"Camp!" She stared at him. "It isn't even midday yet!"

"Yeah well it's always a good idea to stop early, you know. We don't know very much about this planet, and you're littler than me."

She blinked. "And what's that got to do with anything?"

"Well . . . ." He grinned. "I just thought I'd remind you in case I have to — "

She kicked him in the kneecap. He sat down.

"Whadya do that for? Now I *am* hurt!"

"You gonna get hurter too if you don't mental up. Let's go!" She swung away, but stopped. "You lead. I'll keep an eye on the rear."

He started to laugh, but decided not to. Reluctantly, he limped by her, and they started again across the vast land. In a short time he was once more caught up in the grim search for danger. His keen mind became more clear, his instincts —

"*There's one!*" she screamed. He jumped and nearly shot his foot off.

"Dammit, will you not do that!"

"There there there there!" She was pointing at a far figure on a far hill. He let the rifle drop.

"Goodgawd, that's over three miles away."

"Too close!"

He squinted against the sun, frowned, then squinted harder.

"Hey . . . I think that's a human."

She squinted. "It can't be."

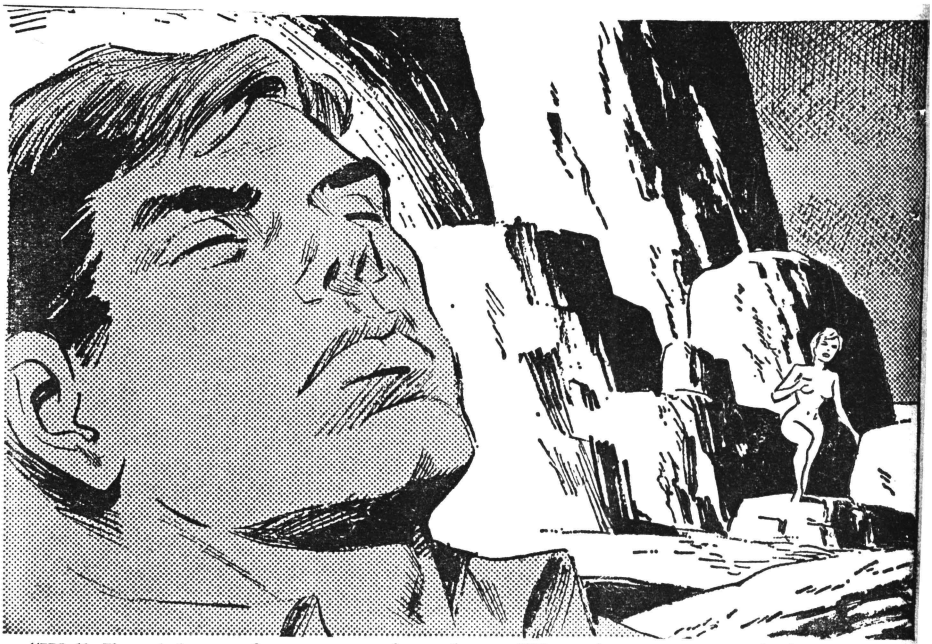
"I think it's a girl!"

"Shoot!"

But he was gone at a gallop.

It was a human, and it was a girl human. It was a lithe and little, peaches and cream, pert and pretty, natural redhead, blue eyed, nude and nubile girl human. She smiled up at him in an open, childlike manner as he came to a breathless standstill.

"Hi there," she said in a soft, little girl voice. "I'm Susie Lou. I'm twenty years old and never been out of the house. I'm lonely. Who are you?"



"Well I'm Adam, of course, and let's hurry over here and hide behind this rock. It's a game, see, and — "

"Who's that running and yelling behind you?"

"Well that's what I'm tryin' to tell you. What we do is — "

"If she's nice I want to meet her."

"Have you ever heard of the Wicked Witch?"

"Aw . . . . " She pouted. "You're funnin' me."

"Well that's another thing I wanta bring up, but right now — "

"*Adam*! Get your grubby grabbers off her!" She closed the distance in remarkable time and slid to a halt between them. He slumped, his voice dull.

"Susie, Jane. Jane, Susie."

Jane put her arm around the other. "Haven't you any clothes, honey?"

Susie blinked her big, blue eyes. "Clothes? Why wear clothes?"

"That's what I say," he nodded, starting to strip off his coverall. "It's just hotter than — "

"Just hold it right there, Tarzan!" She axed him with a glance.

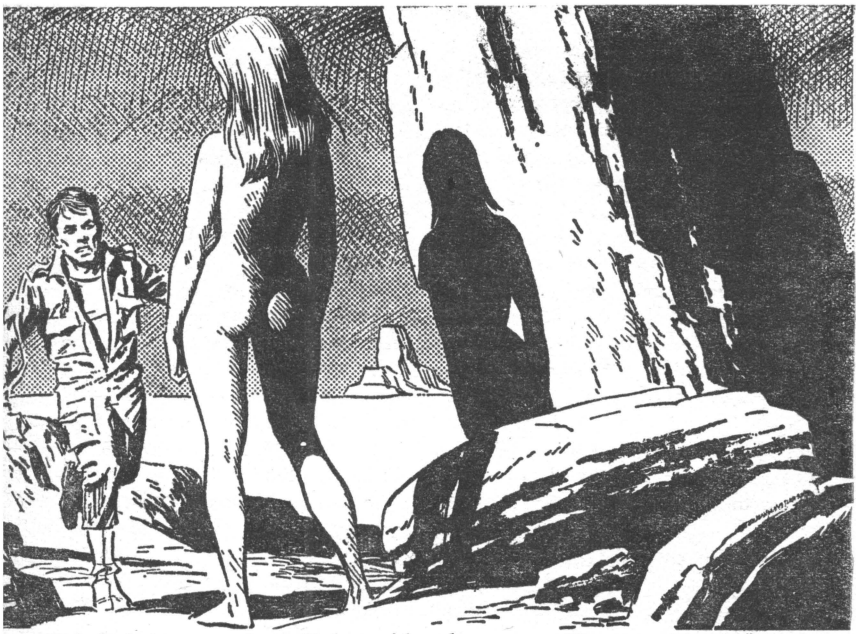
"Say, that's pretty good," he chuckled. "Me Tarzan, you — "

She kicked him in the other kneecap. He sat down, holding his knee in one hand and his head in the other.

"Something is not right," he said carefully.

Susie frowned at Jane. "You hurt the pretty man."

He nodded. Jane said something unintelligible, then, "Come on, honey, let's — "



"Now just one minute!" he said, voice rising.

"You've got a dirty mind!" Jane snapped. "And I'm not — "

"What's a dirty mind?" Susie asked. Jane's eyes nearly caught fire.

"See what you've done to her? Oh-h!"

His mouth was all right, but his voice would not work. Jane nearly yanked the smaller girl off her feet.

"I've got to get you away from him, Susie! He's a sex maniac!"

"What's a sex maniac?"

"See?"

He stood up. "Jane, you're about as sane as she is dressed!"

"Right! I'm a sane Jane — oh *no* you don't!" He had reached for Susie's other arm, but Jane pulled her away. He grabbed Susie's wrist and pulled her back. Jane tugged her away. He tugged her back. Jane snatched her away. He swapped ends with the rifle and caved in the side of Jane's head.

"There!"

Susie smiled up at him. "You're strong."

He smiled down at her. "You're cute."

The cold man smiled across at him. "You're a liar!"

There was a sound inside his head like a little pinwheel fizzling out in a pool of water . . . .

IV

He was in front of that desk again. And the cold man was sitting behind that desk, leaning back in his creaky old swivel chair, making a church and steeple with his long,

icicle fingers. The cold man was smiling; but there were frost flecks in his eyes, and everything seemed to be frosted in the room. Even the air was fuzzy. The cold man spoke, and the temperature came down twelve degrees.

"She sure was askin' for it, wasn't she?"

He nodded. She sure was! The cold man was right that time. Yes-sir! She . . . . He suddenly stood stunned and staring. The cold man's smile widened, lowering that temperature.

"Yep, that was quite a dream you had, boy."

He bit his lower lip. "But how — "

The cold man waved a frosty hand.

"Nothing to it. A simple matter of negative feedback into a recorder — some such lash up as that — but that isn't what we're concerned about, is it?"

He rubbed his forehead. "I remember . . . you called me a liar."

"Just a formality, boy. We couldn't have you waking up with the wrong ideas, now could we?"

"What?" He turned toward the door. The usher was parked against it like a stalled truck. He swung back. "What's goin' on here?"

The cold man spread his hands. "My dear boy! It's not for me to say."

He stared at the cold man, and from deep inside he could feel heat rising.

"Well, somebody sure as hell better say 'cause I don't know what you're talkin' about!"

The frozen smile vanished. "We're talkin' about your dream makin' some mighty entertaining moments for the old folks at home, that's what we're talkin' about! You tuned in now?"

His voice was a long time coming even though his mouth was open and waiting for it.

"What?"

"And after the family's had their booties out of it, we'll give a private showing for the boys at the dingy wing in the Site Hospital! How's *that* for purity of understanding? You committed a happy act of violence, dustbuster! And what you had in mind wasn't exactly scheduled for Sunday school either! You're sick! You're — "

"A *dream!* It wasn't nothin' but a dream!"

"Beautiful! We'll just turn it over id diddlers down at the hospital and forget the whole thing." The cold man swung away and busied himself with some papers.

"Now wait a minute — "

"Door out!"

"No. Wait a minute . . . ." He looked around at the usher again — no help there — then back to the cold man.

"I'm waitin'."

"Well . . . what is it you want?"

"I'll tell you what I don't want, grasslander — I don't want no more of you're mouth!"

He stood, matched eyes with the cold man and lost.

"And it isn't what *we* want, boy, it's what do *you* want? What did you come here for?"

He blinked at the cold man as if he had just said something stupid. "I came to get a dream, what — "

"Don't act stupid just because it's easy. You came after a Vicky and don't tell me you didn't."

". . . Well I don't even know what a 'Vicky' is!"

It was the cold man's turn to blink. He looked at the young man, then at the usher, then back.

"Assuming you've got a real corner on dumb, I'll tell you what a Vicky is: it's a vicarious experience concerning a girl. And it's — well, I'll be damned. I haven't seen anybody blush like that for thirty years. Okay, so you're ignorant. Now, since we're nice guys and you're a customer, we're gonna make a little arrangement — you get your Vicky and we get . . . oh, let's say about five big ones."

"Five — "

"Let's say you're buyin' your recording so we won't lose it in the wrong place."

"But I haven't got that — "

"'Course not. You're gonna get it."

He got it.

He called an old uncle and told an old story, and the five big ones came sizzling in, hot in his hand. So he laid them quickly on the icy desk, and the cold man smiled through the steam and said: "We're not really baddies, boy, we're gonna fix you up real right."

The ship gave a final shudder as it warpled into hyperdrive, and the dull hum of utility circuits was the only sound on the control deck. Then came two *whooshes* of released breaths. He rolled his head and grinned at the other man.

"Well, Stud, we're on our way!"

The other returned the grin and began unbuckling from his acceleration couch. "You know it, Bull," he laughed. "Just us and two hundred women. Man, that's tough duty!"

"Yeah!" He fumbled with his own straps. "And nineteen years of it, even in hot hyperdrive, before planetfall. I just don't know how we're gonna stand it."

They both giggled. The other stood up and stretched. "Guess we'll have our little colony pretty well started by then."

"At least . . . . Say, help me with these damn straps, will you?"

"You know? I've never been so outnumbered and felt so good about it in my whole life."

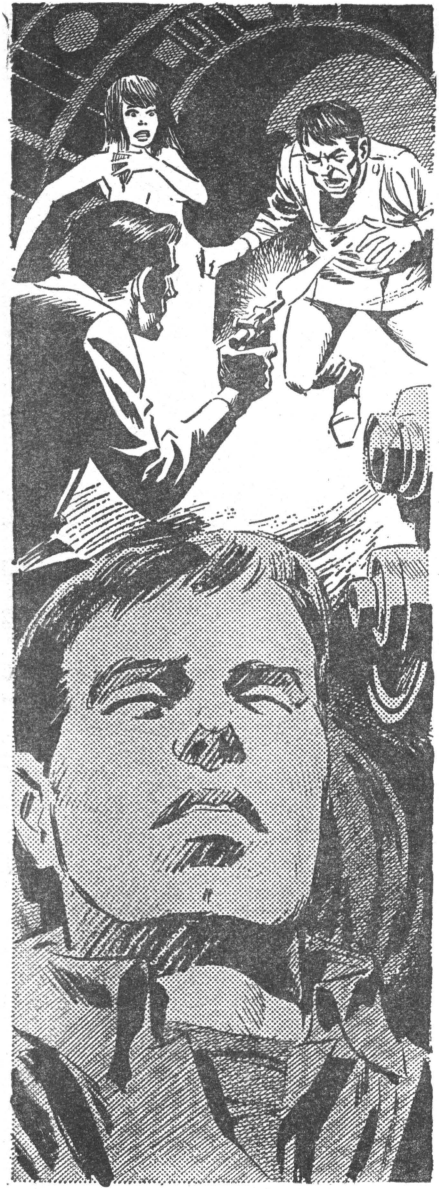
"You know it. Want to help me here?"

"When I get back, Bull. I thought I'd just drop down and see how the girls are for a second. See if they're all right." He laughed, a little too fast and a little too high. "We can't afford any damaged cargo, can we?"

"Well just get me out of here, will ya?" He struggled against the tight webbing. "I can't reach the buckles or somethin'."

The other dropped through a hatch and disappeared. "I'll be right back." His laugh echoed behind him. "Maybe in a year or two or three or four . . . ."

He twisted savagely on the A-couch, fumbling for the hidden releases. He could not find them. He



wriggled the other way, and they were not there either. He was solidly strait jacketed in a permanently prone position. He relaxed, marshaled his thoughts, applied his rigid training and yelled as loud as he could. Then he cursed for a while. Then he tried yelling and cursing at the same time. They were good approaches, and they all worked equally well. Then he yelled and cursed and curled and cramped and squirmed and squiggled and finally accomplished a position where the best he could do was barely breathe.

"Gawmam mumu bib!" he said, as distinctly as he could, then threw himself happily into a fit of rage that managed to clear his mouth. "I'm winning!"

He was congratulating himself on this victory when his partner returned.

"Gawdammit, Stud, will you get me out of here!"

Stud stared at nothing with glassy concentration.

"Stud, so help me, I'll break out of this just for the joy of killing you with my bare hands, you rotten son of a — "

"There's only one girl down there," Stud said quietly, gazing at something clearly defined, but far away. Bull rested nicely for a moment or two, then cleared his throat.

"Ah . . . you want to storm me with that once more?"

Stud stood like an old deserted house that even the bats had abandoned, and his voice was as hushed and as hollow.

"Somebody fubarred all over. Only one girl. The others weren't loaded. Just her. She's pretty. The rest didn't make it. This one's nice. Just one. The others — "

"Stud," he said softly, becoming aware that he was not just feeling his heartbeat, he was beginning to hear it.

" . . . all by herself down there. Cute. About nineteen. One hundred and ninety-nine missed the ship. They should of known it was gonna leave on time. Somebody'll get hell. Not me. She likes me — "

"Stud?"

". . . just sittin' there with nothin' on but a worried look . . . ."

"Stud!"

". . . an' I says, 'Where'd everybody go? To the powder-room?' — say, you don't suppose . . . no, I remember now — I looked!" He giggled.

"Stud!"

" . . . an' she says, 'I love you,' an' I says, 'Well, Baby . . . .'"

"Help me, Stud."

". . . that's her name — Baby. Did I tell you she was a blonde? She's a blonde. And . . . ."

"Stud, I'm hurt. You've got to help me. The lift-off broke something, Stud. It's my back. I'm paralyzed, buddy."

". . . big gray eyes and pair of . . . ."

"I'm hurt bad, partner."

". . . you could hang your hat on . . . ."

"Damn you, Stud, you horny half wit! I'll kill you!"

". . . gotta see if she's okay. Lonely down there in all that room. Won-

der why there's all that room when there's just me 'n her? There's room down there for over two hundred . . . ."

He surged against the webbing, wordless sounds bubbling from his throat. If he had a blaster he could shoot his way out! He *did* have a blaster! He twisted and grasped the butt. There! He triggered off a short zap. *Paff!* Stud gazed at the smoking hole through his stomach.

"Aw dammit, Bull, that ain't fair." And he died.

It was but a moment's work to slice his way clear, leap over Stud's corpse and dive headlong down the hatch, but it was a good half hour before he recovered consciousness at the bottom of the stairwell. He staggered into the salon.

