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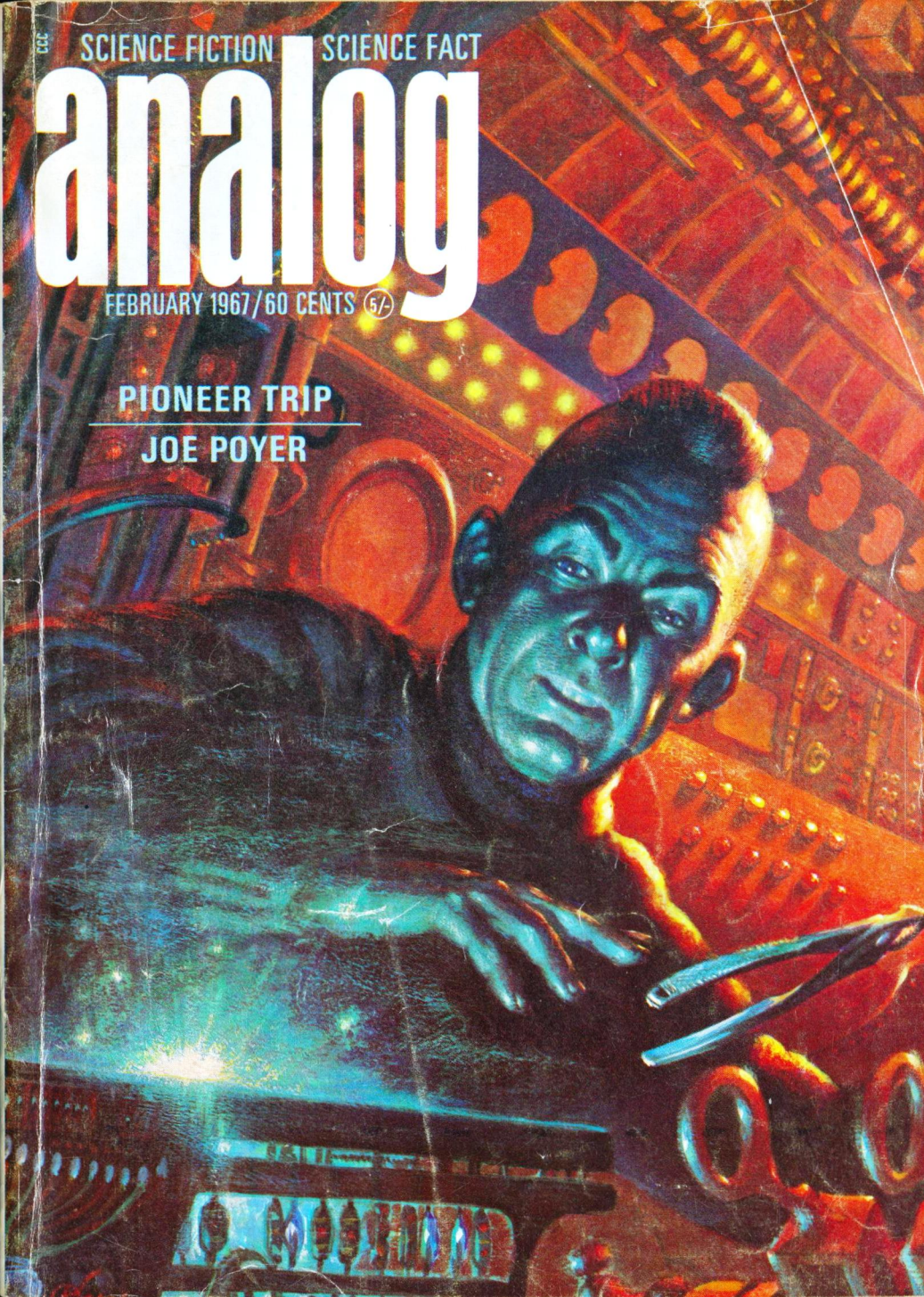
PIONEER TRIP

JOE POYER



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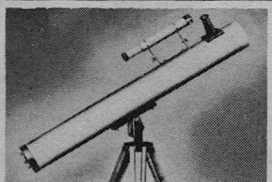

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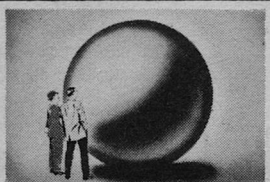

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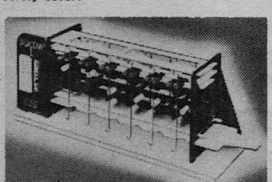

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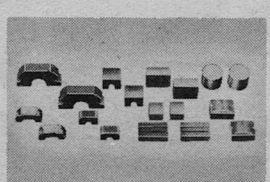

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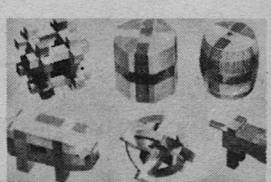

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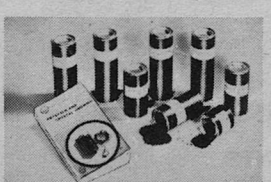

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SHORT STORIES

SHORT NOVEL

SERIAL

SCIENCE FACT

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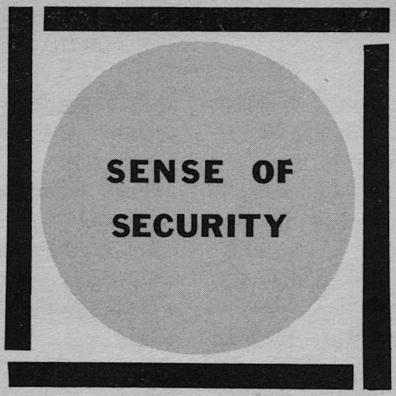

Psychologists say that one of the greatest motivations of human beings is the search for Security—a statement I'll accept with reservations, having known some professional adventurers, Everest climbers, and biochemists with a penchant for trying out their newest syntheses on themselves. A more important reservation stems from the fact that the psychologists don't define what "security" is—what it is everybody wants so much.

So far as I can make out, the "sense of security" comes from the *belief* that "I can handle any problem or situation I will encounter." Of course, there need be no validity whatever to that belief; the nitwit engaged in happily chiseling the fuze mechanism from a five hundred pound "dud" bomb may have a perfect sense of security, while a woman who discovers that a terrified young mouse, desperately seeking to escape the vicinity of that immense two-legged meat-eating animal, is in the room with her, shrieks in terror.

A child can feel a deep sense of security because any situation he can't handle himself can surely be handled by shouting "Daddy!" loudly.

Security is the *belief* you can handle any situation you *will* meet —which involves another and very important belief-factor. The belief that *you know the limits of possible situations.*

Americans, in general, were shocked into near hysteria when Sputnik I went overhead; since most Americans had *known* that space travel, space vehicles, et cetera, were fantasies encountered only in those nonsensical science-fiction fantasies. The situation of having a space vehicle pass overhead was, in their sense-of-security computations, a situation they would never encounter. It was beyond the limits of reality-possibility, and hence did not require that

they know how to handle it. When they were slugged with the knowledge that space vehicles were *not* beyond the limits of the possible, that a space vehicle was, in fact, orbiting over their heads—their sense-of-security was badly distorted.

Sense-of-security was restored when we got our own space-vehicles up there orbiting; the situation now became one we were able to handle.

A human being's sense-of-security is seriously menaced—whether he is or not!—when he discovers that the limits of the possible do, in fact, extend beyond what he has understood. The terror of the Unknown is simply that you don't know how to handle it, nor do you know its limitations; your sense-of-security vanishes. Gaining knowledge and realization of the existence of reality beyond your known limits of the Possible is always disturbing; it can be terrifying. It is almost strongly resisted. The simplest way to protect your sense-of-security is to deny, to explain away, any evidence that the new area of reality exists. As long as it can be successfully denied, your sense-of-security remains intact—however great the danger of the denied-but-real menace may be.

Now the guy who's happily chopping away with chisel and maul at the fuze of the five hundred pound "dud" feels no tension, no accelerated pulse, no sweating palms, quickened breathing, or tightened muscles. He's successfully kidding himself that he's in no danger. A bomb-disposal expert working to tease out the fuze mechanism of a bomb is an entirely different thing; he's not kidding himself, he knows he's insecure because he does *not* know-for-sure how to handle the situation. That takes guts. The dope doesn't need courage; he's got his folly to keep him happy.

To open up a totally new area of Possibility requires the courage to accept insecurity—and relatively few human beings have that type of courage.

Unfortunately, a great number of scientists enter the field of science because it offers them a sense-of-security. A scientist knows the Laws of the Universe; he knows what can be done, and what is impossible. The Laws of the Universe are inflexible, absolutely dependable, implacably just and completely reliable. There, there is security; no fallible human legislature can change those laws; no whim of administrator or tyrant can modify them an iota. He can learn to know those laws, and knows they are precise, dependable—safe.

Such scientists will, obviously,

reject any new ideas that break open new areas of the Unknown—that make the Impossible clearly demonstrated to be Possible, and-not-yet-known. Such new-area-openers, like Sputnik I, have a shock effect that brings a powerful effort to deny the reality.

Eventually the new area will be explored by the adventurous and courageous among the scientists—there are always some, thank God!—and the Unknown becomes partially known. Gradually the security-seeking scientists breathe easier, then decide that the Unknown is really nothing very new, because it's been shown that, just like the old, it has limitations—it isn't really lawless and Utter Menace Without Limit. Presently they can consider it quite calmly, now that it's been explained to them, and soon they are happily explaining the new discovery to the laymen who don't really understand these things the way *they* do. Their sense-of-security restored, they go about their business at the old stand with confidence restored.

The problem is that they will fight violently to suppress the original area-opener. They'll deny it, and bring great pressure to bear in preventing the recognition that there *is* an area of phenomena that is *not* under the laws they already know and consider the Limits of Reality.

They aren't fighting for mere job-security; they're fighting for a far deeper thing—the sense-of-security. Freedom from the Terror of the Unknown and Unknowable. And that security can be maintained *if only they can deny the reality of the evidence.*

Now a mind so dedicated to security cannot be convinced by logic, evidence, or even experience. You simply can't change a belief resting on the need-for security; the rejection of evidence is based not on logical analysis, but on emotional need.

Currently the best example is the widespread scientific rejection of psi phenomena. They don't follow known physical laws; therefore, psi threatens the sense-of-security of the scientist who "knows the limits of reality" and is terrified to think that his structure may crumble, to leave him in a lawless universe. Because obviously (to him) if a phenomenon doesn't follow the familiar and long-established Laws of Physical Science, then it is lawless, unlimited, unpredictable, terrifying *in extremis.* If it isn't limited by the Laws he knows—then it is lawless and limitless. *It must not exist at all*—because if it did, it would make chaos of everything, since no law (that he knows) can limit it.

Dr. Rhine and his group have, for some forty years, been trying, with careful logic and mathematical-statistical analysis, to get sci-

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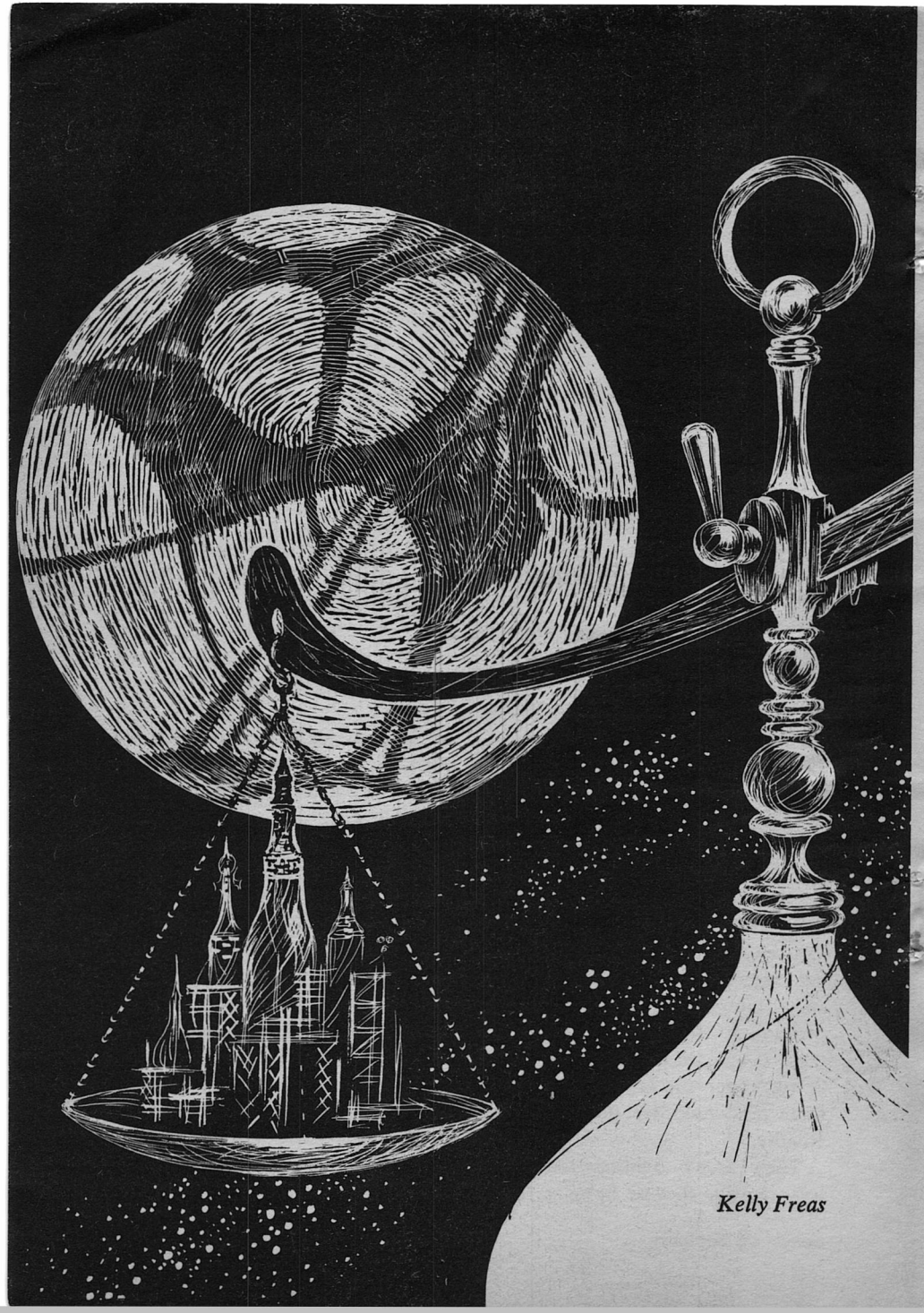
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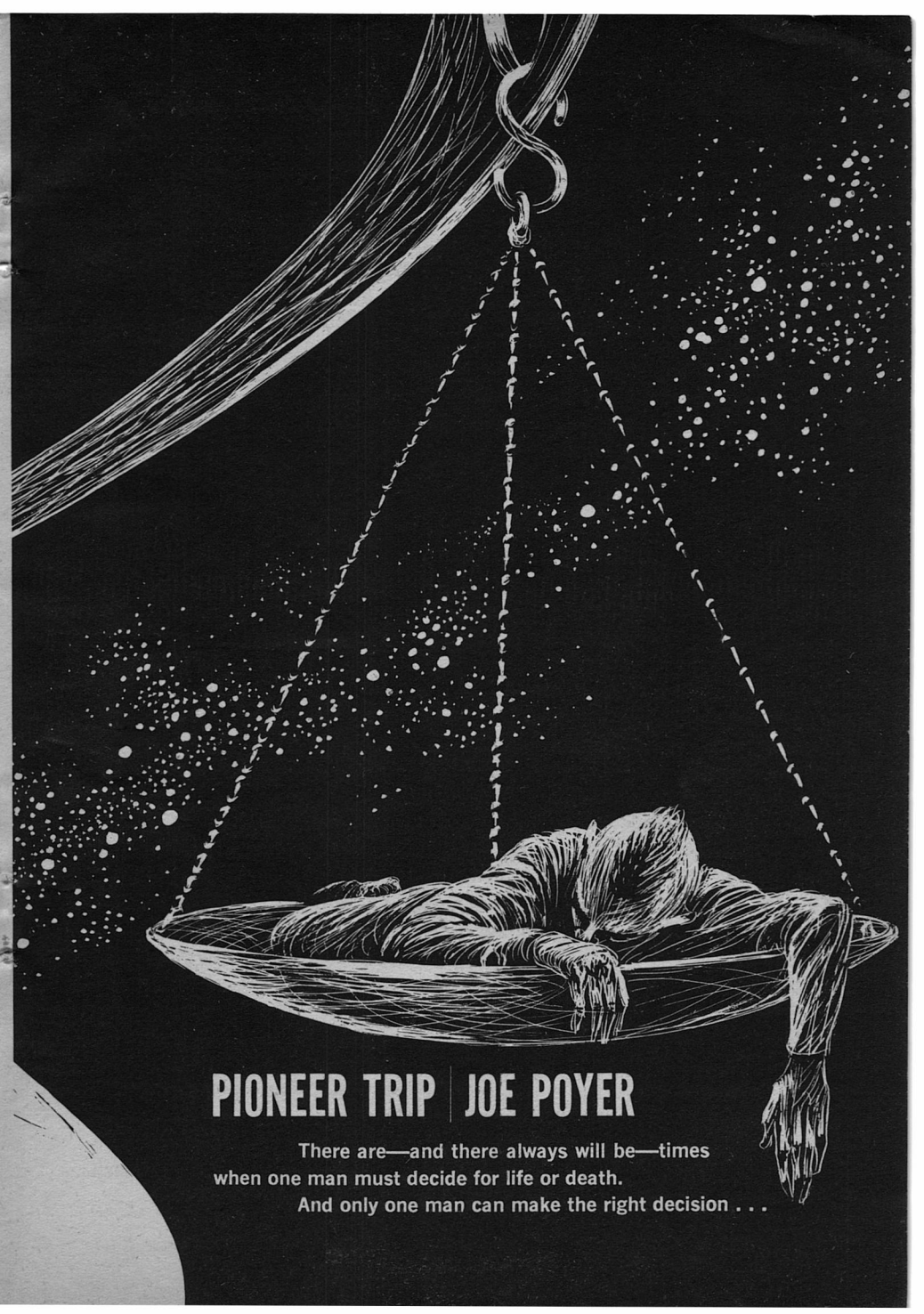


PIONEER TRIP | JOE POYER

There are—and there always will be—times when one man must decide for life or death.
And only one man can make the right decision . . .

"Son of a gun!" Witthoft snatched his burned fingers away from the control panel and grabbed a handhold on the back of the acceleration couch. Quick tendrils of smoke curled up and dispersed in the cramped cabin. He started forward, half hesitating and the face of the panel erupted into bluish flame.

Witthoft jumped across the compartment for the fire extinguisher. He thumbed the button and a solid stream of foam streaked to smother the fire. Breathing heavily, he let the tank droop in his hand and moved in, pushing against the bulkhead with his toe. The foam bubbled and began to break up in the zero-G while he peered into the interior of the console. A dense, biting cloud of gas exploded and he floundered, inhaling a lungful involuntarily as he fought to move away.

Choking, he clawed his way out of the compartment and dogged the hatch shut. He was still gasping for air when Swenson floated in, saw the smoke and charged over to him.

"What the hell. . . ?"

Half sitting—half crouching, Witthoft reached a trembling hand for the bulkhead to steady himself while the coughing spasm racked his chest. His face was bright red and beads of sweat laced his forehead as he tried to clear his lungs of the noxious vapor.

He looked up to see the worried face and forced a grin. "Had a small fire in one of the consoles . . . I guess." He waved his hand weakly and straightened, gulping for air.

"Fire!" Swenson repeated.

"Yeah. But it's out." Witthoft paused to inhale deeply again, then continued. "I put it out with the fire extinguisher, but it outgassed badly . . . like something exploded."

Swenson moved to the hatch and compartment environment controls mounted on the bulkhead. He switched the blowers to high and put an ear to the metal hatch. Satisfied, he turned back to Witthoft, deep concern on his face.

"Come on, bud, we better get you into a couch and let Reilly look at you."

Witthoft followed Swenson up to the command area and slumped down into a couch while Swenson buckled him in.

Reilly came into the command area on the run, reversed in midair, hooked a leg around the bunk stanchion, and brought himself to a stop in one easy motion.

"What happened?" he demanded, noticing the flush and beads of sweat on Witthoft's face. Without waiting for an answer he slipped a thermometer into Witthoft's mouth and wrapped a blood pressure cuff around his arm.

"Is your vision blurred?" he asked sharply.

"Yeah, I guess . . ." Witthoft replied. The cabin spun as vertigo clutched at him. Reilly's eyes widened as Witthoft's dazed expression deepened and he reached to pinch the left earlobe.

The fuzzy image of the hand above him sharpened, then receded at a tremendous velocity and Witthoft fell into night.

The control room had been darkened and through the forward ports, the stars shone brightly in the absence of the filters. The scattered, multicolored instrument lights framed the ports and Witthoft could not discern where the stars ended and the instrument lights began.

Without moving his head, he let his gaze roam the cramped command center. Two figures hunched over the glowing plot table—one with a coffee bulb—and talked in low tones.

He shifted his head carefully so as not to make a sound and noticed the two thin tubes leading out of his mouth. His tongue explored the soft rubber of the parotid fluid collectors clipped to the upper molars on both sides of his mouth so that they covered the Stenson's ducts. His arms were strapped down to the couch and an intravenous needle was in his left arm and a number of electrodes taped in various places on his head and body.

The doctor cleared his throat and drank from the bulb. "Funny he should be out this long. I still wish I knew what the devil was in that gas."

Swenson remained silent. Finally he straightened somewhat. "Doc? Give me an honest answer, *now*."

Reilly snorted. "Hell, Swen, you know I can't, not until I can run more tests. Everything may be perfectly all right. He might have just got too much of the smoke, or even . . . he might be allergic to the foam in the extinguisher."

"You know better than that," Swenson growled. "If we had any allergies, we wouldn't be here."

"Sure, but you know as well as I do that this kind of environment can do mighty funny things to the common ol' garden variety chemicals.

"And," he paused thoughtfully, "we know very darn little about these effects. We're five weeks out, farther than a manned spacecraft has ever gone before. We still have seven months and three weeks to go before Mars orbit. We're going to find a lot of things we never discovered—never even thought of for that matter," he finished bleakly.

Too bleak, Swen thought. "So, you think this might be one of the things *never* thought of." Reilly nodded. "But could have caused it."

Reilly banged the table top. "How the devil do I know. In these circumstances I'm almost as ignorant as you are. I'm just a lousy mechanic at this stage. Right now, I don't see how there could be anything harmful in that lungful of junk. For crying out loud, a good many other people have breathed burning insulation, outgassing plastic, and fire extinguisher foam before without being hurt by it. I can only guess that nothing but excessive smoke inhalation happened."

Witthoft listened to the droning conversation as if he were completely unconcerned with its results. He was disoriented and his mind too fuzzy to remember clearly what had happened to him. The two men were speaking quietly and the only other sounds were low murmurs from the environmental control and the electronic equipment. He stared out the ports, feeling millions of miles away and utterly disconnected from the here and now. He watched the passing panorama of the stars wheeling slowly around the ship, a tiny silver mote five million miles from Earth orbit. The pure loneliness stabbed through him, seeming to drain all his weakened emotions in one rush.

"I appreciate your position, Doctor," Swenson said stiffly, "but I can't guess."

Reilly chuckled. "Stop being so formal, Colonel, or I'll start saluting and calling you sir." Then he was silent, remembering the results of the analysis. Swenson was going about this all wrong he thought. He was only a doctor, a supernumerary but for his few other duties. He was here to observe. Swenson and Witthoft were responsible for the ship. No matter what happened to Witthoft, Swenson, as Command Pilot was in charge and he should be ready with, not fumbling for, answers.

"What will you do, Swen?"

Swenson growled, "Do I have much choice?"

"Yes, you *do* have a choice."

Swenson swung round. "What the devil are you saying!"

Reilly stared back, the lights etching the hard planes of his face into deep valleys of total darkness.

Swenson turned back to the ports and Reilly, belatedly, turned to look at Witthoft, but he had closed his eyes and feigned unconsciousness. He was aware now that the two were discussing him and he wanted to go on listening for a while longer.

The doctor put his hand on Swenson's shoulder. "Look, Swen, I know these aren't the right words for me to be using—my oath and so forth. My whole life is medicine. But yours isn't. Your job is to get this ship to Mars—with a full crew; or by yourself if you have to."

"Do you—" Swenson interrupted tightly.

"Do I know what I'm suggesting? Of course. Spare me the old chestnuts, please. My job is keeping you people alive, and so I do the best I can with what I've got. Your job is getting this tin can to the Martian surface. Even if you don't make it back. You agreed to that when you signed on."

Swenson remained silent.

"Look, Swen," he continued, his voice now reflecting competency he did not feel. "I can't be sure until I can get some of Witt's samples into the biochemical lab. But what I've been able to come up with so far . . . well, it really looks bad."

Oh, God, oh dear God, Witthoft

thought and he gripped the couch padding to stay quiet.

Swenson looked toward the still form of Witthoft stretched on the couch. "What do you mean . . . bad."

"Just this," Reilly pulled a sample tube out of his pocket. "This is a sample of Witt's parotid fluid collected about twenty minutes ago. The rest of those in the rack are over the last four-hour period." He held the tube up until the clear liquid caught the starlight.

"Each successive sample describes some type of progressive metabolic breakdown. The blood samples show the same thing. I checked Witt this morning, as usual, and everything was right on the profile. That means that something very serious has developed. Whether it is due to the fire, whether it will continue, or reverse itself, I can't tell. If it continues unchecked"—Reilly lowered his voice and Witthoft strained to hear—"it will take about five or six weeks to kill him."

The two men talked on, but Witthoft had stopped listening. Even the magnificence of the stars shut themselves away as the cold ball of fear crept into his brain.

Reilly inserted the syringe into the console receptacle, twisted it the half turn that plunged the needle through the two sealing septums. The syringe went into the disposal chute and the contents of the prepackaged analysis fluids into the highspeed, miniature centrifuge.

He stared at the last tube filled with the fresh parotid sample. The clear saliva fluid clung to the walls of the tube with its exaggerated meniscus clinging well above the normal level in the zero-G. Reilly regarded the rubber-stoppered tube and then swore feelingly. The parotid fluid—almost a mirror image of blood as far as a pathologist was concerned—was Witthoft's jury ballot. Was his body guilty, or not guilty, of the high crime of metabolic degeneration. If guilty, the death penalty was mandatory; unless a higher authority than himself with proper equipment intervened.

The centrifuge stopped and the red attention-indicator broke his thoughts.

The fluid and the centrifugate went into a second syringe, then into a receptacle on the panel face. He hesitated, fingers poised over the console keyboard, then asked the jury for its verdict. He waited as tensely as any defense counsel while the impersonal computer decided a man's fate. The nausea was unexpected and for a moment he thought he would vomit. The computer language of the printed tape read *guilty*.

But the moment passed and professional curiosity and aloofness, beaten into him by fourteen years of intensive study and practice, won out. All indications pointed to a condition similar to acute interstitial emphysema.

But how the hell, he thought.

Emphysema was not a disease, a degeneration of the metabolism. It was a chronic abnormality that took years to develop. He turned to the analysis of the smoke particles formed when the foam, burning insulation, lowered atmospheric pressure, higher oxygen content, human chemical and particulate as well as equipment effluents, high solar radiation, and God knew what else combined in the high temperature of the fire.

The insulation had been Teflon coated at wear points and a strange mixture of fluorine radicals was predominant in the sample. But surely not enough to . . .

Next to the results of the analysis was a piece of strip chart paper. After the analysis was completed, he had checked the background radiation. It was abnormally, but not dangerously, high due to a minor solar flare. Teflon breaks down into very short-lived CF_4 radicals—short-lived but dangerous. But the process is extremely hard to promote, hence the usefulness of Teflon. But abnormally high radiation has strange effects, particularly in the ghastly chemical stewpot of a spaceship's close environment.

Reilly looked at the wooden pencil in his hand. What kind of death did its molecular structure hold, waiting only for the proper catalyst?

Bitterly he recalled the classic contamination example. Testing for the effects of submarine contamination products on crews during long, underwater missions, the Navy had been the most concerned about the effects of fluorocarbon-based refrigerants on the human system. They had exposed mice to higher concentrations of fluorocarbons than a submariner would ever experience, with no ill or lasting effects. But they had forgotten one thing—mice don't cook food. Humans do. Result—some very sick submariners. The closed atmosphere, high oxygen, cooking processes, varying heat range and human effluents, all turned the harmless refrigerant into a killer, a stealthy killer working in parts per million. Fifteen years of space exploration just was not long enough to encounter the problems that would or could arise. And contamination was only one of them.

Somehow, Witthoft was slowly dying of a condition very similar to interstitial emphysema. He was probably already irreparably damaged. In eight weeks he would be dead unless he got proper help. The new cryogenic whole body treatments and the proper drugs could slow his metabolism—his body functions—to the point where judicious chemical treatment might help his body to repair itself. *Might.*

Sadly he looked at the report he had automatically filled out. Proper help was five weeks and some fifteen million miles behind them at the DeBakey Institute of Advanced

Medicine in Houston. *Maybe.* The chances seemed less than twenty percent—and even that might be too high—that Witthoft would ever recover.

He did not think in such basic, and perhaps meaningless concepts as a doctor's responsibility for his patient. His training—since medical school anyway—did not allow such an individualistic approach. He had never practiced medicine as a "Doctor." In his end of military medicine there was no room for doctoring. He was a technician, a highly trained technician albeit, but merely a technician—everything for the good of the team. The individual is only a means to an end approach, everything subordinated to the job. On the other hand, how often had just plain humanity reared up. He pushed the papers aside angrily. In many ways the human machine was the hardiest instrument ever devised; in others, the weakest. But that did not enter into *now.* He caught at a vagrant thought . . . but Swen and himself, there was the matter of duty here, and their collective duty was to see the mission through successfully, no matter what the cost. Witthoft, in this instance, was a questionable factor and there were only two answers.

If Swenson turned back, a twenty billion dollar mission would go down the drain. And even though Swenson would be hailed a hero by the public for refusing to do his duty to save a man's life, this same public would kill the program. There was already enough high-level pressure to cut the space program back to where it would be next to useless. This would be all they needed.

Reilly sighed. So much at stake. He wondered if he would have the courage to make a decision—a decision that Swenson had to make, no matter what the cost. He rose and gathered up the papers. Now it was Swenson's decision.

Swenson watched the uncertain face on the bunk below him. Witthoft was breathing deeply, forcing air in and out of his lungs; already having difficulty breathing.

Reilly had found Swenson in the store's locker and they had both gone to the sleeping quarters where Witthoft had been moved. While Reilly had unemotionally explained what was happening to him, Swenson had been searching for a third possibility and had not found one. He had been unaware that Reilly had left until Witthoft drew a deep, shuddering breath and said shakily: "Uh . . . I guess it's up to you."

"Reilly seems pretty certain that the diagnosis is correct . . ."

"Yeah." Witthoft's voice was quiet and his eyes moved past Swenson to the curving gray bulkhead.

"Yeah. He is. I can't tell whether I'm really having trouble breathing, or whether it's just an emotional reaction . . ." his voice trailed off and he became silent.

"We turn back," Swenson said tonelessly.

Witthoft's face struggled with the simultaneous emotions of fear, hope, anger, and relief.

"Swen . . ."

Swenson turned away. "No mission is important enough to throw away a human life—not one like this. There'll be other times."

Reilly, listening out of sight in the well, closed his eyes.

Swenson turned his face back to Witthoft. "Get some rest," he said softly, punching Witthoft's shoulder. He went below, hating Reilly, as he brushed past him, for the curious, yet unconcerned, detachment in his eyes.

Swenson sat down on his bunk and swung his feet under the netting, feeling the depression settle more deeply. He had been awake most of the preceding night after Reilly had gone on duty. Command was nothing new to him. He had commanded an F-105 squadron in Viet Nam and had made the decisions that sent individual pilots in as decoys against antiaircraft missiles. He was no stranger to the type of command that required that he make life or death decisions. And he knew that that was one of the reasons why he had been picked for this mission. He had actually less time in space than many others who had earned time in the orbiting labs or at the lunar base—but he was qualified in a way many of them were not. He had ordered others to their death. He had had, in essence, the courage to carry out orders given to him. Had *had* it, he discovered.

But, to order a pilot and navigator to go in against waiting antiaircraft batteries was one thing—they had a chance at least. To order the certain death of a man merely to continue a mission—a mission that couldn't be justified as worth saving in any but economic terms—was another.

He had not known Witthoft as long, nor liked him as well as some in his squadron who had died over Hanoi, Heiphong or southern China, but he still could not do it. This was the *first* mission—so what. There would be others—or would there? A scrubbed twenty billion dollar mission could end the space program limiting it to the Moon's surface, and perhaps not even that. Later, perhaps it would be picked up again, but years would be wasted—and his chance for sure. He might be a hero if he went back, but not to the Government.

On the other hand, if the mission went on and Witthoft died, the public's reaction would tear the program limb from limb.

At least if they turned back, he could never be accused of coldbloodedly killing a man. At least there would be a future chance. Even if Witthoft was too far gone to be helped by then, at least they would have tried and maybe people would accept that.

He had gone forward to the command area and sat watching the ceaseless, but never changing, spectacle of man's destiny, debating, weighing all factors, sickening himself with what seemed to him a callous disregard for Witthoft's life. Yet he was deeply undecided as to whether or not the life of a single individual was not too much to pay for the end result. After several hours he had made his decision. He had spent some time in phrasing his words carefully. There could be no doubt of his meaning when he spoke to Witthoft. Both he and Reilly had known what the morning tests would bring and they had to be ready. When they got back there would be an investigation. Everything had to fall perfectly into place so that there could be no question. Witt would understand, he knew, or else he wouldn't be here.

Now the decision made, he picked up the clipboard and sat before the computers to carefully detail the retro-fire sequence that might bring them back in time.

Witthoft lay for a long time in the bunk, staring blankly at the curving, gray wall of the bulkhead. All around him he could hear the quiet murmurs as the ship drove on toward its far distant destination. The continuous cycle and recycle of the life support system continually regenerating the oxy-nitrogen mixture underscored all the other sounds of the craft. The quiet voices of the two men forward in the command center running a log check on the navigation system drifted down to him and he thought about the mission—the first manned mission to another planet. Tomorrow they would begin setting up the program and notifying Mission Control that they were turning back. They would swing the ship and use the engines on the Mars entry vehicle as braking rockets. Then, dropping the MEM section, the rockets in the transtage would blast for 1:43 hours, bringing their wide swinging orbit into a closer, tighter, less circular Hohmann trajectory that would bring them abreast of Earth in five weeks where a lunar shuttle would match orbits briefly to take them off. The ship would continue on sunward until it took up a solar orbit somewhere inside that of Mercury.

But, thank all the gods, he would be safe. A year, maybe less, and he would walk out of the hospital cured. He settled himself more comfortably. His breathing seemed a little easier now and the fear and tension were beginning to leave him. Tomorrow—less than eighteen hours away—they would notify Earth, check the program, recalibrate the chronometer and begin swinging the ship. Already in his mind he could hear the high-pitched whine beginning to ring through the fabric of the ship.