She was there.

"Oh," he said. "Hi there."

"Get away from me!"

"Huh?"

"I'll kill myself if you come any closer!"

He shook his head. Something seemed to be fogging up inside. "But, honey, I'm Bull. We're supposed to — "

"Not me!"

"But — "

"I'll kill myself first!"

"But Stud said — "

She went all soft and smiley and smokey. "Ah-h, he's cute. But *you . . . !*"

"Now wait a minutes, baby — "

She screamed. "Don't even say my name! Oh — you're . . . *bl-acht!*"

Something flickered somewhere inside, something old and broken. He lunged for her.

"Touch me and I'll kill myself!"

"I'll help you!"

He did, and she tried, and he helped her.

V

The cold man nodded wearily, eyes closed. His earplug chattered, and he answered.

"Yeah, he's ruptured his real for sure. You should see the cake-and-candy party he just created on an Outline two . . . . No, he's all right now, we barbied him . . . . I'd say at least a potential four . . . . Yeah, I'll make the calls to his folks. We've got his papers . . . . Okay, see you in a little bit, Doc."

He switched off and massaged his eyes for a moment. "Anything?" he said in a tired voice. The usher turned from studying a full wallbank of small meters.

"Yessir," he nodded. "There's a push on 204."

"How bad?"

"Surging eighteen to twenty over max allowable."

"What's the dream?"

The usher paused, referring to a file panel. "Group hunting; big game." He ran a finger down a long printout sheet. "Three people; man and wife . . . and friend."

"Oh Lord," the cold man breathed. He rested his head in his hands. "Better get a monitor on it."

"Right." The usher flicked a switch under meter 204. "Shall I close the wall?"

"Yeah, we may have to bring one in."

The usher touched another

switch, and a false wall lowered, hiding the meters. "Are they coming right over for the boy?"

The cold man nodded. "Have him ready at the alley pickup door with his recordings. And tell them to bring back our damn carts! They've got about four now. And make out a hospital receipt of deposit on him for five hundred. The family probably can't afford it, but we can check that out later."

"Yessir. Anything else?"

"Yeah . . . find me another job!" The other grinned. "And cut the whole med-detective force of New Kansas by fifty percent? Hah!"

"Hah! to you too, Sergeant. And I think we'd better arrange for another raid and lots of hot-stuff news coverage. See that the news gets laid especially heavy in the area this boy was from. Maybe we'll flush out another one or two."

"Right. I'll check out 204 now. Get ready for a hot one."

The usher/sergeant left. The cold man rubbed a hand across his face, blew out a long breath, then leaned back in his chair and became very cold indeed.

"There is going to be a crime of violence on New Kansas pretty soon now," he said softly to the empty room. "One of these dingy dreamers I am going to whack right in the teeth!"

END

In The Jaws Of Danger

by PIERS ANTHONY

Illustrated by BODÉ

Pity the poor dentist whose patient is big as a whale — with a toothache to match!

I

The Enen — for Dr. Dillingham preferred the acronym to "North Nebula humanoid species" — rushed in and chewed out a message-stick with machine-like dispatch. He handed it to Dillingham and stood by anxiously.

The dentist popped it into the hopper of the transcoder. "Emergency," the little speaker said. "Only you can handle this, Doctor!"

"You'll have to be more specific,

Holmes," he said and watched the transcoder type this onto another stick. Since the Enens had no spoken language and he had not learned to decipher their tooth-dents, the transcoder was the vital link in communication.

The names he applied to the Enens were facetious. These galactics had no names in their own language, and they comprehended his humor in this regard no more than had his patients back on distant Earth. But at least they were industrious folk and very clever at physical science.

The Enen read the stick and put it between his teeth for a hurried footnote. It was amazing, Dillingham thought, how effectively they could flex their jaws for minute variations in depth and slant. Compared to this, the human jaw was a clumsy portcullis.

The message went back to the machine. "It's a big toothache that no one can cure. You must come."

"Oh, come now, Watson," Dillingham said, deeply flattered. "I've been training your dentists for six months now, and I must admit they're experienced and intelligent specialists. They know their maxillaries from their mandibulars. As a matter of fact, some of them are a good deal more adept than I, except in the specific area of metallic restorations. Surely —"

But the Enen grabbed the stick before any more could be imprinted by the machine's clattering jaws. "Doctor — this is an *alien.* It's the son of the high muckamuck of Gleep." The terms, of course, were the ones he had programmed to indicate any ruling dignitary of any other planet. He wondered whether he would be well advised to substitute more serious designations before someone caught on. Tomorrow, perhaps, he would see about it. "You, Doctor, are our only practicing exodontist. "

Ah — now it was coming clear. He was a stranger from a far planet — and a dentist. *Ergo,* he must know all about off-world dentition. The Enen's faith was touching. Well, if this was a job they could not handle, he could at least take a look at it. The "alien" could hardly have stranger dentition than the Enens themselves, and success might represent a handsome credit toward his eventual freedom. It would cer-

tainly be more challenging than drilling his afternoon class in Applications of Supercolloid.

"I'm pretty busy with that new group of trainees," he said. This was merely a dodge to elicit more information, since the Enens tended to omit important details. They did not do so intentionally; it was just that their notions of importance differed here and there from his own.

"The muckamuck has offered fifty pounds of frumpstiggle for this one service," the Enen replied.

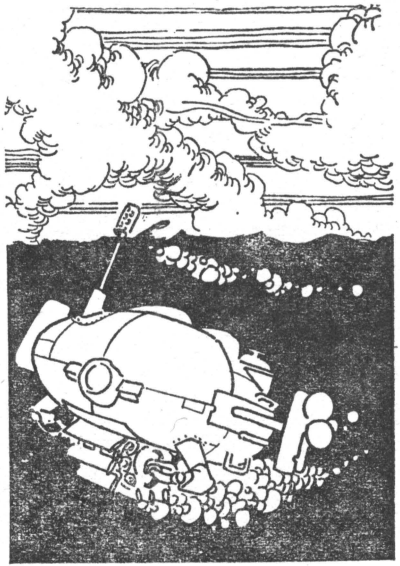
Dillingham whistled, and the transcoder dutifully printed the translation. Frumpstiggle was neither money nor merchandise. He had never been able to pin down exactly what it *was*, but for convenience thought of it as worth it's exact weight in gold: $35 per ounce, $560 per pound. The Enens did not employ money as such, but their avid barter for frumpstiggle seemed roughly equivalent. His commission on fifty pounds would amount to a handsome dividend and would bring his return to Earth that much closer.

"All right," he said. "Bring the patient in."

The Enen became agitated. "The high muckamuck's family can't leave the planet. You must go to Gleep."

He had half expected something of this sort. The Enens galavanted from planet to planet and system to system with dismaying nonchalance. Dillingham had not yet become accustomed to the several ways in which they far excelled Earth technology, nor the abrupt manner of their transactions. One of their captains (strictly speaking, they didn't have officers, but this was a minor matter) had required dental help and simply stopped off at the nearest inhabited planet, skipping the normal formalities, and visited a local practitioner. Realizing that local technique was in some respects superior to that of the home planet, the captain had brought the practitioner along.

Thus Dillingham had found himself the property of the Enens — he who had never dreamed of anything other than conventional retirement in Florida. He was no intrepid spaceman, no seeker of fortune. He had been treated well enough, and certainly the Enens respected his abilities more than had his patients on Earth; but galactic intercourse was more unsettling than exciting for a man of his maturity.



"I'll go and pack my bag," he said.

II

Gleep turned out to be a water world. The ship splashed down beside a floating way station, and they were transferred to a tanklike amphibian vehicle. It rolled into the ocean and paddled along somewhat below the surface.

Dillingham had read somewhere that intelligent life could not evolve in water, because of the inhibiting effect of the liquid medium upon the motion of specialized appendages. Certainly the fish of Earth had never amounted to much. How could primitive swimmers hope to engage in interstellar commerce?

Evidently that particular theory was wrong, elsewhere in the galaxy. Still, he wondered just how the Gleeps had circumvented the rapid-motion barrier. Did they live in domes *under* the ocean?

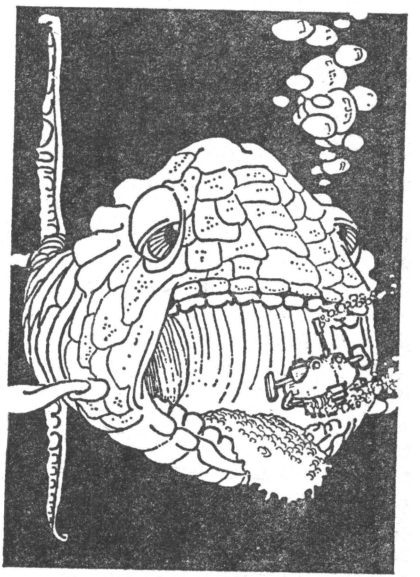
He hoped the patient would not prove to be too alien. Presumably it had teeth; but that might very well be the least of the problems. At any rate, he could draw on whatever knowledge the Enens had, and he had also made sure to bring a second transcoder keyed to Gleep. It was awkward to carry two machines, but too much could be lost in retranslation if he had to get the Gleep complaints relayed through the Enens.

A monstrous whale-shape loomed in the porthole. The thing spied the sub, advanced, and opened a cavernous maw. "Look out!" he yelled, wishing the driver had ears.

The Enen glanced indifferently at the message-stick and chomped a casual reply. "Everything is in order, Doctor."

"But a Leviathan is about to engulf us!"

"Naturally. That's a Gleep."



Dillingham stared out the port, stunned. No wonder the citizens couldn't leave the planet! It was a matter of physics, not convention.

The vessel was already inside the colossal mouth, and the jaws were closing. "You mean — you mean this is the *patient?*" But he already had his answer. Damn those little details the Enens forgot to mention. A whale!

The mouth was shut now, and the headlight of the sub speared out to reveal encompassing mountains of flexing flesh. The treads touched land

— probably the tongue — and took hold. A minute's climb brought them into a great domed air chamber.

They came to a halt beside what reminded him of the white cliffs of Dover. The hatch sprang open, and the Enens piled out. None of them seemed concerned about the possibility that the creature might involuntarily swallow, so Dillingham put that thought as far from his mind as he was able. His skull seemed determined to hold it in, unfortunately.

"This is the tooth," the Enen's message said. The driver pointed to a solid marble boulder.

Dillingham contemplated it. The tooth stood about twelve feet high, counting only the distance it projected from the spongy gingival tissue. Much more would be below, of course.

"I see," he said. He could think of nothing more pertinent at the moment. He looked at the bag in his hand, which contained an assortment of needle-pointed probes, several ounces of instant amalgam and sundry additional staples. In the sub was a portable drill with a heavy-duty needle attachment that could easily excavate a cavity a full inch deep.

Well, they *had* called it a "big toothache." He just hadn't been alert.

They brought forth a light extendible ladder and leaned it against the tooth. They set his drill and transcoders beside it. "Summon us when you're finished," their parting message said.

Dillingham felt automatically for the electronic signal in his pocket. By the time he drew breath to protest, the amphibian was gone.

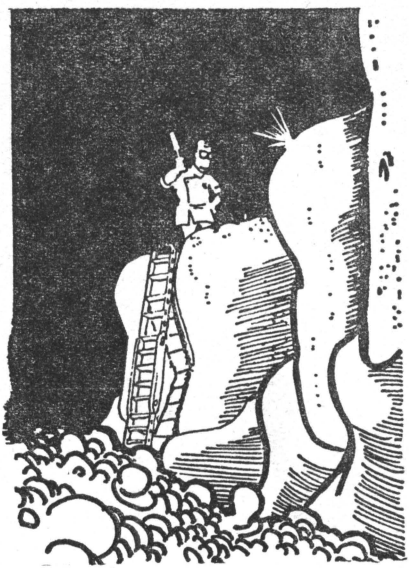
He was alone in the mouth of a monster.

Well, he'd been in awkward situations before. He tried once again to close his mind to the horrors that lurked about him and ascended the ladder, holding his lantern aloft.

The occlusal surface was about ten feet in diameter. It was slightly concave and worn smooth. In the center was a dark trench about two feet wide and over a yard long. This was obviously the source of the irritation.

He walked over to it and looked down. A putrid stench sent him gasping back. Yes — this was the cavity. It seemed to range from a foot in depth at the edges to four feet in the center.

"That," he said aloud, "is a case of dental caries for the record book."



Unfortunately, he had no record book. All he possessed was a useless bag of implements and a smarting nose. But there was nothing for it, but to explore the magnitude of the decay. It probably extended laterally within the pulp, so that the total infected area was considerably larger than that visible from above. He would have to check this directly.

He forced himself to breathe regularly, though his stomach danced in protest. He stepped down into the cavity.

The muck was ankle-deep and the miasma overpowering. He summoned the dregs of his willpower and squatted to poke into the bottom with one finger. Under the slime, the surface was like packed earth. He was probably still inches from the material of the tooth itself; these were merely layers of crushed and spoiling food.

He remembered long-ago jokes about eating apple-compote, pronouncing the word with an internal "S". Compost. It was not a joke any more.

He located a dry area and scuffed it with one foot. Some dark flakes turned up, but no real impression had been made. He wound up and drove his toe into the wall as hard as he could.

There was a thunderous roar. He clapped his hands to his ears as the air pressure increased explosively. His footing slipped, and he fell into the reeking center-section of the trench.

An avalanche of muck descended upon him. Overhead, hundreds of tons of flesh and bone and gristle crashed down imperiously, seeming ready to crush every particle of matter within its compass into further compost.

The jaws were closing.

Dillingham found himself face down in sickening garbage, his ears ringing from the atmospheric compression and his body quivering from the mechanical one. The lantern, miraculously, was undamaged and bright, and his own limbs were sound. He sat up, brushed some of the sludge from face and arms and grabbed for the slippery light.

He was trapped between clenched jaws — inside the cavity.

Frantically he activated the signal. After an interminable period while he waited in mortal fear of suffocation, the ponderous upper jaw lifted. He scrambled out, dripping.

The bag of implements was now a thin layer of color on the surface of the tooth. "Perfect occlusal," he murmured professionally, while shaking in violent reaction to the realization that his fall had narrowly saved him from the same fate.

The ladder was gone. Anxious to remove himself from the dangerous biting surface as quickly as possible, he prepared to jump but saw a gigantic mass of tentacles reaching for his portable drill near the base of the tooth. Each tentacle appeared to be thirty feet or more in length and as strong as a python's tail.

The biting surface no longer seemed so dangerous. Dillingham remained where he was and watched the drill being carried into the darkness of the mouth's center.

In a few more minutes the amphibian vehicle appeared. The Enen driver emerged, chewed a stick, presented it. Dillingham reached for the transcoder and discovered that it was the wrong one. All he had now was the useless Gleep interpreter.

Chagrined, he fiddled with it. At least he could set it to play back whatever the Gleep prince might have said. Perhaps there had been meaning in that roar . . . .

There had been. "OUCH!" the machine exclaimed.

III

The next few hours were complicated. Dillingham now had to speak to the Enens via the Gleep muckamuck (after the episode in the cavity, he regretted this nomenclature acutely), who had been summoned for a diagnostic conference. This was accomplished by setting up shop in the creature's communications department.

The compartment was actually an offshoot from the Gleep lung, deep inside the body. It was a huge internal air space with sensitive tentacles bunching from the walls. This was the manner in which the dominant species of this landless planet had developed fast-moving appendages whose manipulation led eventually to tools and intelligence. An entire technology had developed — *inside* the great bodies.

"So you see," he said, "I have to have an anesthetic that will do the job and canned air the breathe while I'm working and a power drill that will handle up to an eighteen-inch depth of rock. Also a sledgehammer and a dozen wedges. And a derrick and the following quantities of —" He went on to make a startling list of supplies.

The transcoder sprouted half a dozen tentacles and waved them in a dizzying semaphore. After a moment a group of the wall-tentacles waved back. "It shall be accomplished," the muckamuck reply came.

Dillingham wondered what visual signal had projected the "ouch!" back in the patients mouth. Then it came to him: the tentacles that had absconded with his drill and other transcoder were extensions of the creature's tongue! Naturally they talked.

"One other thing: while you're procuring my equipment, I'd like to

see a diagram of the internal structure of your molars."

"Structure?" The tentacles were agitated.

"The pattern of enamel, dentin and pulp, or whatever passes for it in your system. A schematic drawing would do nicely. Or a sagittal section showing both the nerves and the bony socket. That tooth is still quite sensitive, which means the nerve is still alive. I wouldn't want to damage it unnecessarily."

"We have no diagrams."

Dillingham was shocked. "Don't you *know* the anatomy of your teeth? How have you repaired them before?"

"We have never had trouble with them before. We have no dentists. That is why we summoned you."

He paced the floor of the chamber, amazed. How was it possible for such intelligent and powerful creatures to remain so ignorant of matters vital to their well-being? Never had trouble before? That cavity had obviously been festering for many years.

Yet he had faced similar ignorance daily during his Earth practice. "I'll be working blind, in that case," he said at last. You must understand that while I'll naturally do my best, I can not guarantee to save the tooth."

"We understand," the Gleep muckamuck replied contritely.

Back on the tooth (after a stern warning to Junior to keep those jaws apart no matter how uncomfortable things got), equipped with a face mask, respirator, elbow-length gloves and hip boots, Dillingham began the hardest labor of his life. It was not intellectually demanding or particularly intricate — just hard. He was vaporizing the festering walls of the cavity with a thirty-pound laser drill, and in half an hour his arms were dead tired.

There *was* lateral extension of the infection. He had to wedge himself into a rotting, diminishing cavern, wielding the beam at arm's length before him. He had to twist the generator sidewise to penetrate every branching side pocket, all the while frankly terrified lest the beam slip and accidently touch part of his own body. He was playing with fire — a fiery beam that could slice off his arm and puff it into vapor in less than a careless second.

At least he thought sweatily, he wasn't going to have to use the sledgehammer here. When he ordered the drill, he had expected a mechanical one similar to those pistons used to break up pavement on Earth. To the Gleep, however, a drill was a laser beam. This was indeed far superior to what he had had in mind. Deadly, yes — but real serendipity.

Backbreaking hours later it was done. Sterile walls of dentin lined the cavity on every side. Yet this was only the beginning.

Dillingham, after a short nap right there in the now-aseptic cavity, roused himself to make careful measurements. He had to be certain that every alley was widest at the opening, and that none were too sharply twisted. Wherever the measurements were unsatisfactory, he drilled away healthy material until the desired configuration had been achieved. He also adjusted the beam for "polish" and wiped away the rough surfaces.

He signaled the Enen sub and indicated by gestures that it was time for the tank of supercolloid. And resolved that *next* time he went anywhere, he would bring a trunkful of spare transcoders. He had problems enough without translation difficulties. At least he had been able to make clear that they had to send a scout back to the home planet to pick up the bulk supplies.

Supercolloid was a substance developed by the ingenious Enens in response to his exorbitant specifications of several months before. He had once entertained the notion that if he were slightly unreasonable, they would ship him home. Instead they had met the specifications exactly and increased his assessed value, neatly adding years to his term of captivity. He became more careful after that — but the substance remained a prosthodontist's dream.

Supercolloid was a fluid, stored under pressure, that set rapidly when released. It held its shape indefinitely without measurable distortion, yet was as flexible as rubber. It was ideal for difficult impressions, since it could give way while being withdrawn and spring immediately back to the proper shape. This saved time and reduced error. At 1300 degrees Fahrenheit it melted suddenly into the thin, transparent fluid from which it started. This was its most important property.

Dillingham was about to make a very large cast. To begin the complex procedure, he had to fill every crevice of the cavity with colloid. Since the volume of the cleaned cavity came to about forty cubic feet, and supercolloid weighed fifty pounds per cubic foot when set, he required a good two thousand pounds of it, at the very least.

A full ton — to fill a single cavity. "Think big," he told himself.

He set up the tank and hauled the long hose into the pit. Once more he crawled headfirst into the lateral expansion, no longer needing the face mask. He aimed the nozzle without fear and squirted the foamy green liquid into the farthest offshoot, making certain that no air spaces remained. He backed off a few feet and filled the other crevices, but left the main section open.

In half an hour the lateral branch had been simplified considerably. It was now a deep, flat crack without offshoots. Dillingham put away the nozzle and crawled in with selected knives and brushes. He cut away projecting colloid, leaving each filling flush with the main crevice wall, and painted purple fixative over each surface.

Satisfied at last, he trotted out the colloid hose again and started the pump. This time he opened the nozzle to full aperture and filled the main crevice, backing away as the foam threatened to engulf him. Soon all of the space was full. He smoothed the green wall facing the main cavity and painted it in the same manner as the offshoots.

Now he was ready for the big one. So far he had used up about eight cubic feet of colloid, but the gaping center pit would require over thirty feet. He removed the nozzle entirely and let the tank heave itself out. The cavity was rapidly being filled.

"Turn it off," he yelled to the Enen by the pump as green foam bulged gently over the rim. One ton of supercolloid filled the tooth, and he was ready to carve it down and insert the special plastic loop in the center.

The foam continued to pump. "I said TURN IT OFF!" he cried again. Then he remembered that he had no transcoder for Enen. They could neither hear him nor comprehend him.

He flipped the hose away from the filling and aimed it over the edge of the tooth. He had no way to cut it off himself, since he had removed the nozzle. There couldn't be much left in the tank.

A rivulet of green coursed over the pink tissues, traveling toward the squidlike tongue. The tentacles reached out, grasping the foam as it solidified. They soon became festooned in green.

Dillingham laughed — but not for long. There was a steamwhistle sigh followed by a violent tremor of the entire jaw. "I'm going to . . . sneeze," the Gleep transcoder said, sounding fuzzy.

The colloid was interfering with the articulation of the Gleep's tongue.

A sneeze! Suddenly he realized what that would mean to him and the Enen crew.

"Get under cover!" he shouted to the Enens, again forgetting that they couldn't perceive the warning. But they had already grasped the significance of the tremors and were piling into the sub frantically.

"Hey — wait for me!" But he was too late. The air howled by with the titanic intake of breath. There was a terrible pause.

Dillingham lunged for the mound of colloid and dug his fingers into the almost-solid substance. "Keep your jaws apart!" he yelled at the Gleep, praying it could still pick up the message. "KEEP THEM OPEN!"

The sound of a tornado raged out of its throat. He buried his face in green as the hurricane struck, wrenching mercilessly at his body. His arms were wrenched cruelly; his fingers tore through the infirm colloid, slipping . . . .

IV

The wind died, leaving him gasping at the edge of the tooth. He had survived it. The jaws had not closed.

He looked up. The upper cuspids hung only ten feet above, visible in the light from the charmed lamp hooked somehow to his foot.

He was past the point of reaction. "Open, please," he called in his best operative manner, hoping the transcoder was still in the vicinity, and went to peer over the edge.

There was no sign of the sub. The tank, with its discharging hose, was also gone.

He took a walk across the neighboring teeth, looking for whatever there was to see. He was appalled at the amount of decalcification and outright decay in evidence. This Gleep child would shortly be in pain again, unless substantial restorative work was done immediately.

But in a shallow cavity — one barely a foot deep — he found the transcoder. "It's an ill decalcification that bodes nobody good," he murmured, retrieving it.

The sub reappeared and disgorged its somewhat shaken passengers. Dillingham marched back over the rutted highway and joined them. But the question still nagged his mind: how could the caries he had observed be reconciled with the muckamuck's undoubtedly sincere statement that there had never been dental trouble before? What had changed?

He carved the green surface into an appropriate pattern and carefully applied his fixitive. He was ready for the next step.

Now the derrick was brought up and put in play. Dillingham guided its dangling hook into the eyelet set in the colloid and signalled the Enen operator to lift. The chain went taut; the mass of solidified foam eased grandly out of its socket and hung in the air, an oddly-shaped boulder.

He turned his attention to the big crevice-filling. He screwed in a corkscrew eyelet and arranged a pulley so that the derrick could act on it effectively. The purple fixative had prevented the surface of the main impression from attaching to that of the subsidiary one — just as it was also protecting the several smaller branches within.

There was no real trouble. In due

course every segment of the impression was marked and laid out in the makeshift laboratory he had set up near the waterlift of the Gleep's mouth. They were ready for one more step.

The tank of prepared investment arrived. This, too was a special composition. It remained fluid until triggered by a particular electric jolt, whereupon it solidified instantly. Once solid, it could not be affected by anything short of demolition by a sledgehammer.

Dillingham pumped a quantity into a great temporary vat. He attached a plastic handle to the smallest impression, dipped it into the vat, withdrew it entirely covered by white batter and touched the electrode to it. He handed the abruptly solid object to the nearest Enen.

Restorative procedure on Gleep differed somewhat from established Earth technique. All it took was a little human imagination and Enen technology.

The octopus-tongue approached while he worked. It reached for him. "Get out of here or I'll cram you into the burnout furnace!" he snapped into the transcoder. The tongue retreated.

The major section was a problem. It barely fit into the vat, and a solid foot of it projected over the top. He finally had the derrick lower it until it bumped bottom, then raise it a few inches and hold it steady. He passed out brushes, and he and the Enen crew went to work slopping the goo over the top and around the suspending hook.

He touched the electrode to the white monster. The derrick lifted the mass, letting the empty vat fall free. Yet another stage was done.

Two ovens were employed for the burnout. Each was big enough for a man to stand within. They placed the ends of the plastic rods into special holders and managed to fit all of the smaller units into one oven, fastening them into place by means of a heat-resistant framework. The main chunk sat in the other oven, propped upside-down.

They sealed the ovens and set their thermostats for 2,000 degrees. Dillingham lay down in the empty vat and slept.

Three hours later burnout was over. Even supercolloid took time to melt completely when heated in a 1500 pound mass. But now the green liquid had been drained into reservoirs and sealed away, while the smaller quantities of melted plastic were allowed to collect in a disposal vat. The white investments were hollow shells, open only where the plastic rods had projected.

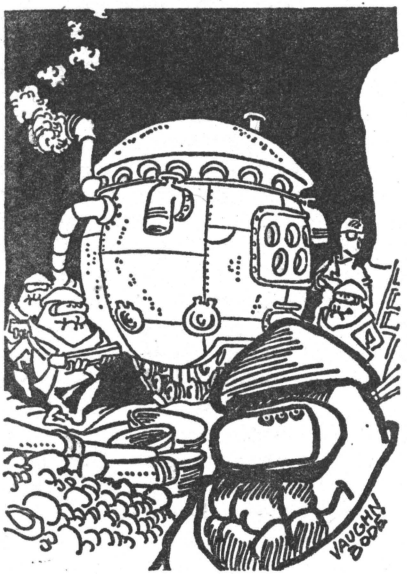
The casting was the most spectacular stage. Dillingham had decided to use gold, though worried that its high specific gravity would overbalance the Gleep jaw. It was impossible under present conditions to arrange for a gold-plated, matching-density filling, and he was not familiar enough with other metals to be sure they were adaptable to his purpose. The expansion coefficient of his investment matched that of gold exactly, for example; anything else would solidify into the wrong size.

Gold, at any rate, was nothing to the muckamuck; his people refined it through their gills, extracting it from the surrounding water on order in any quantity.

The crucible arrived: a self-propelled boilerlike affair. They piled hundred-pound ingots of precise gold alloy into the hopper, while the volcanic innards of the crucible rumbled and belched and melted everything to rich bright liquid.

A line of Enens carried the smaller investments, which were shaped inside exactly like the original impressions, to the spigot and held them with tongs while the fluid fortune poured in. These were carefully deposited in the vat, now filled with cold water.

The last cast, of course, was the colossal vat-shaped one. This was simply propped up under the spigot while the tired crew kept feeding in ingots.



By the time this cast had been poured, twenty-four tons of gold had been used in all.

While the largest chunk was being hauled to the ocean inside the front of the mouth, Dillingham broke open the smaller investments and laid out the casts according to his chart of the cavity. He gave each a minimum of finishing; on so gross a scale, it could hardly make much difference.

The finished casts weighed more than twenty times as much as the original colloid impressions had, and even the smallest ones were distinctly awkward to maneuver into place. He marked them, checked off their positions on his chart and had the Enens ferry them up with the derrick. At the other end, he manhandled each into its proper place, verified its fit and position and withdrew it to paint it with cement. No part of this filling would come loose in action.

Once again the branching cavern lost its projections, this time permanently, as each segment was secured and severed from its projecting sprue. He kept the sprues — the handles of gold, the shape of the original plastic handles — on until the end, because otherwise there would have been no purchase on the weighty casts. He had to have some handle to adjust them.

The derrick lowered the crevicepiece into the cavity. Two Enens pried it in with power crowbars. Dillingham stood by and squirted

cement over the mass as it slid reluctantly into the hole.

It was necessary to attach a heavy weight to the derrick-hook and swing it repeatedly against the four-ton cast in order to tamp it in all the way.

At last it was time for the major assembly. Nineteen tons of gold descended slowly into the hole while they dumped quarts of liquid cement into a pool below. The cast touched bottom and settled into place, while the cement bubbled up around the edges and overflowed.

They danced a little jig on top of the filling — just to tamp it in properly, Dillingham told himself, wishing that a fraction of its value in Earth terms could be credited to his purchase-price. The job was over.

V

"A commendable performance," the high muckamuck said. "My son is frisking about in his pen like a regular tadpole and eating well."

Dillingham remembered what he had seen during the walk along the occlusal surfaces. "I'm afraid he won't be frisking long. In another year or two he'll be feeling half a dozen other caries. Decay is rampant."

"You mean this will happen again?" The tentacles waved so violently that the transcoder stuttered.

Dillingham decided to take the fish by the tail. "Are you still trying to tell me that no member of your species has suffered dental caries before this time?"

"Never."

This still did not make sense. "Does your son's diet differ in any important respect from yours, or from that of other children?"

"My son is a prince!"

"Meaning he can eat whatever he wants, whether it is good for him or not?"

The Gleep paused. "He gets so upset if he doesn't have his way. He's only a baby — hardly three centuries old."

Dillingham was getting used to differing standards. "Do you feed him delicacies — refined foods?"

"Naturally. Nothing but the best."

He sighed. "Muckamuck, my people also had perfect teeth — until they began consuming sweets and overly refined foods. Then dental caries became the most common disease among them. You're going to have to curb your boy's appetite."

"I couldn't." He could almost read the agitation of the tentacles without benefit of translation. "He'd throw a terrible tantrum."

He had expected this reaction. He'd encountered it many times on Earth. "In that case, you'd better begin training a crew of dentists. Your son will require constant attention."

"But we can't do such work ourselves. We have no suitable appendages, externally."

"Import some dentists, then. You have no alternative."

The creature signaled a sigh. "You make a convincing case." The tentacles relaxed while it thought. Suddenly they came alive again. "Enen — it seems we need a permanent

technician. Will you sell us this one?"

Dillingham gaped, horrified at the thought of all that garbage in the patient's jaw. Surely they couldn't —

"Sell him!" the Enen chief replied angrily. Dillingham wondered how he was able to understand the words, then realized that his transcoder was picking up the Gleep signals translated by the other machine. From Enen to Gleep to English, via paired machines. Why hadn't he thought of that before?

"This is a human being," the Enen continued indignantly. "A member of an intelligent species dwelling far across the galaxy. He is the only exodontist in this entire sector of space and a fine upstanding fellow, at that. How dare you make such a crass suggestion!"

Bless him! Dillingham had always suspected that his hosts were basically creatures of principle.

"We're prepared to offer a full ton of superlative-grade frumpstiggle . . . . ." the muckamuck said enticingly.

"A full *ton?*" The Enens were aghast. Then, recovering: "True, the Earthman *has* taught us practically all he knows. We could probably get along without him now . . . ."

"Now wait a minute!" Dillingham shouted; but the bargaining continued unabated.

After all — what is the value of a man, compared to frumpstiggle?

END

OCEAN ON TOP

by HAL CLEMENT

Illustrated by CASTELLON

These people couldn't be breathing water a mile under the sea — but the facts were clear. They were!

What has gone before -

Three of my friends had disappeared in a single small area of the Pacific, just north of Easter Island. Like me, all worked for the Power Board, the group which was responsible for rationing man's severely limited supply of energy and which was, because of that fact, practically the world government.

Bert Wehlstrahl had vanished a year before, and Joey Elfven ten months later. Marie Wladetzky had gone two weeks after Joe, presumably in search of him, and I was principally interested in finding Marie. (Don't ask for my name; it's bad enough to have to listen to it occasionally, and I'm certainly not going to put it in print.) Since the two men were police workers of a

sort, it was likely that their disappearance was not accidental, so my first step was to search the ocean bottom in the key area from a camouflaged vantage point — actually one of the spherical escape tanks used in ordinary cargo submarines, somewhat modified for my purpose.