He closed his eyes to try and sleep. He must have dozed because

when he awoke the ship was darkened and Reilly was in the next bunk, asleep. For a long time he lay somewhere between the unconsciousness of sleep and complete wakefulness. Sounds came to him faintly, the clicking of computer keys—presumably Swenson working in the command area. The keyboard rattled as information was entered and the sharp noise brought him out of his semisleep.

His breathing was more labored now, as Reilly said it would be. The fluorine radicals did not last long, but they had done the damage. The delicate lung tissues of the minute alveoli were disintegrating and were no longer capable of completely passing oxygen into the bloodstream by osmotic pressure. And as they disintegrated more and more, his breathing would harshen. Reilly had explained that the condition was similar to emphysema in that he could breathe in because the diaphragm muscle depressed the thorax, expanding the lungs. But once the air was in the lungs, the degenerating tissues were forming pockets and capsules where the air was trapped, thus keeping the lungs distended. Chances were that he would die of a coronary overload long before he suffocated—as his heart was having to work harder than ever to supply more and more unaerated blood to remove waste products.

He forced his mind away from that line of thought and to the trip back and the hospital. There, with the initial cryogenic-chemotherapy treatment in the first month and the heart-lung simulators for the next six, he could be ambulatory, play some golf, catch up on his reading and maybe finish his Ph.D. thesis. Two years of solid work were enough to sap anyone no matter how dedicated, or all-important, the mission.

In spite of the minor breathing difficulty, he felt pretty good and stretched until he could touch both bulkheads with hands and feet. Reilly had said that tomorrow he would start respirator treatments, as soon as he could jury-rig an oxy tank. After the initial hours of fear, bordering on terror, it was good to be able to relax and rest. He fell into a light sleep, underscored by the sounds of the computer digesting the new course information.

When he woke an hour later, the happiness was gone and a deep depression had set in. Angrily, he tried to tell himself that they had so brainwashed him that they almost had him believing that he was letting down the team. A stupid idea to begin with. What the devil, he thought, the jumble of thoughts rocketing in his brain caused his mind to fuzz. A coughing spasm left him gasping for breath.

When he recovered he stared at Reilly, lying crumpled in the bunk with the pale blotch of the remote electroencephalograph electrodes

glued to his scalp. The straps were snugged tight around his body, but still he managed to look like an old rag. When he slept, he slept the sleep of the utterly innocent—or the utterly damned. Either way he seemed resigned to his fate. The blond hair fell across his wide forehead in damp strings and his face was hidden by a concealing arm, thrown up and floating gently in complete relaxation.

From the sounds coming from the command area, he knew that Swenson was still working on the course tapes. They were a long way out, farther than any man had ever gone before, with still farther to . . . Then he stopped, in a few hours they would go no farther, but back. What was that that Swenson had said: "No mission was worth a man's life—at least not one like this." But Reilly had said his chances of being cured were eighty-twenty. What if he died anyway? It would have all been wasted for nothing.

He remembered Swenson's face when he had announced they were turning back. There had been something there, something behind the concern for a friend and fellow crewman. Witthoft knew, of course, that he had been thinking of the fate of the mission. Either way, Swenson was in a bind. Eighty-twenty—barely decent gambling odds at a Las Vegas crap game. More like Russian Roulette with a real twist—five chambers loaded between six players. Almost everybody the loser, depending on the empty sixth chamber to come up. But where the hell was the sixth chamber? And he found that he had made his decision. Eighty-twenty odds . . .

Swenson sat before the computer, his fingers poised over the keys, ready to enter the final equations. A slight noise caught his attention and he swung round to see Witthoft moving up behind him. He started to turn round, a question forming on his lips when he saw the spanner in Witthoft's hand arc down.

Witthoft steadied himself and bent to examine Swenson's scalp. The blow had been a glancing one, and a small trickle of blood bulged up, but no more. The pilot was breathing easily and a peeled back eyelid revealed unconsciousness. He settled himself into the couch in front of the electronics station and set the tape recorder going. He spoke for several minutes into the microphone, then listened to the playback twice. Finally, he got up and pulled Swenson along to the biomed cubicle and ran a quick EEG on magnetic tape. With the strip of tape in one hand, he pulled Swenson back and strapped him loosely into a couch. He time-coded both tapes on the ship's chronometer and reran the two along with the continuous EEG tapes taken from Reilly while he slept. Reilly always "hooked" himself in and the

tape was time-coded every fifteen seconds. Satisfied, he checked amplitude levels and fed the single tape into the transmitting station with instructions to relay in fifteen minutes. Then he turned and slipped quietly out of the command area and pulled himself hand over hand down the aluminum center pole, stopping to check on the sleeping form of the doctor.

In the air-lock chamber, he climbed quickly into his spacesuit. Without bothering with the checklist, he picked up the spanner again, added a heavy hammer, then opened the inner hatch. He stepped inside and dogged the clamps tight, then hesitated.

Standing inside the narrow chamber, his hands on the exhaust vent, he wished that he had been born a Catholic. He tried to remember what he had once learned of the Act of Contrition, then gave it up as a bad job. He pulled the red emergency exhaust handle down and felt the mylar fabric buffet him as the air whistled out and the suit filled.

He pushed open the outer door and pulled himself out, feeling the initial tightening of his stomach muscles as the gulf opened beneath him. He stood awkwardly in a half crouch and slid his feet forward on the smooth titanium hull. A recessed panel held the air lock external controls and he opened it and pushed the "close" switch. The outer hatch began to swing shut and he wedged the spanner end between it and the coaming. Now, they couldn't open the inner door without pumping all the air in the ship out, which would take way too long.

For a moment, he crouched before the spanner, watching the ice crystals from the lock air effervesce and break into smaller flakes that floated away with the pressure of their escaping gases. Soon he was surrounded with artificial snow like a snowman in a crystal globe.

He backed away and went aft to the omnidirectional radar antenna. It furnished an excellent handhold and he settled himself to wait.

Swenson shook Reilly violently, yelled at him, then dove down the pole for the air lock. Reilly was moments behind him. Both saw at once that Witthoft's suit was missing and that the outer air-lock door warning light indicated that it was open. While Reilly grabbed for his suit, Swenson punched the "close" switch, but still the light grinned at him.

"He's wedged the outer hatch open!" Reilly zipped the suit and pulled on the gloves. "Get on the radio and see what he's up to. Get him to pull out whatever he has stuck into the hatch and get back in here."

Swenson stared at the lights, then turned to look at Reilly's face. Reilly closed his eyes and his fists clenched.

Swenson left him, went quickly

up to the command console and Reilly zipped the helmet into place, leaving the visor up. It was useless to try and call Witthoft on the suit radio because of the blocking effect of the hull. But he tried anyway.

Swenson, sitting in the control room, felt his mind spin in a myriad of directions. He was not sure he was thinking straight. The blow had left him weak and dizzy and in these few moments of realization, he wanted to be out there, waiting to die instead of Witthoft. What was a man's life worth—sixty cents for the chemicals in the cadaver. The million dollar price that the Government tagged on each trained astronaut. Or was human life priceless—to the individual eyes, but to whom else? Even a lover could forget in time and take up a new and satisfying life. But to the individual —what after death. He was not religious and neither was Witthoft he knew. A moment's pain, then total extinction? He could not believe it.

He waited, the red light of the air-lock hatch searing into his mind a lifetime of sweating, screaming nightmares of the drama that must be played out to its inescapable conclusion. Witt understood, and now there was nothing anyone could do. He turned on the ship's recorder for what he knew was coming.

Witthoft grinned as Reilly's panicky voice patched through the command center. Now the tables were turned and the patient must calm the doctor. What an actor, he thought, and knew that circumstances would work out right.

"Relax, friend, I'm right here."

Reilly stiffened at the quiet, unhurried voice. Witthoft's heavy breathing filled the vacuum left by the end of his words.

"Witt," Reilly said, just as calmly, "come back inside. We're going back and you'll be all right."

Witthoft laughed at this. "Spare me the bedside manner, Doctor, I know what I'm doing."

Swenson listened, not trusting himself to pick up the mike and speak.

"If you know, then come back inside."

"Sorry boys and girls. Nobody ruins my grandstand play," he finished bitterly. "This was what you wanted, wasn't it? I tried to do it the easy way. A barbiturate, a tranquilizer and a shot of Scotch." Witthoft laughed again. "The best laid schemes o' mice and men, gang aft a-gley . . ." he quoted. "I couldn't find the Scotch."

"Look, Witt, if you kill yourself now, you kill us, too. The outer hatch is stuck and re-entry will tear it and the hull to pieces."

"Don't worry about that. I have a wrench stuck in the joint. I'll kick it out first. I was just waiting until you were all awake to make sure it closed properly."

"Witt," Swenson interrupted, his voice angry. "I'm back in the com-

mand center. What was on the tape that just transmitted? It went too fast for me to stop it." Out of the corner of his eyes, he could see the take-up reel spinning silently.

Witthoft chuckled. "You might call that part of my grandstand play. It's gonna make a hero out of me—not that it's going to do me any good—and put you two in the clear.

"I told Mission Control what happened. Everything, including Swen's decision. I am sure everyone will be properly emotional and feel that you two made the right decision. Anyway, I told them that this was all my doing, that you were asleep and that Swen was unconscious. I also included some EEG tapes so that they could be sure that there was no hanky-panky going on —no justification, just the plain ol' truth. Great ain't I . . . Now shut up and let me alone."

Reilly was quiet a minute, aching with comprehension.

"Witt, look . . ."

"You know," Witthoft interrupted softly, "it's beautiful out here. So beautiful that I can't come up with words to describe it. I think I can see Earth . . . there are two twin and very bright stars, right close together. I can't find Mars though. This visor is beginning to mist a little, something is wrong with . . ." his voice trailed away.

"Witt . . . ?"

"Reilly," Witthoft hesitated a moment, "take me along and bury me there, will you?" He was quiet. "That would be nice."

Swenson sat back in the couch, sick with the knowledge of what was going to happen. Yet he knew that there was no other way. It had been his decision that allowed them to turn back. The public would accept that and NASA would be forced to ignore it in the light of later events. But, Witthoft *understood*. Between them nothing could be said, yet each understood what had to be done. They were all three selected for a variety of reasons—the topmost being personal courage.

Reilly was their control; uninvolved according to the public in any way, except to save Witt's life, because he was a doctor. And that was the way they had played it.

They were clean, he thought bitterly. The planned firing sequence, the preparations, Witthoft's so-called "Grandstand Play." All had worked out beautifully, with no apparent flaws. They would be O.K.

Reilly heard the tinny sound of sliding boots, a dull clunk and he snapped his visor down and yanked open the hatch. The air-lock warning panel blinked green and he charged inside. The five seconds it took for the air to exhaust was an eternity. He kicked open the outer hatch and bounded out.

Witthoft was standing five feet away, the hammer already swinging up. The plastic starred, then exploded in a misty cloud. Reilly lunged for his legs. Witthoft

coughed sharply as the air in his tortured lungs blew out. His face showed a mild surprise.

Witthoft looked at Reilly slowly and then glanced away to the twin planets against a scattered diamond background. So quiet, he thought. His face prickled as the cold hit him, but his vision was quite clear. He scarcely felt Reilly's touch and did not hear his shouts. He opened his mouth and inhaled nothingness in a long, shuddering sob and the sky darkened.

The two men stood quietly, bulky and gleaming in their pressure suits. The last rays of the afternoon sun slanted across the low line of brown hills to miss the shadowed cross, leaving it in a single pool of hard-edged darkness. The scene was a weird tableau repeated a thousand times a day forty million miles away; but strange in this place.

One stepped forward and straightened the metal cross.

"We'll bring a better marker next time," Swenson said.

Reilly was silent. They both looked around. As far as they could see, a ragged, pockmarked landscape, with a too-near horizon spread from them. They walked away and clambered back up the ladder to the air lock. Their last glance was for the sun-capped brown hills. ■

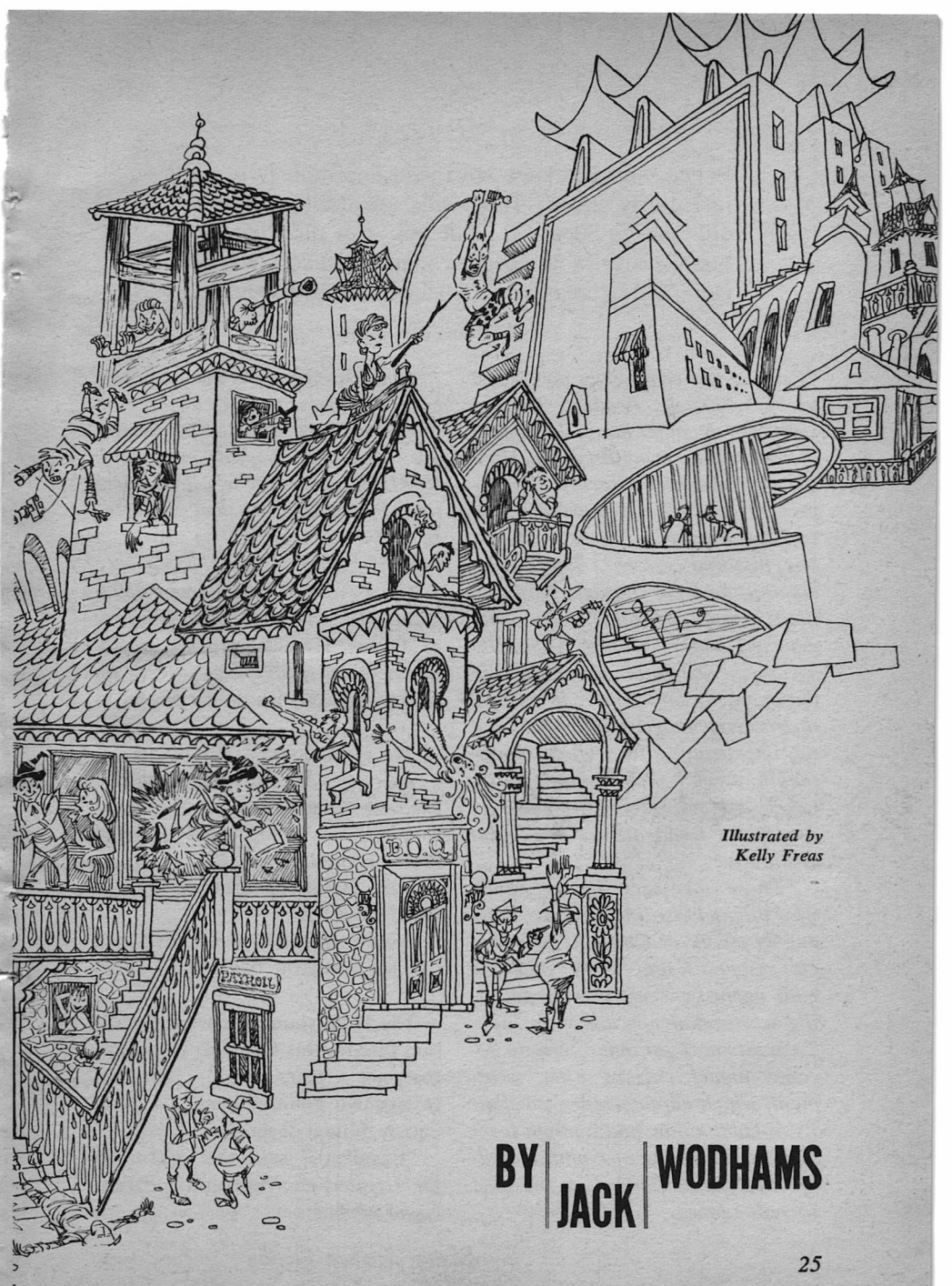
IN TIMES TO COME

Harry Harrison has done a number of top-notch novels of danger and adventure. He has also done some lovely shorts of the sort that takes off from one cockeyed assumption and follows through with perfect—if perfectly irrational—logic.

Next issue we feature Harry's latest novel "The Time-Machined Saga." This is a novel; it's high adventure and danger. It is also well equipped with Harry's inimitable logic that follows through on a straight-line departure from the world-as-it-is. Like it's obvious that the inventor of the time machine could get support from Hollywood to save costs of paying extras and burning down sets when it makes filming the burning of a city so much simpler. And the way to get pics of authentic looking Vikings is to get pictures of Vikings, of course. But when Hollywood's latest sex-bomb, the inimitable Slithey Tove (for whom the phrase "beautiful, but dumb" was invented) gets mixed up with a mere seven feet of Viking and the movie company finds that Vikings don't play their games for fun, money or marbles . . .

Fortunately they can take vacations on a beautiful island in the Devonian Sea and broiled trilobite proves delicious . . . THE EDITOR

THERE IS A CROOKED MAN



Illustrated by Kelly Freas

BY JACK WODHAMS

Police methods have advanced enormously in the last thirty years. They will, inevitably, advance still more. Sure . . . but you can also bet the equally inevitable crooked man will also advance. Here, the Crooked Man advances most hilariously.

"There is less crime than there used to be," Sacpole, head of Co-Ord said. "On the other hand, the quality of the crimes committed has risen an unprecedented degree. The apprehension of wrongdoers in straightforward cases is virtually one hundred percent. Those who commit common murder, burglary, theft, assault and the like, are easily detected and restrained. Generally speaking, potential criminals are discouraged sufficiently to ensure their social cooperation. This, and the unwarranted fear of the three-month mental reclamation course, have increasingly affected the downward trend on the per-capita crime scale.

"Those members of the public who might be so inclined are thoroughly aware of Co-Ord's formidable resources and know that the odds against successfully perpetrating a criminal act are very high. Take into account that offenders become model citizens after treatment, which eliminates the possibility of habituation, and it might seem that the dwindling of common malpractice places Co-Ord on the road to redundancy.