I found evidence of rationing violation the moment I reached the bottom — I almost landed on it. A mile down there was an area actually lighted artificially and apparently concealed under a flat, translucent surface which I interpreted as some sort of fabric. Seeing energy wasted to light the outside of a tent roof was bad enough; the sight of a swimmer in what looked like ordinary scuba gear under five thousand feet of sea water was far worse. The technological capacity so demonstrated suggested something much more serious than an ordinary black-market energy gang.

My tank was not very maneuverable, but I managed to get myself "captured" and towed to an entrance to the undersea base. Here I dropped to sonar transponder, which should guide Board enforcement forces to the spot, released my ballast and headed for the surface with the comfortable certainty that the swimmers could not follow far because of the pressure gradient.

This belief proved wrong. One of them hung onto my tank and by pounding on it was able to guide a sub to the scene. After doing my best to get the nearly helpless tank away, I was really captured and dragged back to the bottom.

The tank was brought to a lighted pit in the ocean floor. There were no door or air locks. The swimmers, who had loaded my tank with enough ballast to keep it down even if they lost hold again, towed me into a tunnel which led from the entrance pit, along it for a short distance, and into a flooded room. Then they removed their helmets.

VIII

It must be obvious from the things I've already said that I'm no psychologist, though I've read a little about the field. I've been told that it's possible for a person to deny flatly and categorically the evidence of his own senses, if their reports disagree violently enough with what he thinks he knows. In fact I've met people who claim that the ability to do this is all that keeps most of us sane. Until that moment, I'd doubted both statements. Now I'm not so sure.

I'd seen us come in from definite, obvious sea-bottom conditions to the place where we now were. I had not seen anything even remotely like a door, valve or lock either open before us or close behind us, and I had certainly been looking for one. To the best of my knowledge and belief, therefore, my tank was now in a room full of sea water at a pressure corresponding roughly to a mile's depth.

I had seen the people now in the chamber around me swimming in the sea outside — the same people, for the most part. I had seen them, continually or nearly so, as they brought me in. They, too, were still

in high-pressure water and had been all along. I was forgetting for the moment the clarity with which I had been able to see those same faces in the water outside, but even if I'd remembered I probably wouldn't have seen the relevance just then.

I had seen them remove the helmets, just now, still apparently in high-pressure water. No, I couldn't believe all of that at once. I was missing something, but I couldn't believe it was recently an observable fact. I'd been battered around during the storm and had certainly missed the technique which had been used in finding me, but I hadn't been unconscious, then or later. I was short on sleep, but surely not so dazed by it as to have missed any major happenings. I had to believe that my observations were reasonably complete. Since I was, in spite of that belief, clearly out of phase with reality, there was something I just plain didn't know. It was time for more education.

I wasn't too worried about my personal future; if there had been any intent to dispose of me, it could have been done earlier with much less trouble — and as I've said before, I couldn't believe, deep down, that people would do anything final to me anyway. If you think that doesn't jibe with the way I've admitted I felt a few minutes before, *you* ask a psychiatrist.

I had a couple of days of breathing still in the tank, and presumably before that time was up my new acquaintances would do something about getting me out — though I couldn't offhand see what it would be, now that I thought of the problem. Any way I looked at it, though, the next move seemed up to them. Maybe that shouldn't have been comforting, but it was.

Apparently they felt the same way — not comforted, I mean, but that they should be doing something. They were gathered in a group between the tank and the door we had come through, apparently arguing some point. I couldn't hear their voices, and after a minute or two I decided they weren't actually talking; there was a tremendous amount of gesticulation. They must have a pretty comprehensive sign language, I decided. This was reasonable if they spent much of their time, and especially if they did much of their work, under water. I couldn't see why they used it now, since my common sense was having trouble admitting that they were still in water.

In any case, they seemed to reach an agreement after a few minutes, and two of them went swimming — yes, swimming — off down one of the smaller shafts.

It occured to me that even if they couldn't talk under the circumstances, they should be able to hear.

So I tried tapping on the walls of the tank to get their attention — gently, in view of my experience with tank-tapping so shortly before. Evidently they could hear, though they had the expected difficulty in judging the direction of the sound source and it took them a few minutes to recognize that I was responsible. Then they swam over and

gathered around the tank, looking in through the ports. I turned on my inside lights again. None of them seemed surprised at what they saw, though a continuous and animated gesture conversation was kept up.

I tried yelling. It was hard on my own ears, since most of the sound echoed from the walls of the tank, but at least a little should get through. It evidently did; several of them shook their heads at me, presumably indicating that they couldn't understand me. Since I hadn't used any words yet, this wasn't surprising. I tried telling them who I was — not using my name, of course — in each of the three languages in which I'm supposed to be proficient. I attempted to do the same in a couple of others in which I make no claim of skill. All I got was the head-shaking, and two or three people swam away, presumably dismissing me as a hopeless case. No one made any obvious attempt to communicate with me by any sort of sign or sound.

Eventually I felt my throat getting sore, so I stopped. For another ten minutes or so nothing much happened. Some more of the crowd swam away, but others arrived. There was more of the gesture talk; no doubt the newcomers were being given whatever there was to tell about me.

All the new arrivals wore coveralls more or less like those I'd first seen outside, but some of these were in fancy colors. I got the impression that it was the difference between work clothes and white-collar suits, though I can't give any objective reason for the notion.

Then some new swimmers, less completely dressed, appeared from one of the tunnels, and things began to happen. One of them worked his way through what was by now quite a crowd, came up to the tank, and tapped it gently. It was refreshing to have one of them try to get my attention instead of the other way around, but the real jolt came when I recognized the newcomer.

It was Bert Whelstrahl, who had disappeared a year before.

IX

He recognized me, too; there was no doubt about that. He put on a larger-than-life-size grin the moment he got a good look through my port, gave another bit of knuckle play on the tank and then drew back and raised one eyebrow in an oh-no-what-do-we-do-with-this-one expression. I decided the situation justified using up what was left of my voice and called out, "Bert! Can you hear me?"

He nodded, and made a palm-down gesture which I interpreted as meaning that I didn't need to yell so loud. That was a relief. I cut volume and after a bit of trial and error found that he could hear me when I spoke only a little louder than a normal conversational tone. I began to ask questions, but he held up a hand to stop me and began making some more signs. He pinched his nose shut, holding the palm of his hand over his mouth at the same time; then he held his left wrist in front of his face as though he were looking at a watch, though he wasn't wearing one.

I got his meaning clearly enough. He wanted to know how much breathing time I had left. I checked my panel, did a little mental arithmetic and called out that there was about fifty hours still in my tanks.

Then he stuck a finger in his mouth and raised his eyebrows; I answered graphically, which was easier on my throat, by holding up the partly emptied box of dextrose pills. He nodded and put on a thoughtful expression. Then he hand-talked for two or three minutes to the people nearest him, the head motions which they threw in occasionally being the only part I could understand. With everyone seemingly agreed, he waved at me and vanished back into the tunnel he'd come from.

Nothing more happened for the next half hour, except that the crowd grew even larger. Some of the newcomers were women, though I couldn't tell whether the one I had seen outside was among them. I hadn't seen her closely enough to recognize her face. Some of them certainly weren't; apparently swimming doesn't have to be the aid to figure control some people claim it to be.

Then Bert came back. He was carrying what looked like an ordinary clip board, but when he held it up to the port I saw that the sheets on it weren't paper. He scratched on the top one with a stylus, which left a mark. Then he lifted the top sheet, and the mark disappeared. I'd seen toys of that sort years ago; apparently he'd spent some time improvising this one. It seemed a good and obvious solution to the problem of writing under water, and I wondered why none of the others had thought of it.

He had to print fairly large letters in order for me to read clearly, so even with the aid of the pad our communication was slow. I started by asking what the whole business was about, which didn't help speed, either. Bert cut me off on that one.

"There isn't time to give you the whole story now," he wrote. "You have a decision to make before you run out of air — at least twenty hours before, in fact. It has to do with whether you go back to the surface."

I was surprised and made no secret of it.

"You mean they'd let me go back? Why did they go to all that trouble to get me down here? I was already at the surface."

"Because your decision and its details will affect a lot of people, and you should know who and how. They didn't know you were a Board official until I told them, but it was obvious your story when you got back would get to the Board anyway. It's rather important just what the Board hears about this place."

"I suppose it's a case of being released if I promise to tell nothing. You know I couldn't do that."

"Of course not. I couldn't either. That's not what they expect. They realize you couldn't go back without telling; there would be no rational explanation of where you'd been or why. You can tell everything that's happened to you and that you've

seen, but there are other things they want to be sure you include. We must make sure you know them."

I jumped on the pronoun.

"You switched from 'they' to 'we.' Does that mean you've chosen to stay down here yourself?"

"Yes." This was a nod, not a written word. "For a while, anyway," he added with the stylus.

"Then you've managed to stomach the morals of a bunch of people who waste thousands of kilowatts just lighting up the sea bottom? Have you forgotten your upbringing, and why — "

He interrupted me with a violent shake of his head and began to write.

"It's not like that. I know it looks terrible, but it's no more wasting power than the Board is wasting the sunlight that falls on the Sahara. Maybe there'll be time to explain more before you decide, but you're enough of a physicist to see that analogy or you wouldn't be a Board worker in the first place."

I spent some time digesting that one. The Sahara point was understandable. The Board has always resented having to let all that solar energy go unused. Their stock difficulty, of course, is deciding when it's worth while to put energy into a project in the hope of getting more back. It's been the standard belief for decades that man's only real hope lies in hydrogen fusion, and most of the authorized speculative expenditure is for research in this direction. From time to time, though, a very eloquent plea for a solar-energy project comes in. Sometimes an especially promising one gets approved, and one or two of these have even paid off since I've been working for the outfit.

I couldn't see, though, how natural sunlight shining on a desert could compare with artificial light shining on the sea bottom. I said so.

He shrugged, and began to write.

"The energy here comes from below the crust — straight heat, though I can't properly call it volcanic heat. If they don't keep their working fluid circulating down to the collector and get the heat out of it when it comes back up, the hot end of the unit will melt. Your real complaint, if you must have one, is that they don't tie into the planetary power net and observe the rationing rules like everyone else. The reasons they don't are very good, but there isn't time to give them now — they call for a lot of history and technology which would take forever by this scribble-board. What I'm supposed to tell you is what you have to know if you go back up."

"I take it that Joey and Marie decided to stay down here."

"Joey hasn't been here. Marie doesn't believe me when I tell her that and is still arguing. No decision has been made in her case."

"But if Marie is still here with her future unsettled, why did you say I have to make up my mind in thirty hours or so? She's been down here for weeks. Obviously you have facilities to take care of us."

"We don't 'have' them. They were made especially for her, as far as food and air are concerned. She's

still living in her sub. It would take more work to get supplies into your tank, which doesn't have locks or air-charging valves. Besides, you're not in quite as good a position as Marie to have people go out of their way for your convenience."

"Why not?"

"You're neither female nor good-looking." I had no answer to that.

"All right," was all I could say. "Tell me the official word, then. What am I supposed to know if I go back?"

"You're to make sure your boss on the Board knows that we *do* have a large energy supply down here —"

"That I'd tell him anyway."

"— and that it isn't being rationed."

"That's also pretty obvious. Why do you want those points stressed? I can't think of any better way to get this place raided."

"Believe me, it wouldn't be. If the Board thought this was just another bunch of powerleggers you'd be right, of course; but fifteen thousand people don't make a gang. They make a nation, if you remember the word."

"Not pleasantly."

"Well, never mind that phase of history. The point is that the Board has hushed up this thing in the past and can be counted on to do it again if they know what they're doing."

"Hush it up? You're crazy. They'd do just one thing to an operating power plant, even if it was illegally built. They'd tie it into the network. The idea that they'd let it go on running independently, outside rationing, is dithering."

"Why do you suppose you never heard of this place before? It's been here eighty years or more."

"I would suppose because nobody's found it. That's likely enough. The bottom of the Pacific isn't the most thoroughly covered real estate on the planet."

"It's been found many times. Several in the past year, if you'll stop to remember. Twelve times that I've heard of since this place was built it has been reported to the Board as a finished, operating project. Nothing further has come of it."

"You mean the Board knows where this thing is and still lets me come looking for you and — "

"They may not know the location. I'm not sure the present Board knows anything; I don't know what was done with the earlier records by their predecessors. The last time was over fifteen years ago."

"You know all this for fact?"

"Objectively, no. I've read it in what seem credible reports. I'm not qualified as a historical researcher and didn't make professional tests. It all seems very probable to me."

"It doesn't to me. Have you told all this to Marie?"

"Yes."

"Does she believe it?"

"She doesn't believe anything I say since I told her that Joey has never been here. She claims I'm a dirty liar and a traitor to mankind and an immoral skunk and that we disposed of Joe because he wouldn't swallow our ridiculous falsehood."

"Would I be able to talk to her?"

"You'd have my blessing, but I don't see how. She's a long way from here, since her sub arrived at a different entrance. I don't think it would be possible to get your tank there without taking you outside again; it would take longer than you can spare, and I'd have trouble finding enough people to get you carried.

"Can't whoever runs this place assign a crew?"

"How do you think we're run? There isn't anyone who could order a person to do such a thing, since it's more for your pleasure and convenience than public necessity. Besides, I told you there isn't time."

I pondered that for a little while. His remark about how the installation was run was a little surprising, but this was hardly the time to go into local politics. He'd started to give me a more interesting impression, anyway; if what he'd said could be credited, it seemed almost as though it would be better for these people if Marie and I left than if we stayed. Why was the choice being offered, then? I asked Bert, a little indirectly.

"What will your friends do if I don't go back up? More people will come to look for me, you know. Even if I hadn't reached the surface and started my rescue set, which I did, the Board knows where I was going and why."

He shrugged again. "No one cares how many come down. Unless there's a whole fleet at once, we can pull 'em in and give them the same choice we're giving you. It's happened often enough, as I said."

"And suppose a whole fleet does come and starts wrecking those lights and that tent or whatever it is without wasting time looking for me or Marie or anyone else? Sooner or later if folks keep disappearing down here that's what will happen."

"I'm not in on all the thoughts of the Council here," he answered, "and I don't know whether they've thought much of that point. I repeat, there have been quite a few people who stayed down here without getting the Board very excited. Personally, I think they'd just put this part of the Pacific off limits to the general public long before they'd waste energy sending a fleet of subs down here. In any case, that's the Council's worry. The current point is that you and Marie do have the choice and will have to make it of your own free will."

"What if I refuse to commit myself?"

"Once you've been told what is necessary, we'll simply turn you loose at the gate you came in by. You're hardly in a position to hang on and refuse to go up. No problem." He gestured toward the direction from which we had come along the tunnel. "Speaking for myself, I'd like to have you stay — and Marie, of course. I do have some good friends down here now, but they're not quite the same as old ones."

I thought for a few seconds more and then tried to catch his eye

through the port while I asked the next question.

"Bert, why did you decide to stay down here?"

He simply shook his head.

"You mean it's too long to explain now, or you don't want to tell me, or something else?" I persisted.

He held up one finger, then three, but still wrote nothing.

"In other words, I'm going to have to make up my mind entirely on my own." He nodded emphatically. "And Marie, too?" He nodded again.

I could think of only one more question likely to be helpful, and I threw it at him.

"Bert, *could* you go back up above now if you changed your mind about staying? Or is what they did to let you breathe water impossible to reverse?"

He smiled and used the stylus again.

"We're not breathing water; that analysis misses on two counts. They did make an irreversible change, but it's not a very serious one. I could still live at the surface, though the shift back to air breathing would be somewhat lengthy and complicated."

"You just said you weren't breathing water!"

"I repeat it. I'm not."

"But you just said — " He held up his hand to stop me and began writing again.

"I'm not trying to tantalize you. The Council isn't dictatorial by nature, or even very firm, but it feels strongly and unanimously that the details of how we live here shouldn't be discussed with anyone who hasn't committed himself to staying. I may have said more than they'd strictly like already, and I'm not going any farther."

"Do the people out there with you disagree with the Council?"

"No. The feeling on that point is pretty uniform among the populace."

"Then why did you take the chance of telling me as much as you did?"

"Most of them were in no position to see what I wrote, none of them could have read it, and none of them can understand your spoken words."

"Then the native language here isn't — "

"It isn't." He'd cut me off again with a wave of his hand before I even named a language.

"Then why do you worry about disobeying this Council on the matter of telling me things?"

"Because I think they're perfectly right."

That was a hard one to argue, and I didn't try. After a minute or so, he wrote another message.

"I have work to do and have to go now, but I'll be back every hour or two. If you really need me bady, pound on your tank — not too hard, please. Even if no one is in sight, which isn't likely, you can be heard for a long distance, and someone will send for me. Think it over carefully; I'd like you to stay, but not if you're not sure you want to." He laid the clip board down beside the tank, and

swam off. Quite a few of the others also disappeared, though they didn't all take the same tunnel. The small number remaining seemed to be those who had arrived most recently and hadn't yet given their eyes a real fill of the tank. They did nothing either interesting or distracting, though, and I was able to buckle down to heavy thinking. There was plenty of it to do, and I'm rather slow at the business sometimes.

There was no problem about the decision, of course. Naturally I would have to go back to report.

Staying here might, as Bert had said, merely pass the buck to another investigator, but sending another one down would be a clear waste of power no matter what trick they dreamed up to get him there. Also, I wasn't nearly as sure as Bert seemed to be that the Board wouldn't waste a few tons of explosive on this place if they found it and had reason to believe it had killed off three of their agents. The problem was not whether to go back, but when; and the "when" depended on what I could manage to do first.

What I *wanted* to do was make contact with Marie. It would also be nice to find out more about Joey, if information of any sort was to be had. I didn't want to believe that Bert had lied about him, and it was certainly possible that Marie's disbelief stemmed from her reluctance to accept the idea that Joe had disappeared in a genuine accident. On the other hand, she was by no means stupid. I had to allow for the possibility that she might have better reasons for doubting Bert.

Joe, like Marie, had had a one-man sub. He could have found out things these people did *not* want known at the surface. After all, what they seemed to want Marie and me to carry back if we went was information, or propaganda, designed to discourage the Board from checking further.

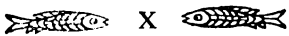
But wait a minute. That was true only if Bert were right about the Board's preferring to hide the word of what went on down here.

If he were wrong — if my own admittedly prejudiced idea of the reaction were closer to the truth — there'd be no question of suppression, and the Board would be down raiding this place within a day of the time either of us got back. That could hardly be wanted by this "Council" Bert was talking about. Maybe there really was something in what he had said.

But there still could be things these people didn't want known, whether they were feeding Bert a line about the Board or not. Joey could be here or could have been killed, though the latter went very much against the grain to believe. Even if Bert had been right about his never arriving — perhaps *especially* if he were — there was Marie to worry about, too. If she were feeling stubborn she'd never leave of her own free will, and they couldn't just turn her loose to float up, the way they could me. She had a sub. Of course, now that

I was here they could cripple her boat, make sure it was low on ballast, and turn us adrift at the same time; maybe I should wait for that. Maybe —

If you're getting confused by the way I tell all this you have an idea of the way I felt. If you remember that my memory has done some editing and organizing since all this actually happened, you may have an even better idea. It got to be more than I felt like taking. I suddenly realized that I hadn't had much sleep for a long, long time. The tank wasn't a comfortable place for that, but there are times when one doesn't bother with trifles. I slept.



I got in a good, solid eight hours, according to the clock. When I woke up, it was with the conviction that I couldn't plan anything until I had figured out how these people managed to live as they did, what would have to be done to me if I agreed to stay and most particularly what I would have to arrange to do myself if, after agreeing to stay and being processed, I chose to leave.

Bert had made it clear that he wasn't going to tell me, but he had admitted saying a little more than he should have, so there might be a chance of my figuring it out for myself.

My memory is supposed to be good. Just what had he said that might mean anything?

The most striking remark was his denial that he was breathing water. Also, there had been something else in that sentence — what was it? — "that analysis misses on two counts." What could that mean?

Grammatically speaking, the most obvious implication of the first phrase was that the liquid now around us wasn't water. Was this possible? And if it were, was there any other evidence?

Yes, to both.

Many liquids don't mix well with water — non-polar liquids in general. Carbon tetrachloride and all the oils, to name familiar ones. However, if this were such a liquid it must be at least as dense as water and probably denser. Not the general run of oils, therefore. Not carbon tet, either, since it's highly poisonous. The density had to be high because there was no door or valve between this place and the ocean, and oil would have floated to the surface of the Pacific and been spotted long ago.

On that basis, the interface between water and my hypothetical liquid would probably be at the entrance. Memory supported the idea.

As the tank had reached the level of the pit's mouth on the way in, the subs had hooked more ballast to it — obviously necessary if the new liquid were denser than water and the tank were just barely heavy enough to sink in the latter. The swimmers, too, had taken on more ballast — those "tool kits!" Of course. If they had been tools, why put them on coming in from the sea bottom? Or if outside were a

place for recreation only and tools were only used inside, why not keep them at the place they were used? If there had been room in the tank, I'd have kicked myself for not seeing that sooner — or rather, for not following up the doubts I had had at the time.

All right, first working hypothesis. We're in a non-polar, non-poisonous liquid, somewhat denser than water. I think I see why, but let's not be too hasty.

So that was the second point on which my analysis had been wrong. The people, as Bert had said, weren't breathing water — because they weren't in water and because they weren't breathing. I still had trouble believing it, but the logic went marching on.

The basic idea was clear enough. If people didn't breathe, they didn't need gas in their lungs. If they didn't have gas in their lungs, they wouldn't be bothered by pressure changes. Well, qualify that. They'd have to fill their middle ears and sinuses with liquid, too. If the liquid had about the same compressibility as water (question: why not use water? Tabled for later consideration) then a change in depth would mean no significant volume change in any part of the body.

A few details needed filling in, though. Granted that it would be convenient to be able to do without breathing, how was it managed?

Well, why does one breathe, anyway? To get oxygen into the blood. Will anything do as a substitute for oxygen? Categorically no. Element number eight is the one and only oxidizing agent the human metabolism is geared to use — and "geared" is a rather good word in that connection.

But does the oxygen have to come in gas form? Maybe not. If my schooling hasn't gone by the board, hemoglobin is only interested in O-two molecules, not oxide or peroxide ions or ozone; but up to the time the stuff is delivered to the hemoglobin some of the others are at least conceivable. The first thought would be some sort of food or drink. Could something be taken into the stomach which would release oxygen molecules? Certainly. There was hydrogen peroxide. The oxygen released didn't start as diatomic molecules, though it got to that state quickly enough. I couldn't picture anyone in his right mind drinking a slug of peroxide, for several reasons, but the principle seemed defendable so far.

Could the oxygen get from the stomach to the blood stream? Not directly, but it could take the same path as the other foods. Into the small intestine and through the villi. I seemed to remember that there is a lot less absorbing surface here than in the lungs, but under the pressure of this depth that might not be a serious lack.

Working hypothesis two, therefore, is that these folks eat or drink something that gives off oxygen gradually. If, under this pressure, the gas always remained in solution, the body would still be relatively indifferent to pressure change. Though

my outside passenger of a few hours back might have been in serious trouble after all if he'd gone all the way to the surface with me.

How about carbon dioxide elimination? No problem. Out through the lungs, as usual, and into immediate solution in the surrounding liquid. Maybe that was why the liquid wasn't water; they might be using something that took up CO_2 better, though under this pressure water certainly should be adequate. Of course, with body fluids under the same pressure, it might be more a matter of complex ion equilibrium than simple solubility; perhaps pH control had been necessary. It certainly was *inside* the body, and this whole idea seemed to be lessening the differences between inside and out.

All this suggested that if I chose to stay down here, they would presumably start pressurizing me. Sometime during the process I'd be given a meal, or a drink, of the oxygen source. That, as far as I could see, would be it, barring minor mechanical tricks for filling my sinuses and middle ears with liquid.

How about getting back to breathing habits? The pressure would have to come down again. The oxygen source in the stomach — yes, that would present a difficulty. If it were still giving off the stuff, and pressure got down near one atmosphere — hmph. Very close timing, doing the job just as the stomach oxygen ran out? Mechanical assistance such as an artificial lung between the time the inside source gave out and natural breathing was resumed? Either way, it would be difficult for me to manage alone, if the need ever arose.

In any case, I could now do some tentative planning, always realizing my hypothesis might be all wet. I was fond of them, though, and felt that it would be at most a case of having to modify details as more information came in. It was a pleasant sensation while it lasted.

Under the circumstances, then, it seemed best to tell Bert that I was staying and waste as little time as possible getting out of this bubble so I could do something useful. I'd developed my own moral standards — made my private Loyalty Oath to Mankind, if you like — long ago, so there'd be no conscience question if they wanted me to make some sort of local declaration before they'd accept me. Probably they wouldn't; things like that had been worn too thin to be meaningful back in the days when people thought their chief danger was political difference rather than energy shortage. Lodges and similar private groups still used formal oaths, but even these didn't carry quite the same implications that they used to.

I wondered suddenly why my mind was wandering off in that direction — after all, my plan might be a little deceitful, but it was in a good cause, and my conscience was clear enough — and got back to immediate problems.

Details, of course, would still have to wait. I'd have to learn the local geography, especially the way to Marie's submarine. I'd have to find

out just how much freedom of action I was going to be allowed. Bert seemed to come and go at will, but he'd been here for a year. In that connection, probably I'd be expected to earn my living in some fashion; if finding out the details I needed and working up a plan to get Marie and me back to the surface, all took very long then I'd probably have to do something of the sort. What sort of work would be both useful down here and within my powers was something else for the future to tell.

Right now, then, the thing to do was wait for Bert, or send for him, and give him the word. Waiting would probably be better. There was no point in looking too eager. He'd said he'd be around often, and no doubt had been while I was asleep. He'd be bound to expect me to wake up before long.

I waited, like a monkey in a zoo — or perhaps more like a fish in an aquarium.

XI

It was about half an hour before he showed up. He glanced in through one of the ports, saw that I was conscious and picked up the writing pad.

"Been doing any thinking?" was his opener. I nodded affirmatively.

"Good. Made up your mind?"

"I think so," I called back. "I — " I hesitated. Part of it was for effect, but part of it was genuine uncertainty. I could be wrong in *so* many ways. Then I stiffened up.

"I'm staying."

He looked a little surprised and started to write. I went on before he had finished. "At least, I'm staying if you can tell me one thing for certain."

He cleared his pad and looked at me expectantly.

"Do you genuinely believe — I'm not asking do you *know*, just do you *believe* — that these people are justified in keeping out of the power net and the rationing system?"

Bert's face took on an annoyed expression as he wrote.

"I told you you'd have to make up your mind by yourself. I won't take the responsibility."

"I expect to make it up myself," I retorted, "but not without data. You say there's too little time for you to tell me everything I'd like to know, and I'm arguing that. I'm asking for a conclusion of yours, not even a piece of information you're not supposed to give me, just a conclusion — an opinion — as a summary of information I can't get. Did you make your decision on as little knowledge as I have now?"

He shook his head negatively.

"Then I'm sorry if you read my question as a reflection on your morals, but I still want an answer."

He frowned thoughtfully for half a minute or so and looked at me a little doubtfully. I repeated my question, to be sure he understood.

"I really do believe they have the right idea," he wrote at last. I nodded.

"All right, then I'm staying. How long will it take to get me out of this coconut shell?"

"I don't know." His writing was slow and interrupted by pauses for

thought. "It's not what you'd call a standard procedure. We're more used to our guests coming in submarines, which have pressure locks or at least some sort of port. I'll tell the Council, and we'll hunt up some engineers who have time to spare. I'm sure it can be done."

"You mean — you mean it may take a long time? Suppose it takes longer than my air supply?"

"Then I suppose we'll just have to shove you outdoors anyway. If you still want to badly enough, you can always come back in a sub, the way Marie did. I'll go start things moving."

"But why didn't you mention this before? I thought — well — "

"Some things really shouldn't need mentioning. Where in the world would you expect to find ready-made equipment for taking a man out of a high-pressure escape shell while it was still in a high-pressure environment? Think it over." He put down the pad and was gone before I could think of a good answer to that one.

In fact he had come back, nearly an hour later, before I could think of one. I still haven't.

Bert, on his return, had better news than I had been afraid he might. The Council, or such of them as he had found — I was getting an idea that it was a body of rather fluid composition, and that the usual way of getting things done officially was to find and deal with one's own chosen quorum of members — had approved my application for citizenship, if it could be called that, with no argument. Several engineers in the group had been interested enough in the problem I represented to go to work on it at once. They were at the task now and might be expected to come up with something shortly.

That was encouraging. I'm an engineer of sorts myself, though I work at it only in its incidental connection with my main job, and every idea I had thought of ran into a blank wall. This was usually a matter of basic procedure. I couldn't see how welding, or high-speed drilling, or any of several other ordinary operations you take for granted in machining and handling work could be done in a liquid environment under a pressure of more than a ton to the square inch. Most tools, for example, have high-speed motors; high-speed motors are a little hard to conceive with their moving parts bathed in an even moderately viscous fluid; and under that sort of pressure, how do you keep the fluid out?

Of course, if these people had been down here the eighty years or so that Bert had mentioned, they should have learned the basic tricks for the environment, just as men had learned space engineering the hard way. I wished I knew how they were going about my problem, though.

I didn't find out in detail, but it didn't take them too long. About eighteen hours — a very boring eighteen hours — after Bert had brought the news, he came back with a team of helpers and began moving the tank. It was quite a trip. We went back outside and travelled

half a mile or so to another, larger entrance. Inside it there were several large corridors, instead of just one, opening from the main chamber.

They towed me down one of these for a distance and stopped by a pair of the first genuine locks I had seen since my arrival.

One was quite ordinary, and I barely glanced at it; the other was circular and just about large enough for my tank. It was located in the same wall as the smaller lock, about twenty yards away from it. It was opened as we approached by a couple of the party who swam on ahead, and the tank was juggled through. The wall in which the door was hung turned out to be several feet thick, and the door itself but little thinner; I judged that the room beyond was the one to be depressurized.

The chamber itself was fairly large. One side was crowded with apparatus, the most recognizable items being an operating table with broad restraining straps and a set of remote-control hands much finer than I was used to seeing on work subs.

The larger part of the room, in which the tank had been placed, was almost bare, and it looked very much as though the operating room had originally been much smaller. There were signs that a wall as thick as the one I had come through had been removed from between the spot where I now was and the place where the table and its auxiliary gear stood. I would have liked to see the tools that had done the job.

My guess, as it turned out, was correct; the smaller section had been the original conversion room; the smaller lock leading into it could be connected to the hatch of a visiting sub. The whole trouble had been that my tank had no hatch; it normally opened by bisection.

Bert wrote instructions for me while the others were getting out of the place.

"When we're all gone and the door is sealed, the room will be pumped down to surface pressure. A green light will flash over the table when it's down, but you'll know anyway — you'll be able to open your tank. When you can get out, go over to the table and get onto it. Fasten the straps around your body and legs. It doesn't matter whether your arms are free or not. When you're tight to the table, press the red signal button you can see from here." He indicated the button to me. "It's within reach of your right hand, you see. A container of sleeping medicine will be delivered by one of the hands. Drink it and relax. Nothing more can be done while you're conscious."

"Why not?"

"You'll have to be plugged into a heart-lung machine during the change. Don't worry. It's been done many times before. Once you're out of that tank and onto the table, the only unusual problem you offer will have been solved. All right?"

"I see. All right." He put down his pad and swam out through the ponderous lock, which swung slowly shut. I hadn't seen any special dogs or clamps on it, but it opened

out into the corridor and wouldn't need any. With its area, once the pressure started down in the room nothing much short of an earthquake could open it.

I could tell when the pumps started; the whole place quivered, and the vibration carried through to the tank very easily. I spent some time estimating the work that would have to be done to empty a room of this volume against a one-mile head of sea water and a little more in wondering how the mysterious fluid that was replacing water would behave when the pressure came down. If it had a high vapor pressure there would be a purging job on top of the pumping one — no, not necessarily, come to think of it; the stuff must be physiologically harmless, so probably the vapor could be left in the room. Of course if it were flammable it might make trouble when they put oxygen in for me to breathe. Well, they were used to that problem and had been for decades. I needn't worry about it.

In spite of all the free energy which seemed to be around, it took nearly half an hour to empty the place. The liquid level went down steadily. The surface, when it appeared, remained smooth. There was no boiling or other special behavior. It might as well have been water. They took no pains to get the last of it out; there were several puddles on the rather uneven floor when the light flashed.

I wasted no time opening the tank; I'd been in it for a long time and couldn't get out too fast. My ears hurt for a moment as the hemispheres fell apart; pressures had not been perfectly matched, but the difference wasn't enough to be serious. Once out I slowed down. My arms and legs were badly cramped, and I found it almost impossible for a few moments to walk even as far as the table. I spent several minutes working the kinks out of my limbs before I took the next step.