"This is not so. The 'common' crime has become quite uncommon in recent times. But Co-Ord continues to expand. It needs to expand. It MUST expand. A whole new section is required to deal with Instravel alone . . ."

Mr. Frederic Traff looked down at himself and choked back a cry of dismay. He had been incorrectly re-assembled. His legs were on backwards and his toes pointed to the rear.

Mr. Traff teetered unfamiliarly.

His arms did not feel right. He examined them. His elbows pointed forward, his palms faced outward from his sides.

"Oh, God," he groaned unhappily. "Oh, God."

A tear overflowed his eye and trickled down the back of his neck.

The label round his wasted neck said that he was Obadiah Hoskings, forty-six years, one hundred twenty-two pounds, apathetic inadequate, opium degenerate.

"Excellent," said the celebrated Dr. Joynter, neurosurgeon and Professor of Anatomy. "Perfect. I won-

der where they found him? No matter."

"Does the Psychotherapy Center know just exactly *how* you intend to rehabilitate him?" Leslie asked.

"Their concern is not with ethics but results. I have their trust. I will justify that trust . . ."

"It's an encephalograph, a completely new type, superior to anything in use today."

Frank was skeptical. "Small, isn't it? Does it work?"

"It should do," Clive Mossy said. "No reason why it shouldn't."

"You mean you haven't tried it out yet?"

"It's at the testing stage now. That's why I invited you up."

"Oh, yeah?" Frank said. "I'm no guinea pig. I've had some of your bright ideas. I remember 'Mossy's Improved Electroconvulsive Machine'."

"What was wrong with it?" Clive asked, nettled. "It worked, didn't it? Steveson seemed glad enough to steal it and modify me out of it."

"Yeah, yeah, yeah," Frank said. "I know all about it. So it was great, yeah, and you're a genius. But that doesn't stop me from twitching every time I think about it. No. No dice. Find yourself another boy."

"But, Frank . . ."

"What's his name?"

"Frederic Traff. Oslo to Vienna."

"Outside interference?"

Rasulko frowned at the report. "Can't be sure. Take a look and see what you think."

Mauriss crossed to the plate-glass window and peered in at the unfortunate Mr. Traff. "Hm-m-m. Not as mixed up as they usually are. Interesting. Check out Dispatch and Reception?"

"Co-Ord teams are there now."

"Hm-m-m. Good. Should be a comparatively easy case. Shouldn't take more than a week to straighten him out."

"You see how I have enlarged the brain cavity, Leslie? Eh? Excellent. Perfect. It fits beautifully."

His bifocals flashed. Sharply he said, "Watch his temperature, Leslie! It's gone up a degree."

"Yes, sir."

"Ha. Good." He hummed. "Now

for the intricate part. *Da de dum-de-dum, da de dum-de-dum.* Enlarger auto. Magnificent. Leslie, come look at this. What delicate tracery."

"Yes, sir."

"Keep an eye on the nutrient flow, Leslie," the doctor warned.

"Yes, sir."

"Hm-m-m. Ha. Marvelous. Now then. Controls responding? Good. Micro tissue welder satisfactory? Good. Are you ready, Leslie?"

"Yes, sir."

"Good. Then we shall proceed with the vital fusion."

Coordinated Scientific Criminal Research. C.S.C.R., or, popularly, Co-Ord.

The note informed Igor Bernhof that five thousand dollars had been placed in his Swiss account.

He smiled. It was easy for an Instravel operator to finely fumble the relays at a critical moment to ensure the incapacitation of a certain traveler.

Like Mr. Traff, for instance.

"Relax, Frank. You won't feel a thing, I promise."

"I'd better not feel a thing," Frank said ominously.

Clive smiled. "There is nothing to be afraid of. It is a measuring device, that's all. It's only on thirty-two volt power."

"O.K., O.K. Get on with it. Don't take all night. I got things to do. And any minute I'll start getting sensible and tell you to go to hell."

Clive raised a reassuring hand. "O.K. Are you ready? Right."

Clive switched on.

Hoskings opened his eyes and looked at the ceiling. Crisp sunlight angled through the bars and he thought, "Hell! They've got me in the jailhouse again."

Then he thought, "But I'm a registered incurable." He mulled this over. "Maybe I did some damage." But this raised the objection, "What damage could I do in the dope area?"

He stared at the ceiling. He saw a fly preening its wings and rubbing its hands over a precious find.

With a suddenness that awakened his very toes, he became aware that his sight with startlingly keen. Without glasses. And . . . his tongue felt odd. But his mouth was uncommonly fresh. In fact . . . in fact he felt fresh. He felt fresh all over. In fact . . . in fact he felt alive. Clear headed. Even alert. It was years since he felt so . . . so conscious.

What bright sunlight! What a beautiful day! It would be a shame to waste such a day of vibrant promise.

He swung his legs off the bed and stared down at himself to discover the reason for his awkwardness: Short legs; long arms; a long-thumbed, long-palmed hand; and hair; thick black hair—all over.

Hoskings gazed in disbelief.

He had changed into some kind of monkey.

"Instravel is one of the most exciting and important breakthroughs of this century," Sacpole said. "Teams of scientists worked years to produce it and perfect it.

"Now we have Instravel, safe, sure and reliable; growing all the time, expanding; shorter than a straight line when it comes to moving an object from point 'A' to point 'B'. A wonderful discovery, and currently the greatest single device to tax and absorb the talents of Co-Ord.

"Of those persons studying electrophysics on the libritape circuit, you can be sure that a small percentage are seeking knowledge purely in order to cheat the legitimate sponsors of their due in matters of personal and goods transport; or to attempt privately to smuggle forbidden items; or again, to make efforts to obtain a deliberate malfunction of a licensed Instravel container in order that the user might disappear permanently.

"Before Instravel came into operation, the method was exhaustively tested over and over again to establish beyond doubt its absolute safety-certainty. If Instravel fails, you can be sure that the failure is due to deliberately contrived outside interference.

"Remember ALSA-Ranns Transport, Inc. ran a shock pulsator that almost destroyed Instravel at its inception. A large company competitively threatened by Instravel, their criminally negative defensive tactics were fortunately quickly detected and nullified. However, this episode demonstrated that Instravel was not invulnerable to outside attention and, since that time, many attempts have been made to breach the Instravel frequency illegally . . ."

"Ready, is it?"

The technician grinned knowingly and winked. "All set and rarin' to go," he said.

Sir Edgar Smith chilled at the implied familiarity. His nose rose. "Aligned correctly to Cairo Reception?" he said austerely.

Still grinning, the technician nodded. "Set it for auto any time you have to go there—on business."

Sir Edgar viewed the man with well-bred distaste. The emphasis placed upon the word "business" was almost crude. It was distressing to have need of such people. "Very good," he said without warmth.

He turned and led the way from the bedroom. "Your installation fee is ten thousand dollars, I believe? If you will follow me, I will give you a transfer slip."

Cheekily the technician said, "Better make out half-a-dozen or so. Break it down. Doesn't look so suspicious. I'll give you the names to use."

"Hm-m-m," was how Sir Edgar acknowledged this blunt wisdom, and he quickened his pace, that the

departure of his guest might be expedited.

"That's odd. I'm getting no reading." Clive paused, perplexed. He bent over his encephalogram. "Hold it, Frank, I'll just check the wiring."

"Huh?" Frank said.

Clive looked up. "I said I'll look over the circuits."

Frank's expression was most peculiar.

"Frank? Hey, Frank! What's the matter?"

"Where . . . where am I? Where . . . who are you? What's going on? Where am I?"

"You're testing my machine. Relax, Frank."

"Frank? Who's Frank?" Abruptly Frank stood up. His breath coming faster, he gazed abstractedly around the room. His hand went to his forehead. "I . . . I don't know who I am. I . . . I can't remember. I can't remember anything. What's going on? What's happened to me?"

Taken aback, Clive said, "Take it easy, boy." He looked at his machine. "It seems I may have stumbled upon some kind of freak contingency . . ."

"It came by Special Delivery this morning, sir," she said.

"What is it?" Dorphelmyer asked.

His secretary picked at the tag. "It's from the Voyd Carpet Company," she said.

"Can you tell who sent it?"

"It doesn't say. Shall I get Brigg in to open it?"

The man who had been working on the radiant complex in the ceiling stepped down from his ladder. "May I help?" he asked.

"Oh," Dorphelmyer turned. "Why, thank you. They wrap things so formidably these days. Have you anything to cut the wire?"

The handyman produced a pair of snips. Dorphelmyer had not the perception to detect the glint of mockery behind the heavy glasses. The man cast the wrappings aside and unfolded the carpet within.

"My word," Dorphelmyer said. "My word."

His secretary stood dumbly by.

"It's a beauty," the man said, brushing up his luxuriant old-fashioned moustache. "Goes with the decor perfectly."

"Most peculiar," Dorphelmyer said.

The man seemed dissatisfied. He looked about the office and pursed his lips. He moved his ladder. "It would look best about here, I think," he said. He pulled the circular carpet in front of the desk, directly under the radiation complex.

"There. Don't you think that is effective?"

Dorphelmyer was hesitant. "What is it? Is it a carpet, really? It looks . . . It looks . . . Is it there?"

The man smiled tightly. "Of course. The color is called abyss-

black; though, in actual fact, it is not black at all but a nonrefractive combination of pigmentations that deceive the eye."

He took a few paces to the center of the carpet. The secretary gave a small shriek, and Dorphelmyer gasped involuntarily.

"See?" the man said. "Firm and solid."

"Amazing," Dorphelmyer said. "You look as though you are standing on nothing."

"Try it," the man said.

Gingerly Dorphelmyer stepped onto the carpet. "Ha!" He looked down at his feet. "How odd. I'm standing on a hole in the floor. Ha! Remarkable. Quite remarkable."

The man smiled dryly and turned to collect his ladder.

"Not too much paci-gas, Leslie. Just enough to cool him into amenability . . ."

Una Sayld stepped into the lab. "What is it you want, Richard?" she asked boredly. She glanced at her watch. "It's nearly five and I have a dinner engagement tonight and I don't intend to be late."

Richard Baseman wiped his hands down his protective clothing. "It'll only take a couple of minutes," he said. He flipped a switch on the bench. "Do you mind sitting on the couch for a moment?"

She viewed him with mild disdain, one eyebrow raised.

She gave a slight shrug and moved to the couch. She seated herself, carefully pulled at her hemline, raised her chin and waited.

Richard closed the second set of contacts.

Una blinked. Her mouth partly opened, then her eyes closed and slowly her head went back. "Aaaaaaaaaah . . ." she said.

Richard smiled shrewdly. "Good, huh?" He shut the lab door and locked it.

She spread her arms on the couch. "What is it?" she said. "It feels so . . . so glowing." She raised her head and her eyes opened wide. "What is it?"

His grin was knowledgeably lopsided. "It's a development from our electronic massage ray," he said. "Feels good, doesn't it? Clothes inhibit it a little. Take your coat off and feel it on your arms."

She looked at him, her eyes large now, her breathing quickening. "Maybe I will," she said.

She unbuttoned her coat and slipped from the sleeves. "Oh, my." She flexed her arms. "Lovely."

His lips twitched. He moved and knelt at her side. His fingers lightly pushed back the hem of her skirt. She did not seem to notice.

"The more you expose, the more wonderful you will feel," he said softly.

"I tingle all over," she said. "It's lovely. It's like bathing in concentrated sunlight."

Being careful not to shield her with his body, Richard reached to undo her blouse. "It's a tactitilator. It makes you feel vibrant and alive, doesn't it?"

"It does, it does," she panted. Then, "What are you doing?"

"I want you to know the full benefit," he said with smooth insistence.

"Peach Belle and Post Express are standing nicely now and . . . They're racing!

"And first to leave the barrier stalls is Demagogue, followed by Caveat, Dandy Boy and Musselman, with Co-Pilot hitting out for the inside. In behind him Peach Belle and Blue River with . . ."

Up on Peach Belle, jockey Squit Sheeter hit the catch at his belt and expanded helium hissed unnoticed into his billowing jacket. Powerful stuff. He gripped his knees into his special saddle and hung on . . .

"You see, Hoskings, we have done you no real harm, have we? Your human body was not exactly a desirable property, was it?"

Hoskings hung on the bars and shook his great head to clear it. "Uh,uh,uh," he grunted. "Nut . . . ruht." He had great difficulty with the unfamiliar vocal chords.

"Not right?" Dr. Joynter said. "Was it right to let you rot away? To let your hopeless self-denigration put you in an early grave? What were you? A nobody. An outcast. And now? Now you have a fine body, young, virile and strong. You are unique."

"A gorilla," Hoskings panted through the bars.

"Is that so bad?" Dr. Joynter asked. "Think about it. You are no longer a besotted husk of a man. You are fit, vital. You are magnificent, don't you see?"

Hoskings frowned in concentration, his big ape's nostrils flaring. "Dunno," he managed.

"Just rest," Dr. Joynter said. "The more you think about it, the more you will see that I am right. You have a bright future. I envisage a brilliant career for you."

Leslie entered with his dinner. She eyed Hoskings with open admiration.

Immediately conscious that his hair did not provide adequate concealment, Hoskings hastily turned his back, only to be aware that the fresh view was hardly more prepossessing.

He snatched a blanket from the bed and wrapped it round himself.

Leslie approached the bars. She smiled. "Would you like a banana, Mr. Hoskings?" she asked sweetly.

"What I tell you? What I tell you?" Sy Zadly said exuberantly. "Six length anna course record. An' they dunno nothin'."

He jammed his smokka back between his teeth only to tear it out again and wave it about. "I tell you, boy, we got it made. Who gonna

find out? Nobody, that who. We gonna clean up."

Wilf Waijer had his sober word of caution. "We've only got Peach Belle. Folk'll get suspicious, she keeps on winnin'. Anyway, the odds'll shorten an' it won't be worth the risk."

Sy regarded him pityingly. "You got rock in your boot where your brain s'posed to be. You dumb? We fix it, Peach Belle lose, right? An' who say Peach Belle only one? Anytime Sheeter ride we can fix, right? O.K."

"You'll need other jackets," Wilf objected. "You'll need a whole range of owners colors."

Sy circled his smokka airily. "O.K. We gonna make money, hey? Already we even. Boy, you gotta 'spectorate if you gonna 'vacuate. Yes, sir." With deep satisfaction he stuck the smokka into his mouth and braced his hands behind his back.

Expansively he surveyed his world.

The cop waddled over from his jet scooter tagging his violation pad from his pocket. "O.K.," he said. "I don't have to tell you what you were doing wrong. You know the prescribed southbound height and the speed over dwelling areas. Let me see your license."

Clive Mossy reached affably for his wallet. The cop bent to peer through the window. His head came in line with what looked like a speaker, angled from the roof.

The cop looked puzzled.

Clive eased his foot from the control switch. "Can I do anything for you?"

The cop straightened up. "Where . . . What . . . ?"

Clive leaned over to the window. "Can I help you?"

"I . . . I don't know. Where am I? What am I?"

Clive clucked sympathetically. "Lost, are you? Tut, tut. What you need is a policeman," he said and, with a friendly wave, he lifted to fifty feet and continued south.

"How beddy bore dibes?" Frederic Traff asked wearily.

"You'll have to be patient, sir," the technician glibly replied. "These things take time."

Mr. Traff sagged. "Well, ad leasd you cad dry do ged by dose the righd way ub dexd dibe. Blowig is bosed awgward."

"One thing at a time, sir," the technician said brightly. "You're coming along nicely, don't worry."

Mr. Traff ground his teeth, and winced with pain. He kept forgetting that his incisors had changed places with his molars.

"It is human nature," Sacpole said. "It is the nature of Man to use the machines of Man to bring about the destruction of Man.

"Did not a charioteer sometimes partially sever the harness of a rival's rig? Have not men been sent

to sea in boats cunningly patched with clay? Why, when we were younger, were bombs not put aboard airplanes; automobile brakes tampered with; bath water electrified?

"The continuing expansion of our technology greatly increases the variety of criminal ways and means . . ."

"This drug is undetectable. At least, we have found no way of detecting it.

"You have seen its effect upon muscle tissue, and rigorous testing has failed to fault the product. Side effects are minimal and temporary. Undiscoverable safety.

"Gentlemen, used with discretion, Aktiv can make this the foremost athletic nation in the world. And open warfare being obsolete, I do not have to impress upon you the enormous prestige that can be won upon the international sporting field . . ."

Dorphelmyer paced his office. ". . . Forthcoming, reluctantly compelled to foreclose, Yours, et cetera, et cetera."

He halted.

His secretary scribbled. He looked down at his feet—and center of the rug. The illusion of standing on nothing still sent a thrill through him. "Walking on air."

"Pardon, sir?"

"Eh? Oh, nothing." He looked at his watch. "That will be all, I think, Miss Tolbar. If there is nothing more, you may go."

"Very good, sir. I'll have these ready by ten tomorrow."

"Yes, yes. Goodnight, Miss Tolbar."

She gathered her notes. "Goodnight, sir."

She timidly skirted the rug, flushing a little at the amusement in her employer's eyes. *I don't care,* she thought, and her chin came up. *It's just not natural to walk on nothing.*

And she closed the door and went home.

Joe left his Instravel cubicle after a swift glance up and down the battery.

His bare feet made no sound as he ran to the curtain that cut off the women's section. He drew the stiff folds to one side, peered cautiously and stepped through.

Very conscious of his nakedness, he hissed, "Anna? Anna, where are you?"

He opened one cubicle door with his slip key. "Sorry, ma'am," he said, and hastily closed the door again.

"Joe! Joe! I'm in here."

"Anna!" Quickly he released the catch and squeezed into the compartment with his girl.

"Oh, Joe, Joe," she said, throwing her arms around him, "I though you couldn't make it."

"So did I."

They went.

"I tell you I don't want a happill," her husband snarled. "Can't you get it through your head that I enjoy being miserable?"