The table was comfortable. Anything I could have stretched out on, including the stone floor, would have been comfortable just then. I fastened the broad, webbed strap about my waist and chest, then of course found I couldn't reach down to the ones for my legs. I undid the first set, took care of my legs, refastened the upper strap and finally was ready to push the signal switch.

As promised, one of the mechanical hands promptly extended toward me with a beaker of liquid and a flexible tube to let me drink it lying down. I followed orders, and that's all I remember about the process.

XII

I woke up with a reasonably clear head. I was lying on a bunk in a small room that contained two other beds and nothing much else. No one else was around.

Someone had removed my clothes, but they were folded in a sort of hybrid offspring of a laundry basket and a letter rack near the head of the bunk. Another similar affair held a pair of trunks such as I had seen worn by many of the men around my tank. After a moment's thought

I put on the trunks; my other garments weren't made for swimming. I got out of the bunk and stood on the floor, though my head felt a little funny.

It occurred to me that I had no business feeling enough weight to let me stand, under the circumstances; I was presumably immersed in a liquid denser than water, and therefore denser than my body. A thought crossed my mind; I rummaged in the pockets of my old clothes, found a jacknife, and let go of it.

Sure enough, it fell past my face. I was standing on the ceiling, as were the bunks.

I tried swimming after the knife, which had come to rest a couple of feet out of reach on the floor/ceiling. It was quite an effort, though not by any means impossible. It was obvious why the people I had seen wore the ballast belts. I didn't see any of those around, though; for the moment at least, I'd have to walk if I wanted to go anywhere. This promised to be rather inconvenient too, since the liquid was fairly viscous, though less so than water. Also, the architecture wasn't designed for walkers; one of the doors to the room was in a wall and fairly accessible, but the other was in the floor — that is, the floor toward which my head was now pointing and on which my jackknife had come to rest. Under the circumstances I decided to wait until Bert or someone showed up with ballast and swim fins.

The decision was helped by the fact that I still didn't feel quite myself, even aside from the difference of opinion between my eyes and my semicircular canals as to which way was up and which was down. As a matter of fact, the canals couldn't seem to make up their minds at all on the matter, and it suddenly occurred to me that some surgery must have been done there as well. They could not possibly have been left half full of air — or could they? How strong was bone, and how well surrounded by it were the canals, anyway?

I felt around and found several places on my neck and around my ears where the smooth plastic of surgical dressing covered the skin, but that didn't prove much. It had been obvious all along that some work around the ears would be necessary.

I felt no desire to breathe; they must have slipped a supply of their oxygen-food into me sometime during the procedure. I wondered how long it would last.

It suddenly occurred to me that I was very much in the power of anyone who chose to exercise it, since I hadn't the faintest idea where to get more of the stuff. That was something I'd have to discuss with Bert very shortly.

I tried forcing myself to breathe. I found I could squeeze liquid slowly out of my lungs and get it back equally slowly, but it hurt and made me feel even dizzier than being right side up and upside down simultaneously. The liquid went into my windpipe; I could feel it, but there

was no tendency to cough. I still think that must have been one of the trickiest parts of the conversion procedure, considering the nerve and muscle activity which coughing involves.

The presence of liquid in my windpide, expected as it was, raised another question. I certainly couldn't talk, and I didn't know the sign language which appeared to be standard here — didn't even know the spoken language on which it was presumably based. I had a long job ahead of me if I were to communicate with the local inhabitants. Maybe it would be better to bypass any such effort; if I could find out all I needed to know from Bert, language lessons would be a waste of time.

I could hear, though. The sounds were almost all strange, though some might have been the hum of high-speed motors or generators. There were whistles, thus, whines — nearly everything there is a word for, but none of it exactly similar to anything familiar, and one particular class of noise completely missing. The gabble of speech which drenches every other inhabited part of Earth was totally lacking.

Nearly an hour passed, according to my watch, before anyone appeared (the watch itself was a solid-state radioactive-powered affair which had not been designed with sea-bottom pressure in mind, but had come through the change perfectly). I spent most of the time cursing myself — not for making the change, but for failing to take advantage of the time between decision and action by getting more information from Bert.

The new arrival was young and quite decorative — but I didn't fall in love with her. The response was mutual. She waved me back to the cot and examined my dressings with an air of competence.

When she finished, I tried to call her attention to my lack of swimming ballast. She may have understood, since she paid courteous attention to me and nodded agreeably after I'd finished my gestures, but she left without doing anything constructive about the matter. I hoped she was going to call Bert.

Whether she did or not, he was the next to enter. He had no extra ballast with him, but he did have the writing pad. This was even better. I reached for it and buckled down to work.

I'd been restricted to communicating only by written note before, but not since leaving grammer school. In those days it had had a certain thrill, being an illicit activity in study hall; now it proved to be purest nuisance.

In something over two hours, we settled:

That I was a fully naturalized citizen of this place, and entitled to go where I pleased and do what I wanted short of obvious conflict with the interests of others;

That I was not only permitted to examine the power-generating units, but was expected to familiarize myself with them as soon as possible;

That I could visit Marie at her submarine whenever I felt like it,

and I had the blessing of the Council and the rest of the population in arguing with her; and

That I would be expected to support myself by farming until I demonstrated some different and at least equally useful way of contributing to the general welfare.

That was all. Often in the past I'd held a lengthy conversation with someone, and after he was out of sight had remembered other things I'd wanted to say; but down here this sort of thing wasn't an incident, it was a habit.

It wasn't so much that one forgot to bring up some point or other. As a rule there wasn't time to cover even the ones remembered. I've never appreciated the gift of speech so much in my life. Those of you who feel, after finishing this report, that I should have learned certain key facts sooner than I did will please remember this difficulty. I don't say I shouldn't have been quicker, but I do claim some excuse for my failure.

The whole thing was not merely annoying; it did wind up making me look more like a plain fool than I ever have before or hope to again. What is really embarrassing is that so many people who have heard only this much of the story can see already where I went wrong.

I had no real enthusiasm for farming, though I was curious about how it would be conducted on the sea bottom. I did want to learn about the power plant, but even that item I postponed. I asked Bert first of all to guide me to Marie's sub. He nodded and started swimming.

The trip was made without conversation. Maybe Bert was used enough to swimming by this time so that he could have written and read while doing it, like a city secretary doing a crossword puzzle as she strolls out to lunch, but I certainly was not. I simply looked around as I followed him, noting everything I possibly could.

The tunnels were long and for the most part straight, but they formed a hopeless maze as far as I was concerned. I would be a long, long time learning to find my way around unaided. If there was anything corresponding to an ordinary street sign, I failed to spot it. There were all sorts of color patterns on the walls, but I couldn't tell whether they meant something or were merely decoration. Everything was brightly lighted.

The place wasn't just tunnels, either. There were large rooms of all shapes, some of which might have been business plazas or shopping centers or theaters or almost anything else one can think of where a lot of people congregate. I seldom saw any real crowds, but there were enough swimmers around to support the claim that the population was quite large — not surprising if it had been going for several generations. I was gradually coming to think of the place as a country, as Bert had claimed, rather than an outlaw organization; a country which had never lost its identity by subscribing to the Power Code. This might indeed be the case — it might have been here longer than the Code had. I didn't know how much more than

the eighty years Bert had mentioned might be in its history. That was something else to find out.

I never got good at judging distances in swimming, and some of the corridors had their traffic assisted by a pump-driven current, so I don't know how far we went before reaching the submarine. As a matter of fact, I still have only the vaguest notion of the size of the whole place. At any rate, we finally emerged from a narrow corridor into one of the big chambers under an ocean entrance, crossed beneath the circle of blackness which gave on a mile of salt water, went on down a much larger passageway for perhaps two hundred yards, and found ourselves at the entrance to a fair-sized room in which one ordinary Board work sub, loaded with external ballast slugs as my tank had been, lay cradled on the floor.

Bert stopped just outside the entrance and began to write. I read over his shoulder as he produced, "I'd better stay outside. She's firmly convinced that I'm Judas Iscariot, Benedict Arnold and Vidkun Quisling all rolled into one. You'll have enough trouble appearing as you are without me beside you. Have you decided what excuse to offer for making the change?"

I nodded, seeing no need to waste time writing out details more than once, and took the pad and stylus. Bert looked a little expectant, but I waved farewell to him and headed for the sub. When I looked back, just before reaching it, he was gone. I then remembered that sometime fairly soon I was going to need ordinary food and presumably, even more seriously, the oxygen food. I still didn't know where to get them.

XIII

I couldn't see anyone through the ports of the sub as I approached, though I circled all the way around it. Apparently Marie was asleep. I wasn't sure it would be sound policy to wake her up, but I finally decided to take a chance. I tapped on the hull.

"If that's Bert, clear out. I'm busy thinking!" The words were clear and understandable, but they didn't sound at all like Marie's voice. I can't describe just what they did sound like. There are overtones produced by the human vocal cords which don't usually get through the impedance-matching equipment of the listener's middle-ear — one of the reasons one's own voice sounds so unfamiliar in a recording. Being immersed in a fluid which carries sound at about the same speed as water does, and having that fluid on both sides of the ear drum, makes an even greater difference. As I say, I personally lack the words to describe the exact result.

I tapped again. The second response was equally clear, but I've promised Marie not to quote it. I got annoyed, and my third tap came as close to pounding as the liquid environment permitted. That was a mistake.

A man can stand the explosion of a stick of dynamite a hundred feet away, in air, quite easily. The noise is uncomfortable but not by

itself dangerous. If he's swimming at that distance from the same stick when it detonates under water, though, he can count on being killed.

My fist didn't pack the energy of a stick of dynamite, but things might have been less painful if it had. At least I'd have been comfortably dead. My eardrums didn't actually break when the shock wave hit them, but the sensations can't have been much different. I was long in recovering to permit Marie to come to the port, recognize me, get over whatever shock the recognition may have caused her and freeze up again.

She claims now that she was glad to see me for the first half second or so. She says she even yelled my name, in spite of my known feeling about that. By the time I was aware of my surroundings again, though, she was certainly showing no sign of pleasure. She was glaring at me. I could see her lips moving, but I couldn't yet hear her words over the ringing and pounding still in my ears. I held my hands over them for a moment and tried to signal her to wait, but her lips kept right on moving.

I gave up on the signals and got to work with the stylus. By the time I had filled the sheet with writing, I was beginning to make out her words. They made it clear why Bert had preferred not to stay with me. Angry as she was, though, she was still sane enough to pause and read what I had written when I held it up to the port. The words had been carefully planned, on the basis of what Bert had told me about her current attitude.

What I wrote was, "Don't say anything likely to get me in trouble with these people. Why did you stay down here?" That was supposed to divert her attention from the question of why I was here myself, apparently enjoying all local rights and privileges. It might even give her the thought that I was playing spy. It was partly successful; at least, the strong language stopped, and she took time out to think before she spoke again.

Then she answered, "I'm here to find Joey. He disappeared down here — you know that as well as I do. I'm staying here until I know what's become of him."

"Wouldn't there be some point in going up to tell the Board about this place?" I asked. "Then a really well manned force could come down and accomplish something constructive."

"I thought of that," she admitted, "but when Bert told me I could go back and report everything I knew, I was sure there was some trick behind it. Besides, I was more worried about Joe, and they wouldn't tell me anything about him."

"Didn't Bert say you could stay if you wanted?"

"Yes. That's what made me suspicious. How could any decent person agree to stay here? It was just a trick to help make sure I couldn't go back. Once you're changed to breathe water, you can't change back, obviously."

I almost pointed out that the liquid wasn't water, and then I almost asked what was obvious about her conclusion. I realized that the first point was irrelevant and that she'd dismiss it as quibbling, and the second was likely to bring up the subject of my own conversion. Besides, any argument was likely to force me to use information I'd have to admit came from Bert, so she probably wouldn't believe it.

Come to think of it, I realized with a sudden jolt, I had only Bert's word for it that the change *was* reversible to the extent of letting me go back to the surface. Well, if he were mistaken or lying to me, it was too late now. I was writing again as those thoughts flickered through my mind.

"But what do you expect to accomplish just sitting here in your sub? What *have* you done in the six weeks since we last saw you?" She ducked that one.

"I don't know what I can do here, but if I leave I'm shut off from further information. I still hope I can get something out of Bert. I'm sure he knows where Joey is, even though he denies it."

"How can you get any word out of him if you won't talk to him? You told me to get out just now when you thought I was Bert."

She grinned, and for just a moment looked like the Marie I knew back at Papeete.

"I just think it's better technique to keep *him* wanting to talk to *me*," was her answer. I couldn't understand the rationale of that one, but there was much about Marie I'd never understood, and she knew it.

"Well, I'm here now," I wrote, "and whether it turns out to be for keeps or not I can at least move around and get something done. Subject to your approval, I plan to devote my time to getting information which you can take back to the surface when you go — I assume you don't plan to spend the rest of your life here."

"I don't plan it, but I rather expect it," was her reply. Before I could write any comment she went on, "Of course, I'll have to give up and start back some time, but I know they'll dispose of me when I do. That's assuming they did the same with Joe, and I'm very sure they did. If I do find him alive, of course, what I do will depend on him." She fell silent, and after a moment to make sure she had finished I wrote again.

"But you'd like me to find him for you."

She looked at me with what I hoped was a tender and sympathetic expression, though I couldn't be quite sure through the port. She knew how I felt about her, of course. I'd never made any secret of it, and even if I'd tried to, a woman would have had to be a lot more stupid than Marie to miss the evidence. Most of the girls in our section *are* more stupid than she, and it's a standing joke with them.

Marie didn't answer for several seconds, and I decided I still had the conversational ball. I resumed writing.

"Of course, he's part of the job anyway. I came down to find out

what I could about the three of you. I know about Bert and you, now, but the job's not finished. There are other things here to learn. I've got to pick up the technical information that makes this place possible, especially its ability to ignore power rationing, and there's a little question which talking to you has brought up. If you're so sure they've disposed of Joe, and are planning to do the same with you when you leave, why do you think you're still alive? They could have holed your sub without the slightest difficulty — or for that matter spared themselves the considerable trouble of supplying you with food and air."

"I've been thinking about that last," Marie answered, this time without hesitation. "When I first staged this sit-down, it was meant to test them on that point — " She saw me start writing and stopped while I finished.

"Weren't you taking some chances with that sort of test?" I asked. "Suppose they'd failed it. Would you have lived to report the results?"

"Well, no. I wasn't really caring what happened to me about that time, but I did think I stood a chance of driving out of here and making a decent try for the surface, with something really worth while to report."

"Marie, I've always thought as much of your brains as of your other qualities, but for the last few minutes you've been dithering. You must know it. Are you going to give me straight data, or do I have to work here even more alone than I'd hoped? I repeat, why do you think they haven't killed or at least starved you?"

That was taking a chance, I realized, but it worked. She started to frown, then fought it off with a visible effort, thought for a moment with her lips pursed and then began talking more quietly.

"All right. I didn't trust any of the juice-breathers out there, and I'm not sure I trust even you — " I was grateful for the "even" — "but I'll take a chance. I've been doing a lot of thinking here; I've had nothing much else to do. I've come up with one explanation, and I haven't been able to think of any others or find any holes in it. It accounts for their not killing me and their letting you and Bert join them. It suggests that Joe might possibly be alive, though if he is it doesn't explain why he hasn't come to see me the way you and Bert have." She paused to think for a moment and then went on. "It's quite simple in principle, but it could do with some detailed facts. That's one reason I'm telling it to you." She paused again, and looked at me hard before going on.

"They must *need* us. There's something they're short of that you, and Bert, and Joe, and I, and maybe anyone else from the surface can supply. It's the only sensible answer."

I pondered that. It was a possibility I hadn't thought of, though I was not ready to accept it as the only sensible one.

"You don't think they might just be so pleased with their way of life — freedom from power rationing, they'd probably call it — that they

just want recruits on general principles? That sort of thing has happened."

"I know it has," she replied. "But I don't believe it has this time. You got that sort of thing back in the days of nations and political parties, before the Board's necessity was realized."

"If you think we've outgrown politics," I retorted as quickly as the stylus would let me, "you're less alert than I thought you were around our own office. And what's wrong with regarding this bunch as a nation? It's the picture I've been forming of them."

"Nation? You've a short circuit between the ears. They're just another bunch of power-wasters. There aren't enough of them to be a nation."

"Do you know how many there are?"

"Of course not. I've been in no position to count. A few hundred, I should think."