Kaminsky banged the lectrocorder and cried, "Ha!" Boisterously he turned to the witnesses. "You see, comrades? Do you see? Like a drosky on a glacier, hey?" He threw up his hands. "He clips seventeen seconds off the five thousand meters, and he is only a third-rank, broken down Kazkshtan blodder. What can a real runner do with a *touch* of Spert, hey?"

Kaminsky leaned forward and lowered his voice. "Comrades, an intelligent application of this drug will ensure that the Soviet Union gains complete ascendancy in the forthcoming Games."

"Can the drug be detected?"

"It is undetectable," Kaminsky said. "Pure, absorbed, used, gone."

"It will need careful handling," Bosgorov said.

Kaminsky's features stretched sideways, unaided by his fingers. "The utmost secrecy is being observed."

Bosgorov nodded at the runner, who was now doing push-ups on the track. "What about him?"

Kaminsky turned. He stuffed his hands into the pockets of his lightweight English thermo-coat. He shrugged carelessly. "From his performance, I think he is suffering from salt deficiency," he said.

"I'll let you out, if you'll promise that you'll behave," Leslie said.

Hoskings leaned forward on his knuckles. "Errggh," he said.

Taking this for assent, Leslie opened the door.

Hoskings shambled out.

"There," Leslie said. "Now you have the run of the place." She reached to stroke his hairy arm. Her eyes glowing, she breathed, "You'll find that your change has its compensations . . ."

"Co-Ord needs a full department to watch over Instravel alone," Sacpole said. "Constant vigilance is required if we are to track the brief pulsations of unlicensed Instravel containers bringing in illegal migrants and undesirables; to track private installations of the OWTE (One Way Ticket to Eternity) type; to thwart any attempts made by outside parties who, for private or political reasons, administer dispersal jolt oscillations to bring about either the permanent disintegration of the traveler, or disorganize his re-grouping to an extent that requires months of permutated calibrations to reestablish.

"Then again, moving away from deliberate interference, we have to deal with the deliberate victim. The latest teen-age cult is mutual entirety. This is a serious prank where a boy and a girl endeavor to occupy the same container. Separating those who succeed in this enterprise again requires months of computer hours to divide, evaluate and correctly realign . . ."

Mr. Traff stared horrified as they wheeled the new admission past his door. It was a grotesque human octopus, two bodies fantastically fused. He shuddered at the incongruous grins on two teen-age faces.

A hand on his arm, "We'll try and get your toenails up on top where they belong, Mr. Traff."

Mr. Traff gestured down the corridor. "What . . . was that?"

"Uh? Oh, that. Just a couple of kids. That's the third pair in two weeks. New craze they have. They call it togetherness."

"Where are we going?" Naomi asked.

"Over to my place," Clive Mossy said.

"Your place? No thank you. I want to go home."

"Just for a nightcap," Clive said.

"No," she said firmly. "I know you and your nightcaps. I've had some. Nothing doing. You just take me home. To *my* home."

Clive made a face. "O.K.," he said. His foot pressed the control switch.

Naomi frowned. She shook her head.

"What's the matter, honey?" Clive asked.

She put her hands to her temples. "I . . . I don't know . . ."

"Headache? We'll soon be home."

"No," she said. "Not a headache. It's . . ." She turned an anguished face to him. "I can't think.

Funny. My mind . . . My mind's gone blank . . ."

Clive tut-tutted. "You've had too much excitement today, darling." He grinned. "Here's our home. We can put our feet up and rest, alone together at last."

"Alone together? Wait a minute. Who are you? What's happening?"

Clive brought the craft to a halt at his third-floor bay. He slipped his arm around her. "Darling, you must be joking," he said. He kissed her. "Surely you remember that we were married this afternoon?"

"Married?" Naomi said weakly.

"Of course, sweetheart." He brushed her shoulder. "Look. Confetti everywhere. Oh, darling, darling, you're wonderful, wonderful . . ."

"Mr. Hoskings?" Dr. Joynter called. "Oh, there you are. If you will come down here for a moment. The tailor is here to measure you."

Hoskings swung out of the tree in two easy loops and came bounding over the grass, his outsize Bermuda shorts flapping.

The tailor yelped, dropped his bag, and took off.

"What seems to be the trouble then?" Dr. Cruss asked.

"My parents don't seem to understand me. My father won't let me read his newsflap, and my libritape is kept on the juvenile channel."

"I see. I'll speak to your parents about it."

"I wish you would. I'm tired of pap."

"I'll see what I can do," Dr. Cruss said. "Anything else?"

"Not that I can think of just now."

"Very well. But do try to be patient with them, won't you?"

Three-year-old Jerry Knowles sighed. Resignedly he said, "O.K."

"Naturally, every woman wants a super-child. It's understandable. But the point is that we cannot in-

undate the world with genius. Despite automation, there are many jobs tolerable only to persons of mediocre intelligence. Also, if genius is to become standard, those of us not of like mental capacity must become substandard.

"No. In my opinion, the DNA adjustment process should be carefully restricted to selected persons. After all, how much genius can we use?"

In a large room, the improved and modified Instravel containers were ready for critical testing.

Professor Muldible made one last adjustment to his project, wired the time delay, and stepped, fully clothed, into the dispatch cabinet.

He watched the clock tick the seconds away. ". . . Seven . . . Six . . . Five . . ." Professor Muldible counted. ". . . Two . . . One . . . Zero . . . One? . . . Two? . . . Three? . . ."

He stared blankly. Something had gone wrong. He had not moved. A wave of keen disappointment swept through him.

His Instravel unit cut out and a green all-clear flashed on.

Professor Muldible stepped from the receiver cabinet smiling broadly at his success as Professor Muldible stepped from the dispatch cabinet slowly shaking his head in perplexity . . .

Senator Hardman stubbed out his nicolette and dropped it in the swalla box. "Should leave the kids mingled," he said. "It would serve them right. Make an example of a couple. Put them on show, even. That would stop them."

Sacpole clucked disapprovingly. "That is a vengeful precept and exactly the kind of principle we are trying to eradicate from our society. We must try to be civilized, Senator, at all times."

Hardman scowled. "It's wasting good money on irresponsible kids."

"You were young once yourself," Senator Philson pointed out.

"Things were different then," Hardman snapped back.

Philson grinned, "I guess so. Do you remember that Jameson girl, and the night you let her drive so that she could knock down that stuffed pedestrian? Boy, how you rigged that case. You had her eating out of your hand."

Hardman looked suddenly sheepish. "It was just a lesson in applied psychology, that's all. There was no need to bring that up here."

"It's a lesson in teen-age high spirits," Philson said firmly, "and you know that it would be wrong to subject kids to harsh punishment for a juvenile escapade."

Hardman avoided his eye. "O.K., O.K.," he said. "You've made your point . . ."

"What was that, Michael?" she said with fresh interest.

"I said, wouldn't you like your child to be a genius?"

"Don't tell me you have some DNA pills?"

He patted his pocket significantly and nodded.

She looked at him thoughtfully for some moments. "Where did you get them?"

"I know a man who knows a man."

"How do you know that they are genuine?"

"They're genuine, don't worry about that," he said confidently.

She stood up. "I'll think about it," she said.

He shrugged. "There are other women."

She stopped. "You're being very blunt, Michael," she censured.

He smiled. "With these pills I can command a price for my services," he said. "You I like. You appeal to me. You've got something." He spread his hands. "O.K. To you for free. Just thought I'd let you know."

He reached for his hat.

She made a quick decision. She caught his arm. "Don't go," she said. And then, "It might be fun. How long does it take for the pills to act?"

"Potency is after one hour through to the fifth."

"Really?" she said brightly. "Arthur will not be home till eight. If you take one now . . ."

"Are you sure no one will see you switching colors?" said Wilf Waijer doubtfully.

"Sure he sure," Sy Zadly said, his paternal pat on the back straightening Squit Sheeter's riding curve almost lethally. "What he got to worry? Who's looking? He draw color, he switch. He win. He switch back. Simple." He enveloped Squit's thin shoulders with his ample arm. "Ain't that right?"

"Yeah," the overpowered Squit said lugubriously. "Simple."

Advertisement in *Male Telemag*: No bachelor den should be without a Kress Tactitilator. Stimulating and safe, the Kress Seductobeam is a must for those candlelight moments. Revel in the sensational Glo! An Experience IN Experience!

"All countries now spend large sums on top-secret projects and, while nearly all countries have diabolical weapons and frightening means at their disposal, they have reason to be afraid that their enemies may be even more formidably equipped. It is the fear of ignorance, of some awful and unexpected retaliation, that has kept the world at peace for so many years. We do not know exactly how advanced our neighbors are, and they, likewise, can only guess at our true strength. We are frightened that they may know some of the fantastic things we know, and they are frightened that we may have discovered the terrible forces that they have found. And we are all

afraid that we might not know enough.

"Warfare today is as it should be, a nonviolent mental conflict that will give a bloodless victory to those most fitted to rule, the wisely intelligent people."

"It is you that is the copy, not I," Professor Muldible said. "I was in the dispatch box and never moved."

"Nonsense," Professor Muldible said. "The experiment went exactly as anticipated except that, for some reason—inverted compensatory diffraction perhaps—my duplicate formed instantaneously through reflectory ionization . . ."

"Rubbish," Professor Muldible said. "I was molecularly assessed by the frequency atomizer, and some inhibitory factor, probably an inverse load on the quantum definitor, projected a facsimile grouping . . ."

"No, no, no," Professor Muldible said. "If that were the case, one of us would be insubstantial, a mere sho-scope image, whereas I, at least, am whole and complete . . ."

"That is impossible. You feel whole and complete, maybe, but in reality you are a composition of photonic weld in static simulation," Professor Muldible said. "Polarization would reduce your substance to a positive charge that . . ."

"Poppycock," Professor Muldible said heatedly. "If such was the case, it would mean that if I tried to go through the machine again I would be dispersed, correct?" He snorted. "You are the one that would be absorbed, not I."

"Oh, come, come, don't be ridiculous," Professor Muldible said. "Your self-realization is illusory. You are a carbon copy without carbon . . ."

"Oh? Oh, you think so, do you?" Professor Muldible activated the machinery and reset the time-delay. "We'll see who disappears," he said, stepping once again into the dispatch cabinet.

Professor Muldible scowled. "Go ahead," he said. "Go on, go ahead. You'll see . . ."

"If we ever do have another war that requires a human army, the stuff might come in handy," Gregor said pessimistically. "Offhand, I can't think where it might be employed in peacetime."

Perrimont sighed. "I thought it might be useful."

"We'll keep it in reserve," Gregor said, "with the rest. Carry on with your work."

"Yes, sir." Perrimont left.

"Kreepi-gas." Gregor closed his eyes and shuddered.

"Where . . . Where am I?" Carol said, frightened. Her hand went to her mouth. "I've lost myself."

Clive leaned over. "You're not lost when you are with me, my darling." He kissed her shocked

cheek. "Till death do us part," he murmured.

"What are you saying? Who are you?"

"Baby," he said with mock seriousness, "don't tell me you've forgotten your new husband already?"

"Husband?"

"Uh-huh. We were married this morning. Don't pretend you can't remember." He brushed. "Why, look at all the confetti on your coat still . . ."

Lady Violet Smith nestled closer to her lover. "What's the matter, darling? You seem preoccupied."

"I don't know. I'm nervous, I guess. Are you sure Sir Edgar will be away some time?"

"Of course, darling. Eddy won't be back till Wednesday at the earliest."

His sixth sense persisted. "There's something wrong. I don't know what it is."

"Not me, I hope," she said, her voice frosting.

He was instantly contrite. "Oh, no, my rose. You are perfect . . . perfect."

He kissed her but his eyes wandered about the air-conditioned four-poster.

"It's this bed, I think," he said. He stared at the enfolding plastic drapes. "It looks somehow familiar . . ."

"Never mind that now." Lady Violet pulled him to her. "Kiss me, kiss me, kiss me, Robert."

Robert put his nagging hunch aside and obliged.

Sir Edgar cried, "Ha, you tramp!" and closed his personal Instravel circuit.

The couple on the bed disappeared.

Sir Edgar switched off his secret viewer. "If that doesn't give me an uncontested divorce, I don't know what will."

Highly satisfied, he poured himself a brando and syfe.

Loy Chi Fong never noticed the small metal disk that dropped into his pocket.

The festival was in full swing, the crowd jostling, the streamers blowing in the wind, the great dragon undulating across the road. Among the many firecrackers that popped and spat incessantly, one jumper was tossed by Gang Wa.

Bang! It jumped. *Bang, bang, bang!* It hopped across the road. *Bank, bang!* Two more jumps and it was at Loy Chi Fong's feet.

Bang! The firecracker sprang at his pocket.

Loy Chi Fong lurched back too late.

Voooooooooomph!

Exit Loy Chi Fong.

"Right you are, Mr. Traff. Just sign these clearance papers, here, here, and here."

"What am I signing?"

"It's just to say that you are satisfied with the re-assembly job."

"I see," said Mr. Traff. "I intend to claim damages, you know."

"Of course, Mr. Traff. That is expected in a case such as yours."

"Ha. Well, I'm not signing anything till I see my lawyer and my own medical specialist."

"Oh."

Into the foyer, on a wheeled trolley, came another conglomerated couple. "Where from, Sam?" the reception clerk queried.

"Cairo," Sam said. "Came in on an illegal line, we think."

"O.K.," the clerk said. "Take 'em on up to Five."

Mr. Traff watched the trolley wheel away. He shook his head. "They're the oldest teen-agers I've ever seen," he muttered.

"Hosky, if you want me to tie your tie properly then you'll have to hold your chin up higher," Leslie said.

Hoskings lifted his chin. Leslie's fingers worked deftly. Hoskings' fingers worked less deftly.

"Aaaah!" She slapped his hand away. "Hosky, don't be naughty. There's a time and a place for everything." She straightened her skirt. "Now come along and behave yourself."

Meekly Hoskings took her hand and allowed her to lead him to the party.

"What you mean, you lost it?" Sy Zadly said. "How you lost it? What you done?"

"I don't know," Squit Sheeter said helplessly. "I think an apprentice took them. I put 'em on a hanger an' was only away a couple minutes . . ."

"Careless," Sy snapped. He rolled his eyes. "What in heaven I got to deal with people?" He glowered at Squit. "How come someone take 'em? What for? You been talking?" He balefaced his menage. "Anybody been talking?"

"I think an apprentice took 'em," Squit said unhappily. "See, young Donelli is on Costa this race, and that's a Pocmint gee, too. Same colors. So, by mistake, he musta took my silks . . ."

Sy's eyes widened. "What? You mean he's out there in my special jacket?" He struck himself forcibly between the eyes. "Aye-yi-yi. What we do? What we do?"

The bell rang, and a voice droned, and they became aware that the race was on.

Of one accord they scrambled from the locker room to seek a point of vantage.

"Your signature there, Mr. Hoskings, please. And there also."

Hoskings' long ape fingers guided the pen expertly.

Dr. Joynter beamed. "You see? I told you you would have a great future." He clapped his hands. "A ten-year-contract, with options."

Hoskings smiled.

The lawyer blanched. "Please don't do that," he pleaded.

Dr. Joynter rubbed his hands. "And my modest ten percent should enable me to extend my laboratory."

Velupta Orccid, his first leading lady, put a caressing hand on Hoskings' shoulder and leaned sensuously forward. "I think we are going to be great . . . together," she said, her husky voice throbbing with meaning.

In the background Leslie simmered and tried to catch his eye.

But Hoskings' sensitive nostrils were arched to Velupta's perfume, his small ocularballs beadily intent upon his leading lady.

An ape's fingers tugged to loosen a constricting collar . . .

"I told you there was something wrong," Robert snarled.

"Oh, shut up, will you? Shut up. Shut up!" Lady Violet Smith said, her sweet voice lost in testy acid.

Ferro-plastic. Easy to pour and work, gloss finish, hard and practically indestructible. But a disrupter-drill can destroy the adhesion of the magnetized steel particles, and *could* be used to soften quite a large area.

It is a trick that a handyman would know.

". . . The possessor of a new, powerful, three hundred pound body. In short, gentlemen, Hoskings adapted to his new form with surprising rapidity and soon regarded the surgeon, not with hate as a enemy, but with affection as a benefactor and friend.

"This attitude made Co-Ord's prosecution of the case very difficult, and the State's plaint lapsed for want of proof of malicious injury. Hoskings likes being a gorilla and there is little that Co-Ord can do except apply certain restraints upon the surgeon. On the other hand, had Hoskings *not* liked being a gorilla, the legal aspects would still have tangled sections of our judicial system.

"As it is, Hoskings has full human rights and though we have tried to play down the facts of the case, as he is now in show business, our efforts have been somewhat ineffectual.

"We are afraid that this might create a demand for transplant by consent and give us a society interspersed with social monkeys and . . . and perhaps talking dogs. It can be done and, oddly enough, it has been assessed that few of those inclined to metamorphosis could be denied on the grounds of insanity.

"There are many features to consider . . ."

Expertly the thief broached the lock on the glidocar. He slid behind the control stick and ran through a half-dozen combinations before connecting with the correct starting range. He threw the switch.

Lock-bars thunked into the doors and windows, and a nerfroz capsule

burst to fill the vehicle with paralyzing fumes.

In three seconds the thief was out cold and the signal bleep was sounding in the map room of the glidocar squad.

"We can rule out Instravel, solidless and mattamulse. Dorphelmyer got into the ceiling in some way we don't know about," Cranston Beever said.

"And what have you worked out?" Gil Prober asked.

"Well, on analysis, his body is smashed, consistent with a high fall. He had grass stains and dirt on his clothing. I can only jump to the obvious conclusion: Somehow, by some disintegration or disorientation process, a vertical hole was made inside the building. Dorphelmyer stepped into it and fell to his death."