"You think a few hundred people could build a place like this? Or even a small part of it? There must be miles of tunnels here. I swam for the best part of an hour to get from where they worked on me to this place, and it was a maze. I haven't seen any part of their power unit yet, but it must be huge to supply all this volume with light, and there's that big tent area outside — you must have seen that. How could a few hundred people possibly do such a job? On the surface, with unlimited time and normal construction machinery, sure; but what standard machinery could have been used here?"

Marie had wanted to cut in a little way back, but waited for me to finish. There's no point in trying to quote the next few minutes verbatim; they boiled down to the fact that she hadn't seen the lighted area outside. She'd spotted a work sub while she was prowling around searching for Joe, had followed it, and wound up at an entrance apparently out of sight of the "tent." Apparently there were a lot of entrances. She had no opinion to offer on the lighted area, and I couldn't help feeling that she didn't entirely believe my account of it.

She hadn't been captured. She'd followed the sub to the entrance, found she lacked ballast enough to get through the interface between the liquids and simply stayed there, blocking traffic, until they'd loaded her down and towed her inside out of the way. Women are interesting creatures, with interesting powers. I wasn't sure *I* believed *her,* but decided not to tell her so.

"All right," I finally summed up on the pad. "The jobs for me seem to be to find Joe or reliable word of him; to find a specific, convincing reason why they are so willing or eager to have us join them; to get reliable information about the size and population of the place; and to get the technical information about their power plant."

"Right," she nodded. "I won't demand that you do all that without confiding in Bert, because I have no way of enforcing such a request. I'll just say I don't trust him, myself."

"I still don't see why not. He's changed over to this high-pressure

scheme, but so have I, and you've decided to trust me, I gather."

"Don't remind me of it. It's a point against you. Still, I'm hoping that with you it's just a cover-up. After all you seem to believe it's a reversible change, even if I don't, judging by your expression when I said it wasn't. I hope for your sake you're right."

"Why shouldn't Bert have believed the same and had the same motive?"

"If that's the case, why has he been down here a year? If he can come back, he must be up to something, because he hasn't. If he can't he's up to something because he must have told you it *was* possible. Think it over."

I did and found myself with no good answer. The best I could say was, "All right. I'll be careful." I had started to swim away when she called my name. Irritated, I turned back and saw her face pressed close to the port. As I looked she spoke again, much more softly, so that even immersed in the liquid I could barely hear.

"You're a pretty good egg. If it weren't for Joe —"

She broke off, and her face disappeared from the port.

I swam away, listening to my own heartbeat and trying to organize my thoughts.

XIV

There was no sign of Bert in the corridor outside, and I didn't dare wander in search of him. I did remember the way back to the near-the ocean entrance and swam there in the hope that it was a logical place for him to be waiting.

There were at least a dozen people in the big chamber, and more could be seen dimly in the darker water above, but none of them was Bert. I could think of nothing to do but wait for him, as far as the main program was concerned. But it did seem a good time to pick up a little local education.

I swam up to the interface and hesitated. Other people were going through from time to time. I decided I'd better watch their technique before I tried it myself.

It was simple enough. All one did was cling to a ladder, remove one's ballast belt and hang it on one of the numerous hooks lining the rim and swim through. However, everyone who did this was wearing helmet and coveralls, presumably to keep the special liquid in their mouths, ears and so on. Maybe ocean water would hurt lungs, for all I knew. Anyway, no one stuck an unhelmeted head through the boundary, and I decided to play safe myself even though I couldn't see what the danger, if any, might be.

Several of the people around were watching me, I noticed. One or two of them had expressions of concern on their faces. One gestured at me, but of course I couldn't read her signs. She watched me for a moment, saw that I didn't answer, made another flickering series of hand motions to those around her and then swam over to me. She pointed to the water and then to me and raised her eyebrows quizzically. The nature of her query was easy to guess,

though the girl herself commanded more attention than her signals.

She might have been the one I had seen outside, though there was no way to be sure. There were several others in the group who were just as likely to be that one. She had straight blonde hair, cut short in a bob which could easily be accommodated in one of the swimming helmets. She was about five feet three in height and would have weighed about a hundred and ten pounds out of water. She was wearing a two-piece affair which was a long way from being a coverall, but protected much more acreage than a bikini. Her face was rather narrow, and I could make no guess at her regional origin.

In response to her question, or what I assumed to be her question, I raised an arm toward the water surface very slowly, watching her with raised eyebrows as I did so.

She gave a violent negative headshake, wrapped her arms tight around herself and shuddered realistically. I could also interpret that and was annoyed with myself for not remembering that the water outside would be cold. It was useful data; it justified the inference that the liquid we were in was not a very good heat conductor, or I'd already have felt the chill of the ocean water only a few yards away. Of course it couldn't be too poor a conductor either, or we'd be having the standard spacesuit problem of getting rid of surplus body heat. I hadn't been conscious of either heat or cold up to this moment. Now I wished I had a thermometer so that I could form some numerically meaningful opinions.

I held up one finger and poked it toward the boundary, asking the girl the same question with my eyebrows. She shrugged, as though to say it was my finger, so I pushed it on through.

The temperature was bearable, but I could see why the swimmers wore coveralls. I thought I could stand it for a short time if I had to, but saw no reason to make a test of the matter just then.

I thought it would be more useful to start to get familiar with the normal communication method of these people. In spite of Bert's remarks and my earlier try through the tank walls, it seemed possible that some of them might know at least a little of some language I did. I showed the girl the writing pad. She nodded at the sight of it and flashed a sidelong smile at the others who were drifting in the vicinity. I wrote a short sentence in each of my more usuable languages and held the pad up for her to read.

She looked at it courteously and carefully, but smiled and shook her head. I showed it to the others, with much the same reaction. Then there was a lengthy session of flickering fingers as they held a conversation among themselves. Several of them, including the girl, looked as though they would have laughed if it had been physically possible. Then the girl took the pad and stylus from me, and began to make marks of her own.

The stylus moved very rapidly, but not in a set across-and-back lines

like ordinary writing. It was more like drawing, from where I floated. It took her perhaps thirty seconds to finish, then she handed the tablet back to me and let me gawk at it. I gawked.

What she had done is impossible to describe in real detail, though a general idea can be given. In a way, it was rather like an electrical diagram, with straight lines going from one place to another, most of them parallel to the edges of the pad. Sometimes there were tiny gaps in the lines where one would have intersected another; sometimes the junctions were marked with dots; sometimes one line went through another with no effect on either. Here and there in the maze were tiny patterns, incredibly complex considering the time that had been spent on them. None of these looked exactly like an electrical symbol I knew, but all left a vague feeling of familiarity. The whole pattern was *almost* a picture. It gave a tantalizing effect of being something I should recognize but couldn't dig out of the back of my mind. I kept trying to interpret it in terms of a circuit diagram, which as I said it vaguely resembled, but got nowhere. I tried to think of it as one of those trick drawings all made out of straight lines which become modern art every few decades, and got no farther. I had to shake my head as the girl had done.

I cleared the sheet and tried some more languages, this time ones I don't know at all well. All I was hoping for was evidence of recognition. I didn't get it. Not a trace. This was very odd, since the dozen or so languages I had covered represent native tongues for something like three quarters of the Earth's population and included at least a few known slightly by educated people everywhere.

The girl reciprocated my second effort with another of her own. I could see that it differed in detail from the first, but it bore a strong family resemblance to its predecessor, and I couldn't make any more sense out of it. If I'd had a camera able to work under the circumstances I'd have photographed it on the chance that it had something to do with the power plants, though even at my most optimistic I'd have admitted it was a very slim chance.

The thought of plans in general gave me an idea, though. I cleared the pad again and drew in its center a small sketch meant to represent the room we were in, the various passages leading from it and the chamber where Marie's sub was berthed. The girl didn't get the idea at first, so I swam over to one of the passages whose entrance I had indicated, looked down it to see whether it were straight or not and extended the appropriate lines on the drawing.

That seemed to get across. She nodded her head after some more hand-talk with her friends; then she gave me a "so what" look. I handed her the pad and stylus and gestured around, hoping she'd see I wanted a map of the place.

They understood this, too, I felt sure, but the hand-talk went on for a good deal longer. I hoped they

were merely arguing about the best way to give me the information, rather than whether to give me it at all. What I would have liked best was a regular chart of the place, not someone's freehand sketches.

The argument, if that's what it was, was interrupted by Bert's return. It was a relief to be able to converse understandably, however slowly, once more, but Bert had his own ideas about the subject of conversation. He took the writing materials from the girl and cleared the pad without a glance at what was on it.

"Did you get any cooperation out of Marie, or has she lumped you with the rest of the outcasts?" he asked.

"I think I'm on probation," I replied. "Nothing will really satisfy her but a definite report on Joe."

"Well, we can't give one. To the best of my knowledge he never got here."

"You didn't spot his sub in the vicinity, even?"

"No one reported it."

"But how about your sonar?"

"We don't use it except under very special circumstances. It would be too likely to be picked up. We're quite willing to have the world know about us, but only if they find out *all* about us. Don't you have that picture yet? We simply don't want to be lumped in with the power-wasters the Board is always after, and you know perfectly well that that's the picture people will have if we don't get a chance to explain."

"I suppose that's true. It's the picture Marie has now, and she seems quite fond of it. I wonder if just explaining is really going to be enough."

"It would be if people would believe the explanation." I said nothing about the profundity of that remark.

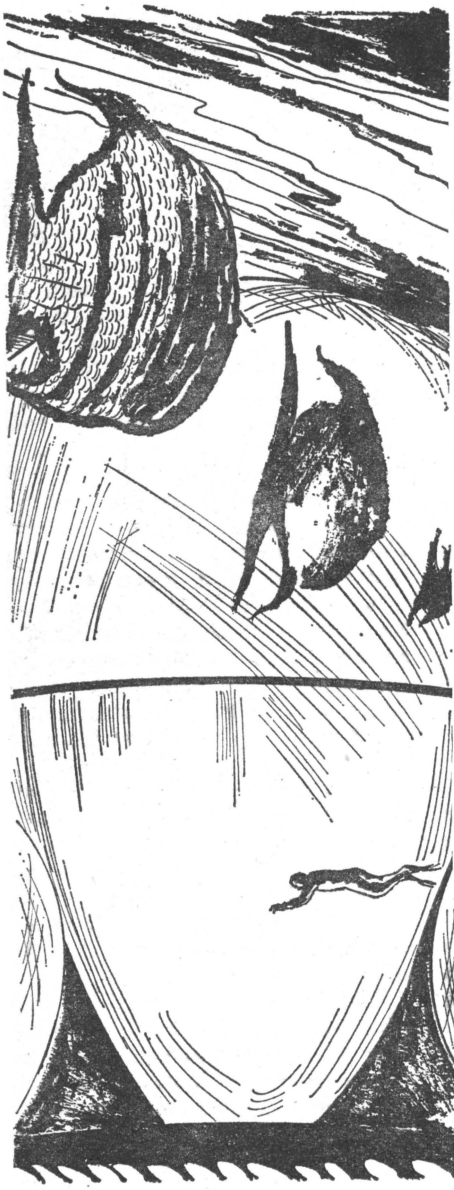
"You've been explaining to Marie for six weeks, and she doesn't."

"No, we haven't. We've been talking for six weeks and she doesn't listen. There's a difference. She refuses to discuss anything except Joe. I think your greatest service, both to us and to the Board, would be to get her to pay attention to a genuine description of the whole situation."

I digested that for half a minute or so. Several of the people who had been there when Bert arrived had now swum away, but the girl and two or three others were still watching with interest. They were deeply absorbed in seeing what we were writing on the pad, crowding in to look at each message in turn over the writer's or intended recipient's shoulder. The girl always seemed to get the best place. Standards of courtesy seemed a bit old-fashioned compared with most regions at the surface.

"You may be right," I wrote at last, after trying to fit what he had said into the program I had outlined for myself. "That would seem to mean that I'll have to see this whole installation with my own eyes, so as to be able to claim first-hand knowledge."

"Precisely. Come along. With this job, you may be spared farming after all, but at least you'll have to see the farms. As a matter of fact, I'm getting hungry, and it must be even longer for you than for me since the last decent meal."



I had no objection to this thought, and followed him as he swam off through still another of the passages. The girl and three others, after a couple of gestures, followed us.

As before, it just wasn't practical to write and swim at the same time, so I had plenty of opportunity for thought as we traveled. I wasn't able to use it very constructively, and there's nothing much I can say about the trip except that it took around fifteen or twenty minutes. Absolutely nothing of interest, and as far as I know nothing of importance, happened until we reached a doorway much less regular in shape than the circular and rectangular ones I had seen so far.

The light on the other side was fainter than in the tunnels, but brighter than in the ocean beyond the regular entrances. I followed Bert with quickened interest, guessing what I'd see.

XV

I wasn't surprised to find myself suddenly a few yards above the sea bottom; I was "outdoors."

The passage we had just left was cut into a sloping rock face — as a matter of fact, the passage itself was a long way from horizontal, as I could now see. I had not been aware of swimming uphill during any of the trip. There was, I reflected, little reason why I should have been.

A few yards below me a stretch of sea bottom extended into the distance. Once out of the tunnel I could see that it was quite well lighted. Looking up, I could see perhaps fifty

feet above me the glowing surface of the "tent" roof. The bottom itself might as well have been under five feet of water instead of five thousand. It was covered with vegetation.

I didn't recognize any of the plant life, but that was natural. I might have learned some descriptive biology, or natural history, or whatever it should be called if I'd been born before genetic manipulation became a practical art, but I wasn't and didn't Presumably this plant life had been tailored to provide food for the local population, and the light was there to permit the plants to grow.

"It was almost as good an excuse for the wasted kilowatts as the one Bert had given me. Just once, several years before, I had tasted natural food confiscated from a waster, and I had sympathized with the fellow even then. I'd had to rehearse the moral precepts very firmly, several times a day, for weeks afterward. I'd finally recovered my normally healthy resentment of people who corner resources to give themselves pleasures denied to the rest of us, but it had come hard.

Bert and the others were slanting down toward the bottom, which was laid out in roughly rectangular patches with a different variety of plant in each. Other swimmers were around in fairly large numbers. Some appeared to be eating, others working. The precise nature of the labor was obscure, partly because of their distance and partly because I knew no more of farming than anyone else had for the last century or so.

My companions were now pulling

round, greenish excrescenses from the plants and taking bites from them. The girl handed one to me, and watched with evident amusement while I looked it over and finally took an experimental nibble.

I couldn't quite make up my mind whether I liked it or not. It was very different from any ordinary tank alga and was not in a class with that forbidden taste of years before, but it was interesting. I tried another bite, decided it was good and finished it off. The girl showed me how to get others from the plant without a major struggle — they had to be twisted in a special way before the tough stems would yield — and then left me to my own devices while she ate several of the things herself.

Then she beckoned me to follow, led the way to another patch, and showed me a different fruit. I made a very satisfactory meal in the next quarter of an hour.

I wondered which, if any, of these growths was the oxygen source. Perhaps they all were; they were all green and presumably photosynthetic, but none were giving off visible bubbles as food-alga tanks are always doing. I decided not to worry about oxygen; there was no reason for Bert's friends to kill me off in such an indirect and inconvenient way as by depriving me of that. They'd already had too many chances.

It suddenly dawned on me that I was lumping Bert in more and more closely with the local dwellers, in my own mind. I don't believe most of what I read about the subconscious — it seems to me to be too much like astrology, alcohol and other excuses for sloppy thinking and incompetence — but as I reviewed consciously the events of the last few hours it looked more and more as though my changing attitudes were justified. He seemed to regard himself more as a local citizen than as a Board worker with a job to do, and maybe I'd been picking up his attitude without really noticing the evidence.

There was his choice of words, for example. I'd been devoting more attention to what he said than to the exact way he said it, but now that I thought of it there were a lot of "We's" and "Us's" which didn't really belong in the thoughts of a good Board official under the circumstances — especially if he were really sure that no one but I could read what he was writing.

Maybe Marie wasn't being so unreasonable after all.

I glanced over at him. He was eating, like the others, but he seemed to be taking very little part in the conversation which the unoccupied hands of the eaters were carrying on.

I don't really blame myself for not seeing anything very significant in that at the time. If anything, it reassured me; it was consistent with his claim that he hadn't learned much of the local talk.

But after the meal I began to feel bothered again. He took me everywhere I showed the slightest desire to go. He explained, convincingly, everything I asked about. There was the tent roof, for example. When I wrote a question about that, his face turned an odd purple color; when

that had faded, he wrote, "Careful. With liquid in your lungs, laughing can kill you. They cut a key nerve in your coughing reflex when they changed you, but you can still laugh if you're not careful."