"When the hole was restored again?"

"Yes. He fell from his own office. To be precise, he fell directly under a circular Voyd carpet that he had in front of his desk."

"I see."

"I thought you would," Beever said. "We think the murder misfired. The dirt and grass stains suggest that Dorphelmyer landed on solid earth. This is quite a new block and, checking back, we found that they leveled a small hill to construct this building."

"You're working on a time-slot theory?"

"It's the only thing that makes sense. I think the killer wanted Dorphelmyer to disappear, to be integrated in the foundations. He did not know about the hill. On the other hand, he might have hoped that the body would stay in the past. Whatever it was, I think he fouled it up."

"Oh, brother," Gil Prober said. "This is going to be a beauty."

With unwarranted confidence, Beever said, "We'll get him. We weren't supposed to find the body. We have a few clues."

Prober grimaced. "I admire your optimism," he said.

"Cut!" the director roared. "Cut! Cut! CUT!" Passionately he threw his script to the ground. "Hoskings, can't you control yourself? What's the good of Make-up making you decent, if you can't control yourself?"

"I'm sorry," the gorilla grunted, abashed.

"Sorry? Huh! We can't take that. We'd be banned from every scope in the country. Whoever heard of an ape being so sensitive that he has to keep grabbing bunches of leaves to cover himself? You're supposed to be threatening her like a wild animal." He gestured wildly. "Something's got to be done. Something's got to be done."

Velupta adjusted her negligible plastic deerhide costume. "As I feel I must be equally responsible," she claimed throatily, "perhaps it

might be better if he and I had a few days to adjust to one another."

The director scowled at her. "Adjust?"

"Familiarize," she said, her shallow eyes readily fathomable. "Say a week at my private retreat."

"You mean that place you go for your honeymoons?"

She cast down her eyes with arch demureness. "Yes," she said. "After all, the poor dear is obviously frustrated . . ."

"Crime today is specialized and is raising problems that are more and more beyond the accepted bounds of normality.

"Organized crime tends to betray itself, and lately we have been concerned almost exclusively with skillful and intelligent amateurs. Co-Ord's research and investigative facilities may seem to have a comprehensive variety fully adequate to deal with any contingency. This is not so.

"Every day, it seems, there are additions to the sum of human knowledge. And the public, generally, has access to this knowledge. It is inevitable that a percentage of our modern skills and discoveries should be misapplied, modified, and perhaps improved to suit a nefarious purpose. It is essential, therefore, that we be prepared to meet any novel circumstance, any challenge to our ingenuity . . ."

". . . Two . . . One . . . Zero . . . One . . . Two . . ."

The green light flashed.

Professor Muldible triumphantly stepped from the receiver cabinet. "You see?" he said. "The same again."

Professor Muldible stepped out of the dispatch cabinet. "Well, I wasn't dispersed," he said.

Professor Muldible stared at his doubles. "Good heavens! You must have been right." He seemed stunned. "Most extraordinary," he muttered. "Most extraordinary."

"Yes, indeed," Professor Muldible said. "It would seem that a reactive discharge, possibly through the meson tube, causes the pattern sequence to be ejected to its source, to take visible shape."

"It is an unforeseen consequence," Professor Muldible said, shattered. "That means that I . . . ah . . . we in the dispatch container are electrolytic representations, not truly life but cosmic creations without real substance."

"A very interesting phenomenon," Professor Muldible said clinically. "Your disintegration is inevitable. Even now you must be radiating irreplaceable energy and . . ."

"Yes, yes, yes," Professor Muldible said tartly. "We are doomed fabrications of tenuous consistency. Yet I do not *feel* like a mirage or a ghost. I came out of the receiver cubicle, reentered the dispatch cubicle, and this time you came out of the receiver cubicle."

"No, no, no. *I* came out of the

receiver cubicle, reentered the dispatch cubicle and, naturally, came out of the receiver cubicle again."

"And it is your contention that if I activate this dispatch container again, that I would disappear?"

"I think you would be absorbed, yes," Professor Muldible said. "You see, your form of existence is purely . . ."

"You don't have to explain to *me*," Professor Muldible snarled. He closed the circuits and set the time-delay. He stepped into the dispatch container.

". . . And first to leave the stalls is Red Strutter and Maori Minstrel, followed by Gamely, Top Choice, Costa, Billakin, then War Whoop, Conspicuous . . ."

Young Donelli kicked his heels and urged Costa over to the rails. His instructions were to stick with Top Choice. Don't hesitate to use the whip, the trainer had said. Costa was lazy.

Top Choice was on the inside and getting away. War Whoop was hustling to fill the gap. Donelli flailed, and his whip-butt clipped a concealed release. Expanded helium bloated his colors and, much to his surprise, his body lifted gently from the saddle. Before he had the wit to exert pressure with his legs, he was clear of the horse entirely and bobbing like a balloon on the end of the reins.

In the Paddock, Sy Zadly lowered his binoculars and let the agony of disaster screw his features into misery. "Aye-yi-yi," he groaned. "Aye-yi-yi."

Floating on air, and feeling extremely foolish in his novel position, Donelli let go of the reins.

Not a very bright lad, Donelli.

Incredibly the two runners put on speed. Already a full lap ahead

of their nearest rivals, they turned into the straight and pulled out all the stops. Their legs pistoning to a blur, they both flashed through the tape, still accelerating.

In the Russian Bloc, Kaminsky tore off his hat and threw it against the wall. "Those Americans are cheating," he grated furiously. "They are using drugs. I am going to demand an examination!"

In the American Bloc, Sol Hardy smashed his fist into the table. "They're trying to be smart, huh? They're trying to pull a fast one, hey? Well, we'll see about that. We'll get the medicos' in . . ."

"Surely you remember, Daphne," Clive said. "Why, look at the confetti . . ."

The specialist pushed his glasses up on his forehead. "Mr. Traff," he said, "I know you are a generous man who gives readily to charity, but I have to tell you this: Your heart is not in the right place."

Mr. Traff nodded gloomily. "I guessed as much. That means that I have to go back?"

"The only place," the specialist said.

"Cut!" the director roared. "Cut! Cut! CUT!" He came to his feet with a snap that sent his chair flying. "You're a gorilla, aren't you? I could climb that tree faster myself."

"I'm tired," Hoskings mumbled.

"Boy!" the director cried. "Pep pills, quick!"

Hoskings yawned. "Had some," he said lethargically.

The director looked hard at Velupta.

She shrugged her sleek shoulders. With amiable insouciance she said, "At least you're getting no censorship problems . . ."

"We avoid sensationalism. For obvious reasons, we discourage emulation by minimizing the potential of the threat, and playing down the publicity, that our image as a competent and inescapable law force is strengthened. We try to ensure that the remarkable seems unremarkable, and to create the impression that our resources are inexhaustible, our knowledge complete and infinite.

"Unfortunately, this is not so. We have been tested to the limit of our ability, and have to be constantly on the alert. We literally do not know what might happen the next . . ."

Advertisement in a newsflap: "Suffer from insomnia? The Goodlife Enervator induces swift and complete relaxation. Portable, no bigger than a strip-tube. Can be clipped by sucaps in any position desired . . ."

"What we want to know," Officer Pyke said, "is where you get these secondhand parts." He

picked up a heart unit. "Look at this."

"It's in good shape," DeCarlo said defensively. "Hardly used. Last for years yet."

"I know," Pyke said, "I know. That's what I mean. How come the last owner parted with it? Surely he didn't buy himself a new one? And this automatic liver. And this Mark III kidney filter. And this lung-air unit with a half-used refill. Where'd you get them? And what do you propose to do with them now that you've got them?"

"I have friends among the morticians."

"You mean these parts are stolen from the dead?"

"They are artificial, not true parts," DeCarlo argued.

"But what do you do with them?"

"The poor are still with us," DeCarlo said. "They just cannot afford brand-new medical sophistications . . ."

Headline: Costa Rider Losta.

"Last seen heading west and slowly gaining height, jockey Victor Donelli has been lost to sight in the twilight. Navy floaters are out with their scan pans and nets, and they welcome the diversion to indulge useful practical maneuvers.

"An inquiry into the matter is already under way but, until Donelli is recovered, we can only speculate . . ."

The delightful tingle in her arms warned her that she was moving into a Kress area. It felt good. On low power it was little more than detectable. She smiled at him.

Confidently he smiled back.

She let her stole slip from her shoulders. Lovely. Massage by a million tiny hands. He sat carefully beside her.

Under cover of the stole she fumbled in her bag. Her hand closed over her enervator. It took will power, but she stood up abruptly. "I must powder my nose," she said. "How about getting me a drink?"

Surprised, he said, "Why, sure thing. What would you like?"

She wrinkled her nose at him. "Nothing too strong." She tripped away to the bathroom.

He moved across into the kitchen. She paused, pressed the enervator against the wall, focused it, and clicked it on.

Back on the couch she noticed that the Kress radiation was slightly stronger. Delicious. So easy to revel in.

Again he settled beside her. "Your drink, ma'am," he said.

"Put it on the table, please. I'll have it in a moment."

Out of sight, his fingers turned the booster up. At the same time his other hand rose to cover a yawn.

She glowed. "Oh my, oh my." The desire to expose more flesh directly to the source was irresistible. She wriggled from her dress.

He blinked. He yawned again and shook his head and tried to

keep his eyes open. A strange ennui slacked his muscles and doped his senses. She rolled under the radiation, kicking her heels, bathing in it.

His eyelids would not stay open and he sagged limply against the back of the couch. She cavorted, enjoying herself thoroughly till, sated, she rolled out of range.

Recovered from her wild abandon, she dressed swiftly, combed her hair, checked her makeup. Then she went through the flat with professional skill, collecting the more readily portable valuables, letting her expert fingers finally go through the pockets of her snoring boyfriend.

A good haul.

Collecting her enervator, she left the flat.

"I'll never get used to it," Hoskings said, not unhappily. "I can't help being virile. It's natural to me as I am. And they like me."

The director stared at the repulsive face across the table. By what strange quirk did such ugliness magnetize women? Sans wig, teeth and corset, the director would admit that he himself was not particularly attractive. But he was not downright hideous.

His envy showed in his snarl. "We're going to fix you. We're going to make a comedy, and you're going to wear clothes . . ."

"Well?" Superintendent of the Olympic Medical Committee, Brazilian Enrico Escola, tossed out the loaded one-word question.

Gruethner, Swedish specialist, wagged his head. "Nothing."

Israeli Shylor Colom confirmed the negative with wry reluctance.

Other members of the team shrugged, or scowled annoyance at their defeat.

"So," Escola said. "No evidence? Nothing?" Again he scanned their faces. He sighed. "Nothing." He stood up and riffled the pages of his report.

"We know there is something," Shylor Colom said. "We must find what it is, or sporting achievements become meaningless." He scratched his ear. "I know it sounds foolish and naïve," he said, "but we can appeal to the sporting instinct, to the sense of fair play, of those countries obviously involved."

"Aye-yi!" Escola said, and rolled his eyes.

Shylor's lips twitched mirthlessly. "Anything for a laugh," he said.

"Why, Mr. Traff. Welcome back, sir."

Mr. Traff glared at him.

In a house ideally located in Brittany, in a direct line between New York and the Instravel receiver in Paris, 303 Spydor watched the clock with an intensity unmatched by any worker impatient for the knock-off whistle.

"Ten . . . Nine . . . Eight . . ." He dripped sweat. He licked his lips.

". . . Four . . . Three . . . Two . . . ONE . . ."

The synchronometer solenoid clacked sharply.

303 Spydor turned eagerly to the receiving cabinet.

He was there!

Triumphantly 303 Spydor ripped back the curtain. "Well, well," he said, grimly jubilant, "if it isn't Professor Sigstein Froymund. Welcome, Professor."

The professor started back. "No! No!"

303 Spydor took a firm grip on his arm and dragged him into the room. "It's no good, Professor, there's nothing you can do."

He jerked his head at 208 Spydor, who seized the professor's other arm. "We would enjoy your company, Professor, but your presence is required elsewhere, and our time is limited. I'm sure you understand."

The two agents bundled their protesting victim into a dispatch cabinet and locked the door.

For a moment 303 Spydor watched the professor hammer futilely on the hardened plastic. He nodded to 208. "The line is open and They will be waiting."

208 Spydor connected and the professor disappeared.

303 allowed himself a sigh of satisfaction. Then, "Let's get out of here."

They sprayed the telltale equipment with generous quantities of mattamulse—careless of its disastrous effects upon the building—and in five minutes were in their glidocar, well away from the scene of their coup.

When a drug had passed demanding preliminary trials and reached a stage where a human subject was required to experience and qualify its effects, the shrewd, but punctilious biochemist, Dr. Kurstead Schriff, refused the offers of his underlings. He felt that it was his duty to take whatever risk might be involved.

He settled himself comfortably on a settee. Dr. Clothilde Bell dabbed Colded on his arm. His assistant, Mayberry, inserted the hypo and squeezed 2cc. of catatonicine into his vein.

"Good," Dr. Schriff said. "Good."

"There are very few attempts at currency forgery these days. The disruptive influence of false currency was felt a few years ago, and the measures taken then have since been modified and constantly appraised in an effort to achieve perfection.

"The laminated shims that you carry in your pockets are works of art designed to protect you from the products of forgers. Every year you pay with your old shims and are issued new alloy-differentiated, code-pregnated, density radiated, intri-colored value shims.

"Under this system forgery is not impossible, but is very difficult. An

issue of great importance is that this annual monetary rejuvenation has made hoarding an obsolete pastime and has ensured that no funds are undeclared. This makes disposal of illegally acquired monies a problem for the wrongdoer and, taxation-wise, is most helpful.

"We are streamlining this method and . . ."

"Oh, Hosky, Hosky! You beast! You brute! You . . ."

Dr. Joynter looked over his bifocals. "A gorilla, hey? They're expensive, you know."

"I can pay," the director said. "Will you do it?"

Dr. Joynter pinched his underlip. "Well, I don't know. You are aware that I have a ten percent interest in Hoskings? Not as remunerative as I had hoped, though."

"You can have ten percent of me if you like," the director said slyly.

"I suppose it wouldn't hurt to have two irons in the same fire," the doctor mused. "Come on through to the sycan and I'll run a fitness test on you . . ."

Sy Zadly tore the newsflap from the machine and crunched it into a ball. "Stupid bum," he said sourly. "He should freeze, the dumkopf."

But young Donelli was not freezing. On the contrary, he was quite warm. No longer frightened, even enjoying his experience, he decided, at one thousand feet, to cool off in the night air. He loosened his jacket.

Not a very bright lad, Donelli.

"Hm-m-m. So now we have a successful tissue-restitutant. This, with anesthetolin, will make our inculcation system well-nigh perfect. Without doubt our fighting services will be the most dedicated and fearless military in the world."

The marshal's aide frowned. "But will they ever be used, sir?"

"We have them," the marshal said. "We are prepared, that is important . . ."

"I'm the same as Hoskings, aren't I? So why do you shudder? How is he different from me?"

"Hosky has charm," Velupta said. "He's basically shy, even timid. He's glorious." Her eyebrow lifted professionally. "You, on the other hand, are you in any skin. Hosky is a gentleman, but you, you have always been a gorilla . . ."

"What have you got?" Cranston Beever asked.

The technician sat back. "Not a thing," he said. "We've tried it every which way and all it does is radiate . . ."

"My husband thinks as I do, don't you, George? And we agree that it would be most worthwhile. How many divorces are there every year? A growing number. And what is the cause? Lack of understanding, isn't that right, George?"

"Yes, dear . . . of course I do."

Constance settled herself with assurance. "We are young, but even George and I do not understand one another. And can we ever? Can George ever understand a woman? Can I ever hope to understand a man? Of course not. But . . . suppose we could switch bodies? Would we not get to know each other in a way that would make each of us fully aware of the other? A deeper understanding. George, how did you put it the other night? A mutuality of . . . of . . ."

George coughed. "A consciousness of opposite requirements," he said diffidently, "and . . ."

"Exactly. You see, my husband feels as I do."

"Only a temporary changeover, of course," George said. "We . . ."

"Just a week or two. That could be done, couldn't it? I mean, in the cause of better marital relations, this would be a great step, a unique opportunity for a woman to gain a masculine viewpoint, and for a man to begin to comprehend the complexities of female attitudes. Greater understanding, that is our aim."

"A temporary changeover," George said. "We . . ."

"To realize each other's needs and feelings," Constance said. "We hope to learn of means whereby we may promote greater compatibility between the sexes. This is not just a whim. We have discussed this matter very thoroughly, haven't we, George? And we agree that our findings may be of great importance in regard to the conjugal happiness of married couples everywhere."

"We intend to write a book," George said. "We . . ."

"What we learn we will give to the world. In the interests of science and happier homes, we are willing to give of ourselves, to use ourselves as . . . as guinea pigs. We are prepared . . ."

Dr. Joynter held up a hand. "Please," he said, "if I may get a word in sideways . . ."

"My wife's as cold as a deprived brass monkey," the man said. "Have you got anything to warm her up?"

The pharmacist glanced up and down the counter. He leaned forward and brought up his cupped hand. "Have you tried this?" he asked.

The man looked down at the small bottle. "What is it?" he said.

"Krucheeger. Great stuff. Latest thing. Safe. Very popular."

"Is it any good?"

"Guaranteed." The druggist deftly plain-wrapped. He slid the small parcel across. "Forty-five bucks," he said.

The man reached reluctantly for his wallet. "It'd have been cheaper to . . ."

"Rent? Certainly," Clive Mossy said. "Come in, won't you? Have I been here three months already?

My, they should never oil clocks. Take a seat."

"Thanks." The landlord seated himself.

"I have only large shims," Clive said. "Do you have change?"

The landlord pulled out his wallet. "I think so," he said, then found himself staring at the wallet and wondering how it came to be in his hands.

Clive's finger left the button, and smoothly he took the wallet. "That's real Morocco leather," he said. "Old fashioned, maybe, but I like it. You noticed the feel of it?"

"Ah . . . well . . . yes . . ." the dazed landlord said.

Clive tucked the wallet into his pocket. "Well," he said, "that's settled then. Sorry that I'm unable to help you, but you do understand, don't you?"

"I . . . well . . . uh . . ."

"My advice is just relax. Take it easy." Clive put a hand on the landlord's arm and led him to the door.

"But . . ." the landlord said. "But . . ."

"You'll be all right after a little rest," Clive said reassuringly. "Goodnight."

Helplessly the landlord stared at the closed door. "Wait . . . Here . . ." He looked about him. He was utterly lost. He turned and slowly walked away.

His eyes wide in search of familiarity, he groped down the corridor . . .

"With the correct equipment, blowing up the area to make manipulation of the minitools easy, the operation immediately becomes less difficult," Dr. Joynter said.

His pupils listened respectfully.

"Here, you see, I cut and seal. Quite straightforward. A simple repetitive maneuver. Clifford, take over, will you, please?"

"Can we legally prevent an individual from becoming, say, a lion in order to further a career in the entertainment world?

"Since Hoskings we have had two or three cases involving transplants. Already we cannot be sure of the number of transplants that have taken place. We frown on transplants, and discourage the practice, but active prevention—when the desire for a transplant is innocently motivated, for research, for aesthetic reasons, or as a means of escape to personal freedom—is not possible.

"The issue is bound to grow more and more complex as time goes on, and Co-Ord is working hard to anticipate some of the legal and material problems that may arise . . ."

"Now then," Professor Muldible said, "explain that, smart aleck."

Professor Muldible stayed dumb.

Professor Muldible scratched his head.

Professor Muldible said, "It is most peculiar, isn't it? You know, I think we may have been hasty."

"How do you mean?" Professor Muldible asked.

"I can see what he's getting at," Professor Muldible said. "We have not been approaching this problem in a scientific manner."

"You're right," Professor Muldible said. "Carried away by the simplicity of direct experimentation, I have multiplied myself by four."

"Not you. Me. After all, *I* am the original."

"What?" Professor Muldible cried. "Balderdash! Neither of you could possibly be the original, and it is likely that he is a copy, too."

"Oh?" Professor Muldible said coldly. "And how do you arrive at this conclusion?"

"The first time I went through to the receiver, right? Leaving you, wasn't it, in dispatch?"

Professor Muldible nodded.

"Good. You haven't been through again, have you?"

Professor Muldible shook his head and smiled.

"So. I went through again, and again left a copy behind. The one left behind had been through once and therefore, failing the second time, is obviously a copy, right?"

"Ah . . . er . . . hm-m-m." Professor Muldible thought it out. Then he nodded gloomily. "That would be right. And if I am a copy and I was in dispatch, the original could not have come out of the receiver."

"Precisely. Which means that the original is either he or I. And I think that the odds favor me."

Professor Muldible smiled again. "I don't think so," he said. "You see, I have a gold tooth . . ."

Much more than cosmetic surgery, a most promising and rewarding field for development. Instravel Re-Creative Physical Perfectionizing.

Surgical technician Rasulko unsealed the door of the adjustment box and threw it open. "Hullo, there, Mr. Wilt," he said, and beamed. "There you are, your club foot and your legs equalized. How does it feel?"

Mr. Wilt looked oddly unhappy, even agitated. "There's something wrong," he said.

"Wrong?" Rasulko said in surprise. "Wrong? We've given you five toes, haven't we?" He checked.

"It's not my feet," Mr. Wilt said. "They seem to be all right." His voice broke. "It's this arm."

Rasulko looked. "What's the matter with it? It seems a perfectly normal arm to me."

"Normal?" Mr. Wilt bit his lip. "It might be perfectly normal," he said, "but *it's not mine!*"

Rasulko raised his eyebrows. "Are you sure?"

"Of course I'm sure, you fool!" Mr. Wilt choked. "Look at the difference in my arms. Long, skinny, white, the other strong, brown and thick!"

"Don't shout, Mr. Wilt, please. Er . . . we'll do something about it, don't you worry . . ."

"You the guy that messes round with brains?" Sy Zadly asked bluntly.

"We do transplants here. Won't you sit down? I am Clifford Downey, Dr. Joynter's chief assistant. He's busy at the moment, so if you tell me what you have in mind . . .?"

Sy grunted. He nodded to Wilf Waijer, who was holding the arm of a reluctant little man, and the trio became seated.

Over his clasped hands, Clifford said, "Well?"

"Yeah," Sy said. "It like this. Our friend here wants to be a horse, O.K.?"

"A horse?" Clifford said unsurprised. "Do you have your own animal?"

The blasé response upset Sy's speed. "Ah, sure. Sure, we got a horse. What else you want?"

"Not a great deal," Clifford said. "We must establish your friend's willingness to become a horse, test him for mental aberrations, and then, of course he must sign a responsibility waiver."

"That all?"

"Just about."

"He willing," Sy said. He turned to the little man. "Ain't you willing, Nye? 'Course you are!"

The little man stuck out his chin obstinately. "I want my own body," he said.

"Sure," Sy said. "They keep your body on ice, right?"

Clifford said, "It depends on the duration of transfer. For short experience periods, yes, but for longer terms we use suspended Instravel."

"Yeah, yeah," Sy said, "but he gets his body back when he wants it, right?"

"Oh, yes."

"See? Nothin' to worry 'bout."

Nye still looked doubtful.

"You'll make million bucks." Sy turned to Clifford. "Start fixing," he said with impatient authority. "He like idea. He just nervous . . ."

Roy Halsey cleared 9′ 8″ and Kaminsky glowered at Enrico Escola. "What? What? You see that? You see that?" He waved his hands angrily. "Don't tell us. Tell them." He pointed dramatically. "Tell them!"

"We have," Escola said patiently.

"Ha!" Kaminsky said.

Vladimir Olafskayer cleared 9′ 9″ . . .

"Goodness gracious," Dr. Kurstead Schriff said. His closed eyes lent strangely to the wonderment on his face. "My goodness me . . ."

"Constance, don't do that. I'm tired and not in the mood."

"Oh, George, you're never in the mood. I was never like that to you, was I?"

"Sometimes."

"How am I going to know what a man feels like if you refuse to cooperate? You're being most selfish, George. After all, it is my body . . ."

Sy Zadly was irritated beyond measure. "Will you stop always complaining? All you think is yourself, yourself, yourself!"

"A maaaare!" Nye whinnied disgustedly. "A maaaaaaaaare!"

"What the difference?" Sy cried. "You be mare forever? Huh? We fix. We make money. What the difference?"

Nye snorted and hung his head.

"We clean up. You go back. Why fuss? You do right," Sy said ominously, "or you go to glue factory before."

Nye's head came up, ears pricked. Then the alarm died from his large wet eyes and he shuffled over to morosely nuzzle his hay. "A maaaaaare," he said bitterly.

Sy thumped the stable door. "What for you horse?" he shouted passionately. "Sex life? You horse to fix race, got that?"

Nye turned his rear to the door. To point up his sentiment he began to relieve himself.

"I only winked at her, George."

"I don't care," George said stubbornly. "This experiment was just between us, wasn't it?"

"Yes, of course," Constance said, sweetly reasonable, "but I can't help it if your body is roused by the sight of another female. It all helps toward greater understanding."

"Huh!" George said. "I've had enough. The two weeks are over tomorrow. We've learned enough. We can change back."

Constance stared at him in amazement. "But, George, darling, we can't do that. We've hardly begun . . ."

Cranston Beever reported:

Dorphelmyer received the rug anonymously. Checking back, we found it was sent in the name of Koyoka Shubishu, a junior employee at 17 Overton Heights, which is the Nipponese Embassy. Inquiries at the Embassy brought denials that the rug had been sent, or that any contact had been made with Dorphelmyer.

We know that Dorphelmyer spent some years in Nippon and returned to this country for no clearly defined reason. We are also painfully aware that Nipponese technology may be in advance of our knowledge in certain fields.

Keeping in mind the delicacy of international relations, the Nipponese Embassy and personnel are being kept under unobtrusive autovigil, and the investigation is proceeding . . ."

"What we want is the *feel* of crime today," Senator Hardman said. "Why is it so? Why do people commit crimes? And why, when organized crime is practically nonexistent, when crime is now the province of the rare amateur, why should crime prevention cost more?"

"Co-Ord's range is constantly being stretched," Sacpole said. "For a

standard crime we have a standard procedure, and the machinery of the law follows a tried path for moderate outlay. But dealing with a new type of crime calls for a new approach, calls possibly for extensive countermeasures. Large-scale preventive action may have to be undertaken. The crime has to be analyzed, documented, and the criminal action defined to ensure that it is indeed a criminal action . . ."

"How much?" Constance said, aghast.

The sweet young thing wriggled back into her shift. "Fifty dollars," she said demurely.

"Just for that?" Constance asked, astounded.

A brittle edge came to the young lady's voice. "I'm not cheap, you know. And it was your idea . . ."

Mutely Constance counted out the money.

"O.K., Molloy, grab her arm and drag her into the bushes. Careful now. O.K., hold it. Look up now, and lick your lips. Now sniff her all over. That's it, that's it. O.K. Now hit hard to draw blood, and rip her clothes. O.K., O.K. Good. Terrific. O.K., now start in to gnaw her. Great. Great. Great! Magnificent!

"O.K., O.K. Cut! Cut!"

Molloy stopped his simulated gnawing and began to lick instead. His rough tongue made the girl squeal with indescribable emotion.

Molloy's new yellow eyes gleamed with satisfaction. From being a one hundred twenty-six pound weakling with a common nine to five job, he had, in one bold stroke, become a star. Buying a tiger to swap with was the best investment he had ever made.

Clive Mossy had what looked like a portable radio on his shoulder. He stepped in front of Garrards' pay clerk, who was on his way from the bank. The pay clerk had no time to do anything but gape.

"Don't stand there like an idiot, man," Clive said irritably. "Give me the bag."

Dazedly the clerk looked down at the valise in his hand.

"Are you going to keep me waiting all day?" Clive said. He looked at his watch. "I'm fifteen minutes late already," he fumed.

"I . . . I . . ." the bewildered pay clerk said.

"And when you go back, you can tell Mr. Foster that I do not like to be kept waiting," Clive said, putting out his hand.

The stupefied pay clerk handed him the bag.

"I should think so," Clive said. He turned away, paused, and turned back. "Well, don't just stand there, man. Get back to your work."

"Yes," the unfortunate man said. "I'm sorry, I . . ."

Clive walked smartly away.

"What have you done to my

arm?" Mr. Frederic Traff said. "You've made it all short and hairy . . ."

"Georgina. I like that name," Charley said. He reached across and took George's hand. "I'm glad you decided to have dinner with me tonight. Have you enjoyed yourself?"

"Immensely," George said.

Charley seemed pleased. "Ah . . . how about rounding the evening off, Georgie, with a nightcap at my place?"

George smiled inwardly at the ill-concealed overtones. He tweaked Charley's ear. "Charles, I like you very much. You're very sweet. Later in the week, perhaps?"

Charley masterfully tried to hide his disappointment. "What about your husband?" he said.

"I can handle him," George said. He gazed soulfully into Charley's eyes. "Darling, be patient."

"That's not easy with you, Georgie."

George laughed. He leaned forward and kissed Charley lightly and jumped out of the car. "I'll call you in the morning, Charles?"

Charley nodded numbly.

"It is the question of the withdrawal of your two countries, or the withdrawal of every other country," the Olympic Chairman said to the Russian and American representatives. "That is the ultimatum supported by all other competing nations.

"Under the circumstances, the Committee hereby disqualifies both the U.S.S.R. and the U.S.A. from further participation in these Games, and declares all results so far obtained null and void."

"This is outrageous," the Russian delegate spluttered. "You have no proof . . ."

The chairman rose with great dignity. "The proof lies in the superhuman capabilities of your athletes. Such extravagant superiority renders competition farcical. We do not know what you employ, or how you employ it. But we do *know*.

"In consideration to the host nation we cannot abandon the Games. But we can, and do, take the strongest possible measures where we feel

certain beyond doubt that the Olympic spirit is being violated and mocked!"

The Russian delegate glared back into the chairman's fiercely reproving eye. "Ha!" he said.

The man from the United States looked uncomfortable. He felt sticky. "Ah, Mr. Chairman," he said diffidently, "before you take action, I . . . ah . . . on behalf of my country . . . ah . . ." he squirmed. "Sometimes . . . national pride . . . ah . . . blinds us . . . and . . . ah . . . in this matter. Ah . . . we have become aware . . ." He took a hold of himself. "Mr. Chairman, we will give you the facts and throw ourselves upon your mercy . . ."

He sprang at her from the thicket. She screamed involuntarily, and thumbed her signalgard.

A silocar soundlessly swerved and homed on the stuttering blip.

"Who told you about me?" Oliver Goldstick said. "No matter. They call me a crank. They say it can't be done. I think differently."

"How close are you to success?" Cranston Beever asked.

Goldstick shrugged. "I can't say. Here you can see the physical paraphernalia of my prototype. I am constantly modifying." He made a weary gesture. "If I had funds . . . If I had backing from a large research organization . . . hrmph, who knows? But they laugh at me," he said without rancor. "I am a crank . . ."

Cranston was not encouraged, but he was desperate. He outlined the facts of the Dorphelmyer Case, then asked, "What do you think? Do you think that it would be possible to create such a time-slot?"

Goldstick smiled wanly. "My young friend, who is to say what is, and what is not, impossible?" Softly he said, "Time. Ah . . . haaaa. Time is a challenge, a powerful and inexorable adversary. But there are weaknesses. For example, Time exists. It is measurable. Therefore, it must once have started. Thus we can make the logical assumption that Time cannot be infinite. Somewhere, somehow, the first second passed . . ."

"Yes," Cranston Beever said, more curtly than he intended. "Thank you for your help. You will excuse me? I hope I didn't bother you too much . . ."

Cranston rudely took his leave, yet hating himself for the look of rejection he left on the older man's face.

In the street he tried to rationalize his guilt. "He's a nut. Sure, a nice old nut. But nevertheless he's a nut . . ."

George hummed a little tune as he let himself into the flat.

"Where have you been?" Constance cried.

"Out," George said. "Having a ball."

"Oh, George, how could you?" She came over and took his hands. "George, I needed you."

George disengaged himself. "Did you? All you think about is yourself, isn't it? Gadding about with other women. Well, two can play at that game."

Constance was distressed. "I'm sorry, George, truly I am. I've been thinking, and you are right. This experiment has gone on long enough." She paused. "I have made arrangements with Dr. Joynter, and he has agreed to take us in tomorrow for changeback."

George looked at her. He gave a short, nasty laugh. "Oh, you have, have you? When I have someone on a string who's prepared to keep me in the manner to which I am unaccustomed—just beating his brains out to keep me happy? Oh, yeah. This is gravy. No more work for me. With my know-how I've got it made."

Constance was shocked. "George!" she gasped. "George, what are you saying? You can't mean that. We'll change back." Suddenly horrified, she said, "We *have* to change back!"

"Not me," George said complacently. "I'm just beginning to like the way I am . . ."

"Your name is Clive Mossy?"

Clive studied the stranger in his two-view. He had Co-Ord agent screaming from every fiber of his conservative bloc-suit.

"That's right," Clive said. He pressed the tube release. "Come on up."

"Thanks."

Clive made arrangements for the discomfort of his guest.

Shortly the stranger faced him. Deadpan he said, "There are a few questions I'd like to ask you, Mr. Mossy. A certain pattern of incidents has brought me to you."

"Oh?" Clive said. "Would you like a drink?"

"Uh-uh, no thanks," the stranger said quickly.

"Not even coffee?"

"Uh-uh," the stranger said positively.

Clive frowned, then shrugged. "O.K.," he said. "Take a seat," indicating an armchair opposite the one he settled into himself.

The stranger hesitated a second, then bent at the knees and sank into comfort.

"Now then," Clive said pleasantly, "what's on your mind?"

"First visit to our country, I see?" the Immigration man said.

He stamped the visa of Carlich Nakaban. And so master-spy Alva Dakari, discovered, exposed, rejected, deported in disgrace, returned to the country of his denouement in a younger body, the sacrificial frame handpicked for perfect satisfaction.

Judge Mercier gazed dispassionately at the protagonists. "As the

law stands," he said, "there is nothing to prevent willing parties, so inclined, from having their cerebral matter transplanted into whatever living vehicle they think fit. The law cannot be concerned in this matter with past agreements; each transplant, whether changeover or changeback, must accord with the wishes of both participants.

"In this case a state of unanimity is sadly absent, and it is the finding of this court that there is no legal redress where the matter cannot justly be decided without the mutual consent of both parties.

"I would like to add that those practicing this form of medicine are under threat of legal action if they use force or coercion, or fail to supply authoritatively witnessed affidavits upon the mental state and precise requirements of each of their clients . . ."

George grinned, and winked at Constance.

Constance gnashed George's teeth.

"It looks like my arm, all right," Mr. Wilt said. "How'd he come to get it?"

"A technical malfunction in the de-synchronized closed circuit relays," Rasulko said soothingly. "An errant overlap. The matter has been fully rectified."

"It has, has it?" Mr. Frederic Traff said angrily. "And what happens now? Another month of flips, I suppose?"

"Oh, no, no," the medico said. "The transfer correction should not be difficult. There is nothing wrong with the arms, and the sequence flow for those members will be complete . . ."

Dr. Kurstead Schriff frowned in distress. "Oh, really! Oh, no."

Dr. Mayberry quizzed Dr. Bell with his eyes.

"It seems he is going through the hallucinatory syndrome much as expected," she said quietly.