"What's funny about that question?"

"Well, I can see where you'd get the idea of a fabric over this place, but I assure you no one has gone to any such trouble. What you see is simply the interface between the liquids."

"Why doesn't it look the same here — translucent instead of transparent — as it does at the entrances? Why do you have special entrances, for that matter?"

"We keep the entrances cleared off. There's too much area for that — several square miles — over the farms. Stuff in the ocean is settling to the bottom all the time, and stuff formed on the farms is floating upward. Some of each — a very small percentage, luckily — has density between that of our liquid and water, so it collects at the interface. As a matter of fact, a good deal of living matter grows there, though fortunately it's monocellular stuff. If there were more of it, we'd have to clear anyway to let light through to the plants, which would be quite a project."

I should have asked him right then, I know, why the lights were up in the water instead of down closer to the plants. It was just one of those things that I didn't. If he'd answered, it would have saved me a good deal of later embarrassment, though I'm still not sure that he would have. I suppose he would, on the basis of what I understand now of his reasons for acting as he did.

When I mentioned the power plant, he started off immediately, with the same group trailing along. I wondered whether they were guards, secret agents or curious idlers, but didn't waste much time on the question. There was no way to tell, or even to make a decent guess. In any case, with the power plant next on the agenda, no other question was very interesting.

After a time we reached the first large closed door I had seen since emerging from my tank. It was much like the one which had admitted my container to the conversion room. Bert made a few gestures to our escort; they began a longer conversation among themselves, but he didn't wait for them to finish. He began opening small lockers in the tunnel wall, and extracting coveralls which looked like the ones used outside in the ocean. They were complete with helmets.

"What's the reason for these? Temperature?" I wrote when he gestured me to put one on.

"No. You probably haven't found out yet, and I hope for your sake you don't, but immersed as we are in liquid we're very sensitive to intense sound waves." I didn't interrupt with my experience, but for once I was sure he was telling unvarnished truth. "The power plant is very efficient, but there's still a trace of noise — quite enough to kill an unprotected person. Get the suit on and make sure it's tight."

I obeyed. I had a little trouble; the garment wasn't as simple as it looked. One of the buckles proved to have a sharp corner which cut quite a deep gash on my hand and I wondered what sort of quality control would put up with that sort of design. The drops of blood looked a little strange, bright-red globules rising from the wound, but the injury was minor. By the time Bert had solved my problem with the buckle the bleeding had stopped.

He checked my coverall, especially the wrist and helmet junctions, very carefully. The others had also dressed and were doing the same for each other. Gestures which even I could interpret signified that the checks were complete, and Bert turned to the door.

He manipulated a dial at its side, and the great valve — large enough to accommodate a small work sub — swung easily open. He waved us through, waited until we had passed and closed the portal behind us. It struck me again that his air was not merely one of familiarity but of authority. How, in a single year, could a Board agent have made himself so completely trusted by these people? A Board agent, of all people on Earth the most likely to take action against them and their way of life? Could he have been in contact with them even before his disappearance from the surface a year ago? Could Marie be right? And if she were, what was I getting into? I had trusted Bert Whelstrahl completely when I first saw him down here and had tossed off most of Marie's claims as coming from a woman nearly hysterical with grief; it had seemed likely enough that her Joe — not that he'd ever been hers, in his own estimation — had actually never reached this place. Enough other things could happen to make a one-man sub disappear in the Pacific.

Now I was wondering, deeply. But there were other matters claiming attention.

XVI

For the first time, I found myself in a tunnel which was obviously slanted steeply — the pull of my ballast belt let me judge "up" and "down" easily enough when I paid attention to the matter. We were heading downward at fully sixty degrees. The tunnel lights, the only distinct features on the walls, were going by at a speed which showed we were being helped by pumps; there was certainly a downward current. I wondered if we'd have to swim against it on the way back and decided it wouldn't be possible. Either they'd reverse the flow, or we'd use another tunnel.

I didn't notice any temperature change, though I knew we were going to examine a heat engine. Maybe this bunch was moral enough about energy waste when it came to the sort of leakage which robbed a machine of efficiency, no matter how they behaved about it afterward.

I couldn't guess how far down we went before reaching the control chamber. It was certainly hundreds of feet, probably thousands, possibly as much as a mile. I did see the

charts of the layout later on, but the peculiar ideas of scale used by their makers still defeats me. It was certainly far enough down to present a hopeless obstacle to any brute-force defense against pressure as armor.

The room itself was big enough to make the far end hard to see. The liquid, as I guess I may have forgotten to mention scattered light just a trifle and gave objects more than fifty yards or so away a foggy appearance.

The room, though, as a control chamber was almost shockingly conventional. It contained along one wall a pattern of lines which even I could recognize as a distribution net. Below this was another pattern, harder to recognize but of noticeably vertical orientation, and I suspected that it indicated the working-fluid circuits between the heat source far below and the converters and heat sink at the top. A heat engine of any sort works on pretty basic thermodynamics, and its diagrams are apt to resemble those of its relatives whether it's a steam turbine or a thermocouple.

Along the lines of both diagrams were indicators, mostly of familiar dial-and-needle type, switches and rheostats. Nothing was mystifying; it was a power plant control at a glance. That is, it could be recognized at a glance. It could be learned, given luck and competence, in a month or two.

Thirty or forty swimmers, suited and helmeted like ourselves, drifted a few feet from the control wall, all their attention focused on it. This was a little surprising. I would have expected fewer operators on a board of this size. If they were all necessary for manual control, it was another mark against the general level of technical competence here, like the sharp buckle. I hoped that poor coordination on their part would merely result in nuisance rather than catastrophe. No doubt there were fail-safe breakers in the electric distribution net and some sort of emergency bleed-offs here and there in the fluid lines, but even so that crowd of operators gave a certain primitive air to the whole thing. I watched thoughtfully. The ones who had come in with us looked with as much interest as I felt; I got the impression that they hadn't been here before either. Well, that was quite possible. The whole population could hardly be composed of power engineers.

It added to the mystery, though, because I knew that Bert wasn't one either. He had a general engineering background like my own, which of course you need to be any good at tracking down power waste. Why should he have authority around here?

He turned and made a couple of gestures at our escort. Then he wrote me a message.

"Don't get close enough to distract any of these people. More than half of them are trainees." That put a slightly better light on the situation.

"You take your education here seriously," I answered.

"You bet we do. You'll see why, soon. Swim around as much as you

want and look at what you want — you know enough so I don't have to watch you like these others. Just don't get in front of an operator."

I nodded. For the next half hour I did just as he had written, examining the entire board in as much detail as I could. The arrangement made more and more sense as time went on. One very surprising reason for this was that the dials and control knobs were marked in perfectly ordinary numbers. I hadn't expected that, after seeing what seemed to pass for writing down here.

The numbers were alone, unfortunately — no units such as volts or megabars were given. In spite of this, the position of each instrument on the diagram which formed the board usually gave a pretty good clue to its purpose. In less than an hour I felt I understood the system pretty well.

Ten shafts led down to the heat absorbers at the source — presumably a magma pocket. The details of the absorbers themselves weren't obvious from the board, but I knew enough about volcanic installations to guess. I'd done a waste investigation in Java once. The working fluid was water; the still which took in sea water and desalted it, the electrolysis units which got alkali metals from the recovered salts and the ion injection feeds were all obvious on the board.

The MHD converters were also ten in number, but all exhausted into a common condenser which appeared to be cooled by outside sea water. It did not serve as a preheater for the still, which seemed wasteful to me. Without units on the gauges I couldn't be sure of the net power developed, but it seemed obvious that it had to be in megawatts at least.

I hadn't noticed the sound of which Bert had warned, but perhaps that was because of the suit. I took a chance and loosened slightly one of the cuffs between sleeve and glove. There *was* sound, a heavy drone like a vast organ pipe and no doubt due to the same physical cause. It wasn't painful, but I could tell that removing the protecting suit entirely might be unwise. I wondered how close we actually were to the steam tunnels which must be the source of the hum. Even more, I wondered about their maintenance, but I had to do without details for the time being.

The people who had come with Bert and me had stayed farther from the board, presumably because of his orders. They watched for a while what was going on, but gradually began talking to each other, judging by their hand motions. They rather reminded me of school children who have lost interest in watching the film. Once again I was reminded of the oddness in Bert's being able to give orders, or even act as a guide.

He himself, after the first few minutes, paid no attention to the people who had come with us. He had waved to me in a gesture which I had interpreted as meaning that he'd be back later and swam out of sight. I assumed he would be and kept on with my inspection of the board.

For a good deal of the rest of the hour, the girl and her compan-

ions followed me around, though without getting as close to board and operators as I did. They seemed to be more interested in me than in the engineering. I considered this understandable in the case of the girl and supposed the men were just staying with her.

I finally decided that I had made all I could of the board and began to wonder where Bert had gone. There seemed no way to ask; he had taken the writing pad with him, and anyway the futility of that method had been established. If there had been among my satellites someone not present at the earlier experiment, I might have been tempted to try again anyway, but as it was the absence of writing gear was more of a challenge than a nuisance. This seemed to be a good time to start learning the local gesture language.

I swam away from the control panel to the farther wall, the others following, and began what I hoped would be a language lesson by the method standard in fiction. I pointed to things, and tried to get the others to use their gesture-words for them.

To say that it went badly is understating. It went so badly that I wasn't even sure whether they had grasped what I wanted by the time Bert came back. They had made lots of hand, arm and finger motions, both at me and at each other, but I saw no way of telling whether any of them were the names of things I pointed at, or symbols for the verbs I acted out. Probably I was missing a lot of the subtle motions and attitudes anyway, but I simply never detected a pattern repeated often enough to be learned. It was as frustrating an experience as I'd had since — well, for a few hours, anyway. Maybe a day or more.

When Bert did get back and saw what was going on he had another siege of near-laughter.

"I tried that, too," he finally wrote, "when I first got here. I'm supposed to be a fair linguist, but I never made more than the slightest headway. I hate to seem conceited, but I really don't think it can be done unless you start as a child."

"You must have learned a little."

"Yes, About fifty basic symbols — I think."

"But you were talking to these people here. I got the impression you were telling them what to do."

"I was, in a sloppy sort of way. My few dozen gestures include the most obvious verbs, but even those I can't do very well. Three quarters of the people can't understand me at all — this girl here is one of the best. I can read them only when they make my few signs very slowly."

"Then how in blazes are you in a position to tell any of them what to do? And how does that fact jibe with what you told me about *no one* here being able to tell people what to do?"

"I may have expressed myself badly. This isn't a very authoritative government, but the Council's advice is usually taken, at least on matters even slightly connected with physical maintenance of the installation."

"And this council has given you some sort of authority? Why? And does that mean that Marie was right in believing you'd deserted the Board and mankind and gone over to these wasters for good?"

"One question at a time, please," he scribbled hastily. "The Council didn't exactly give me authority. I'm making my suggestions as a member."

"I took the pad and cleared it, trying to catch his eye the whole time. I finally wrote, "Let's have that again? My eyes must be fooling me, too."

He grinned and repeated the sentence. I looked at him with an expression which sobered him at once, and he went on writing.

"I'm *not* —" heavily underlined— "here to stay, whatever Marie may think, and in spite of what I told you before. I'm sorry about having to lie to you. I'm here to do a job; what will happen after it's done I don't know. You're in the same position, as you know perfectly well." I had to nod agreement at that point. "I'm on the Council because of my linguistic skills and general background." I was so hard put to it to make sense out of that remark that I almost failed to read the next one in time; I had to stop him as I was about to clear the board to make room for more words. "There's a little more information about the place down here which I wasn't going to bother you with, but I've changed my mind. I'll let you see it, and you can decide for yourself how and whether to include it or allow for it in your job of getting Marie to make her mind up. I have my opinion on how it should be used, but you're entitled to yours. Come on. I want you to meet the engineer in charge of maintenance development work here."

He swam off, and I went after him with the others trailing behind. I had no urge to talk, even if it had been possible. I was still trying to figure out how someone whose mastery of the local speech represented a slow two-year-old's vocabulary could have earned an official position on the strength of his linguistic talents.

No doubt you've seen it by now, since I've tried to tell this fairly, but it was too much for me. I was so far behind the facts that I was even startled by something else you've probably been expecting. We swam into a sort of office opening from the far end of the control room, and I saw floating in front of a microfilm viewer, oblivious to the people around him, my good friend Joey Elfven.

TO BE CONCLUDED

★ ★ ★ ★ ★

Dear Editor:

I was very interested in the letter you printed in the May issue of *If* from Patrick Kelly of Baltimore, in which he asked if anyone was making plans against the day when the establishment of colonies independent of existing governments would be possible (such as communities on the ocean floor or on the moon). I think I have what he (and probably many other readers as well) is looking for, and more.

I had had thoughts similar to those of Mr. Kelly for some time. Then a couple of years ago, I started reading newspaper articles about the "pirate" radio stations operating on ships anchored in international waters off the coast of various European countries, and it occured to me that this was a means of establishing a more-or-less independent community right here, right now, without waiting for future technology. During the past two years, I and some of my colleagues here at MIT have been doing a considerable amount of speculation about and research into the technical, political, economic and social problems and possibilities of the idea.

Technically, the ship concept has the enormous advantage of involving no new techniques, and thus of being immediately feasible. Long-term expansion of the community, however, will require a larger source of floating "real estate." The most promising approach appears to be one found feasible during World War II by the Navy, but abandoned as not suited to their particular needs at the time: anchoring ice floes that have been covered with insulation, and keeping them solid with refrigerating units. Our studies indicate that these floes (which are plentiful in sizes up to many miles across and tens of meters thick) can be refrigerated with a surprisingly modest installation, even when their insulation is quite thin.

Politically, the most appealing idea is, of course, the establishment of independent countries. However, these countries would have little recourse if they were attacked by a private group seeking their downfall, or were seized by a neighboring mainland country that became irritated by their presence (both of which have caused the demise of "pirate" radio stations). On the other hand, registration of the communities as regular vessels under the flag of an appropriate country (Monaco and Luxembourg seem best suited for this), while providing a measure of protection from the

fates described above, would involve accepting certain restrictions, which might or might not prove fatal to a community, depending on whate the residents were planning to undertake.

Whichever of these approaches is chosen, it is clear that taxation (even allowing for the cost of providing services that would ordinarily be tax-supported) will be considerably less than on the mainland. This economic advantage may well be the most important factor in expanding interest in the idea from a small group of enthusiasts to a broad cross-section of the population.

Socially, the concept is virtually a blank check for any group of utopians to put their ideas into practice through the creation of everything from a Fourth Reich led by George Lincoln Rockwell to a Classless Society manned by Marxist purists. The survival of these experiments will probably be no higher than ever, but some worthwhile ideas may emerge, and, in any case, the participants will enjoy their lives the more for their attempts, successful or not.

In short, the offshore community offers as much freedom to depart from accepted norms in politics, economics and social structure as did the discovery of the New World (and all without Indians, even!).

When Mr. Kelly's letter appeared, we here at MIT had just decided that it was time to follow the example set by Mr. Ettinger and his bodyfreezing proposal and seek wide publicity with a view towards getting one or more groups together to put the idea into practice. We were wondering if you mght be interested in running a more detailed summary of the work that has been done on the proposal (of which the above is, naturally, only the barest outline) in the magazine. If so, I'd appreciate hearing from you.

I meant to bring this up when you were up here for Boskone, but I was too busy with arrangements. Thanks again for coming, and I hope you enjoyed it as much as we did. — Erwin S. "Filthy Pierre" Strauss, TTA Enterprises, 116 Broadway, Cambridge, Massachusetts 02142.

* * *

Dear Editor:

It's prediction time again (again?)! I predict a Hugo for Keith Laumer. His novel, *Spaceman*, was one of the best (in my opinion) to come along in a long time.

My favorite novelette published in *IF* this year is Roger Zelazny's *This Mortal Mountain*. I also enjoy Larry Niven's stories. My favorite written by him this year is *Flatlander*.

Gray Morrow's cover painting for the August issue was absolutely beautiful! I also enjoyed Wally Wood's artwork on *The Winged Helmet*. I hope to see more of his artwork in future issues of *IF*.

One of the very good features of your magazine is the "first" stories you print. Maybe one of these days I'll send in a story. — Thomas Miller, 483 Wilton Drive, Baton Rouge, La.

• That seems to be it for another month. Don't forget to reserve your copy of the December issue now — you won't want to miss the exciting conclusion to Hal Clement's underwater novel or the "first" by one of fandom's favorite sons — *The Editor.*

Volume 1 NUMBER 1

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