"How is his heartbeat?"

"Regular." Dr. Bell checked. "Temperature normal, respiration steady." She peered. "No irregularities in his brain pattern, either."

Dr. Mayberry nodded. "As anticipated." He scribbled in his notebook. "Climactic envisioning disassociated from physical involvement, with no physical manifestations apart from facial expression and minor vocal comment . . ."

"Well, really," Dr. Schriff muttered. "What a thing to do . . ."

The Professors Muldible, now defined as P1, P2, P3 and P4, were talking.

"We are flesh and blood," P3 said, "and we must have come from somewhere."

"Obviously," P2 said dryly.

"We look alike, talk alike, are fully conversant with this project, and have the same memories."

P2 said, "We even have the same wife."

They looked at one another. They brightened.

"I say, that's true," P3 said. "If we share her equally . . ."

"It would mean that we would only have to put up with her for a quarter of the time . . ."

"So," Shylor Colom said with satisfaction, "it can be detected."

"Sure," Virgil replied, "provided you know what you are looking for. And provided you look for it before it can be used up by exertion . . ."

Honest merit was back in the Olympics again.

Mr. Traff stared at the Instravel medico with undisguised malignancy.

The medico gazed in silent discomfort at Mr. Traff's two short, brown, hairy arms.

"Ah, yes," Rasulko said at last. "You realize that electronic surgery is in its infancy. A great advance in medicine and we feel, ah . . . We'll set it up again," he said hurriedly, and moved as briskly as he could to beyond the range of Mr. Traff's eyes.

Dr. Kurstead Schriff's eyes snapped open. "Good heavens," he said, "the cunning devils."

He abruptly sat up.

"How do you feel, sir?" Dr. Clothilde Bell asked.

"What was it like, sir?" Dr. Mayberry said.

"Uh? What? Oh. Don't bother me now." Dr. Schriff seemed preoccupied. He stood up. "You have the rest of the catatonicine here? Ah. Good." He pocketed the bottle and the hypo. He strode to the door.

Without a backward glance he let himself out and moved purposefully away down the corridor.

Was it feminine wiles that came to her aid?

"I'm glad you lost Charley," Constance said. "It was he more than anything else." She poured herself a whisky and splashed in some aerox.

"I'll find somebody else," George said confidently.

Constance looked miserable. "Do you have to?" Then, to his consternation, George saw his face crumple and big tears start to leak out of his eyes.

"Here, here," he said, "don't do that."

"I . . . I c . . . c . . . can't help it," Constance sobbed. "I . . . I've been such a f . . . f . . . fool, George, and I d . . . d . . . do love you so . . ."

Embarrassed, George pulled a handkerchief from the breast pocket of the suit his body was wearing. "Here," he said. "Here. Dry your eyes. There, there . . ."

Constance cried brokenly on his shoulder, her hands moving with a subtlety George did not suspect till it was too late.

Even so, why should he care?

He did not know that Constance had swapped his contraceptive pills for aspirin . . .

At Canberra Instravel Reception the clerk was speaking to two Co-Ord agents. "Three of them, one after the other. Just failed to arrive . . ."

"A Dr. Kurstead Schriff to see you, sir."

"Kurstead Schriff?" Gil Prober said. "What does he want? Has he got an appointment?"

"No, sir, but he says it's urgent."

"It always is. Who is he, anyway? Anybody important?"

"I have his card, sir. It says he is the Director of the Psychiatric Drug Development Division of Principle Chemicals."

"Can't the juniors handle him?"

"He insists on seeing someone in authority, sir."

"What about?"

"He says about the disappearance of Sigstein Froymund, sir."

"Oh, very well. Let him through the screen," Gil Prober said petulantly, "but I'm warning you, if he's another half-wit, I'm going to have you vaporized . . ."

Clive Mossy opened the door to his flat, closed it and pressed the light button. Thus triggered, nerfroz gas capsules popped profusely in the hallway.

Clive spun frantically back to the door, clawed with putty fingers and collapsed.

"Sorry, Mr. Zadly, but we cannot allow your horse to run," the Co-Ord agent said unapologetically.

"What? Why not? What I done?" Sy Zadly protested.

"That horse is a transplant," the agent said. "You intend, between you, to influence the result of the race. To cheat, in other words."

Sy gaped at him wordlessly.

"You withdraw the horse and restore him, and we will overlook the matter. If you persist in your attempts to defraud the racing public, proceedings will be taken against you."

"Aye-yi-yi," Sy said. "Don't cover me with spit. I know when I'm licked . . ."

"Come in, Cranston," Sacpole said. "Take a seat. You look tired."

To say Cranston Beever looked tired was the understatement of the year. He let his weary bones sag into a chair. Drained of his natural ebullience, an unaccustomed hopelessness shaded his troubled eyes, and his features were no longer boyish, but haggard and drawn.

"You've been working too hard, Cranston," Sacpole said. "Driving yourself twenty-four hours a day."

Cranston nodded glumly. Preliminary politeness, then, *Sorry, Cranston, we'll put somebody else on the case.* Why else would he be before the big boss?

"Drink, Cranston?" Sacpole poured him one and took it over. "Here, you look as though you could do with it."

"Thanks," Cranston mumbled.

"Hear about Gil Prober picking up the fellow who was operating that amnesi-wave?"

"Yes," Cranston said, morosely sipping his liquor.

"Co-Ord has been enjoying a run of good fortune lately," Sacpole said. "We've caught four spies, brain-transplant boys, one of them an Alsatian dog. We've discovered and closed down thirty-seven illegal Instravel installations, and we've caught Mossy, the Memory Man."

"Yes," Cranston said shortly. "Everybody has been doing fine—but me."

Sacpole put a hand on his shoulder. "Cranston, you *are* in the depths, aren't you?" he said cheerfully. "What you need is a rest."

Cranston Beever thought, *Here it comes.*

"Go home and have a nice hot bath, a good meal and a long sleep, and come back here again at ten tomorrow, eh?"

The televiewbuzzer sounded. The Professors Muldible looked at each other, commonly conjecturing.

"I'll take it," P1 said. He paused. "I think it would be best to present a singular appearance."

P2, P3 and P4 grumbled, but moved out of televiewfocus.

P1 depressed the answer switch.

Sir Clifton Gunfield, Managing Director of Instravel, Ltd. (Australia) filled the screen. "Hullo, Neil," he said. "Hope I'm not disturbing you? How's the research coming?"

"Quite well, quite well," P1 said.

"Good, good. Ah. Fact is, we're having a spot of trouble here in Canberra, Neil. Ah. You're not very far away and I was wondering perhaps, ah, if you'd look into it?"

P1 looked doubtful. "I'm fairly busy at the moment . . ."

"I would deem it a great personal favor," Sir Clifton said meaningly.

"Well," P1 said, "I . . . er . . . What's the trouble at Canberra?"

"A little over an hour ago. Something fishy," Sir Clifton said. "Three people failed to arrive."

"Failed to arrive? Have the interference recorders been checked."

"Everything. It was a clear line. Nothing untoward at all. Very distressing. Some baggage, too. The chaps at Reception are most upset."

P1 stared blankly. An alarming thought had crept into his mind.

"I say, have you thought of something, Neil?"

P1's head did a very slow bob. "Yes, I've thought of something," he said dully . . .

"Marvelous," Mr. Traff said, razor-sharp teeth on his biting sarcasm. "Absolutely brilliant. First, you gave me his arms; now you've given me his whole body . . ."

"Ah, Cranston. You took my advice. You look much better," Sacpole said. "I want you to meet Dr. Kurstead Schriff."

Cranston shook hands with the doctor. It seemed expected.

"Come over here and sit down," Sacpole said. "On the divan. That's it. Now. I suppose you are wondering what this is all about?"

Cranston gave a noncommittal nod.

Sacpole smiled. "Dr. Schriff, would you care to explain?"

Dr. Schriff cleared his throat. "In the course of my studies I have discovered a certain drug, catatonicine. Basically an ataraxic, this drug was developed to relieve the psychoses of those suffering from schizophrenia. However, when I personally undertook initial testing of the drug, my reactions were remarkable. Remarkable indeed."

"In what way?" Cranston asked.

"Well, you may remember that Professor Sigstein Froymund disappeared. He was a very good friend of mine, and his inexplicable exit upset me considerably.

"Now, under the influence of catatonicine, I gained some kind of super vision, and I saw clearly that he had been kidnapped. I saw the whole crime, was cognizant of every detail, and could recognize the agents involved."

"And it checked out," Sacpole said contentedly.

Cranston frowned. "You mean you became clairvoyant?"

"Clairvoyance, E.S.P., what you will," Sacpole said. "It works. Why do you think Co-Ord has been so successful lately?"

"You mean . . .?"

"Exactly. And that's why you are here. Take off your coat and roll up your sleeve. You are steeped in the Dorphelmyer case. A shot of catatonicine and you'll get the whole picture from beginning to end . . ."

"I used to work in Missing Persons," Garvey said.

"So what's that to me?" Sy Zadly said sourly. "I ain't lost."

"Listen, Sy," Wilf Waijer pleaded, picking up the bottle and filling the glasses again, "he's got something . . ."

"Yeah," Garvey said, a little drunk already, "I got something. And you know what I got? I got some of the stuff that put me out of work, that's what I've got."

"What's he talking about?" Sy said. "Why you bring this bum here?"

"Sy, will you listen for a minute . . .?" Wilf begged.

Garvey tugged at his side pocket and produced a small bottle. He waved it at Sy. "See this?" he said. "Know what it is? No, 'course you don't. It's Co-Ord Especial, that's what it is. ESPEC." He glowered at the bottle. "Missing Persons," he said, "was a good job. Good gang. Then suddenly, nobody's missing any more. 'Cept me."

He put the small bottle down and turned back to his glass.

"An' what so special about this stuff?" Sy asked skeptically.

"Not special," Garvey said. "*Es*pecial." He threw his arms in a wide gesture, and his drink slopped crazily. "ESPEC," he said grandly. "Extra Sensory Perception Experience Control." He slumped forward over the table again. "How about that?" he said. "A shot in the arm. Ha!" He began to laugh. "A real shot in the arm. Ha, ha, ha. How about that? . . ."

"What annoys me," Cranston Beever said, "is that he made such a fool out of me."

Gil Prober chuckled. "At some time we all get blinded by science."

Cranston gazed at his beer. "What an idiot I have been. I've had every department in Co-Ord searching frantically for a time-manipulator. We took that radiation complex apart, piece by piece." He smacked his palm down on the bar. "Dammit, Gil, he led me right up the garden path and drove me nearly crazy."

Gil laughed and raised his finger to the bartender for refills.

"Right under my nose all the time. The most obvious suspect and I discarded him. Why? Because he didn't have the know-how, the scientific background, the technical knowledge." Cranston groaned.

"Don't take it so hard," Gil said lightly. "After all, you weren't alone. Everyone at Co-Ord thought the same way you did."

"But we didn't think of anything else," Cranston said. "We ran around in circles looking for a genius who didn't exist. How he must have laughed!"

"Ah, now," Gil said, "I wouldn't say that the genius didn't exist. On the contrary, he displayed the true genius of simplicity."

"Hm-m-m. I suppose so," Cranston said grudgingly. Then he exploded, "But what a setup to lead us astray! The radiation-complex, the Voyd rug, the *exact* perpendicular location. And the grass stains!" He smacked the bar again. "The obvious clue, and I didn't even check the lawn just outside the door!"

"Under the circumstances, I wouldn't have, either. He made you believe what he wanted you to believe. Anyway, he was a tidy worker and probably erased the signs."

"We didn't even notice that that section of the floor had only recently been laid."

"Oh, that is a pardonable error," Gil said. "The building is not very old and that honeycomb ferroplastic weld joints itself undetectably. No, our builder's handyman was a master. He knew what he was doing when he knocked Dorphelmyer out and dropped him out the window . . ."

"That Traff character is a jinx.

Thousands of people use Instravel without fuss or trouble. Yet him," he shook his head. "Oh, boy! You know, I know it sounds crazy, but do you know what I think? I think it's an allergy. Instravel doesn't bring him out in a rash, or anything; it just scrambles him a little."

"Pity we have had only negative results in our efforts to forecast the future," Sacpole said. "However, that may come, eh?"

"A greater understanding of the drug is required," Dr. Kurstead Schriff said cautiously.

"Taken all round, I must say that your drug is the greatest single crime-preventive aid of the century," Sacpole said. "With concentration and catatonicine, I can see that there will be virtually no crime committed beyond our knowledge.

"We have closed the black market in D.N.A. pills, have much greater Instravel security, can detect antisocial transplants and, most importantly, are now able to halt the progress of those, like Clive Mossy, who abuse a novel technical advance to achieve their own ends."

"Catatonicine can be abused, too," Dr. Schriff pointed out.

"Yes," Sacpole said, "we are well aware of that. We need to employ strict controls on its supply and use. Most rigid controls." He coughed. "Doctor, that is why you have been called here. The possibilities of this drug are incalculable. Already our Intelligence departments are demanding a higher quota. You can appreciate our desire for secrecy."

"I can indeed," Dr. Schriff said. "We can be thankful for industrial piracy. At Principle Chemicals we work under strict security. The product is safe and in few hands."

Sacpole smiled. "I can see that you have a sound grasp of the situation," he said.

Dr. Schriff smiled back. "As a major shareholder in the company, my interest is profound—not superficial," he said. "All we have need to discuss are the terms of a satisfactory agreement . . ."

Sy Zadly came awake. "Gorrum," he breathed.

He snapped upright. "Gorrum! I gorrum! I there. I see. I see plain!" He smacked his fat palms together. "We got it made. Quick! Write down before I forget."

The pen trembled in Wilf Waijer's fingers. "Go ahead," he said eagerly. "Go ahead."

"First race, Annabella, nina-two. Second race, Bubba, threeta-one. Inna third, Steamer Steven, twenny . . ." He stopped. For a moment his features retained a fixed parody of enthusiasm.

Wilf looked at him for reason, looked back to see what he had written. He felt himself begin to freeze as horror dawned.

With a bellow of rage, Sy Zadly

sprang to his feet. "Yesterday already! I know yesterday!" Furiously he kicked the table with his stockinged foot.

Which did not help matters.

Sir Clifton Gunfield looked at the Muldibles in dismay. "Are you sure that restoration is impossible?"

"The difficulties are insuperable," P3 said.

"The nearest we could get would be a photographic likeness of a stranger," P1 said.

The Professors Muldible were depressed and worried.

Sir Clifton turned to the Co-Ord agent. "Must there be publicity? Obviously it was an unfortunate accident. It won't happen again. What is done cannot be undone. Surely it would be better if the matter were handled quietly."

"It's not for me to decide," the agent said. "I only uncover the facts. I'll put in my report to the Chief, and he'll probably hand it over to the Legal Department to sort out . . ."

"ESPEC makes much of Co-Ord redundant," Sacpole said. "There is nothing beyond our comprehension. This has leaked out and is now general knowledge, which has had a marked effect upon the public consciousness. Crime, as such, can not occur without being brought to light for scrutiny.

"Now we can truly say, 'Crime does not pay' . . ."

"Everybody thinks that this guy Goldstick is a crackpot, but he's a genius not a screwball. I met him, and he made so much sense to me that I started working with him. Between us we have overcome practically every obstacle. We can create a chronomorphous state, and our main difficulty now is period selectivity."

"All very interesting, Ray, but why have you called us in?"

Ray grinned. "Shortly we will be able to move around in Time. Do you know what that means?"

"Go ahead, elucidate."

"I'll explain it this way. Back in 1935, three men walked into the Cambridge and Citizens' Bank and carted away over one million dollars worth of bullion. Got it?"

"I . . . uh . . ." He whistled.

"You got it. Some kind of fancy knock-out gas was used and the three men got clean away. The case is still in the Unsolved file," Ray said happily. "It's perfect. Handled with care, no one should get suspicious . . ."

Carl Roeder was wondering how to murder his wife. He liked the idea of planting a crucial but natural posthypnotic suggestion, but the recent Irving Case had revealed that the least suspicion invited ESPEC. And if ESPEC *saw* nothing untoward, the obligatory truth session was an attendant check-out feature that could foil the most skillful histrionic performance.

Carl Roeder sighed. It had been much easier in the old days.

No suspicion. There must not be the least hint of suspicion.

A thought came to him and he sat up to help it mature. Why not use ESPEC itself? He could see Mayberry at the club. Maybe wangle some ESPEC with a good excuse. With a shot of ESPEC and a telekinetic booster . . .

He rubbed his chin. It might work. He could envision her whereabouts and influence something to fall on her. Or perhaps give her a push. Or maybe put a glidocar out of control and . . .

Col was breathing hard. He did not have much time.

Everything was in readiness. He put his forehead against his forbidden Mossy Memory Box. For some reason it successfully confused ESPEC culprit visualization. It was simple, but it had its disadvantages.

The shutter was on 1/50th, and he clicked it over.

Col stared blankly at the Memory Box. Stuck on it was a note that said: "See letter on table."

Col turned, saw table and letter.

With agitated fingers he ripped the envelope open. He read: "Your memory will be gone for about a week. Don't worry. You did it yourself for a very good reason. Take it easy and try and relax. There is plenty of food in the kitchen cupboard and . . ."

Sy Zadly had learned something from his personal experience under the ESPEC drug, catatonicine. The picture came through clear and vivid, a startling presence, but too broad to cope with fine print. Also, the sound fell far short of hi-fi, and Sy laid his crafty plans accordingly.

Muffled unrecognizably, in a bare, undistinguished room, he made whispered blank-screen teleview contact with an equally circumspect ex-marine sharpshooter.

And so it came about that later, in a room on the tenth floor, overlooking the racecourse, the pair were huddled, effectively masked, at the window, as the first race was in progress.

"There he go," Sy hissed. "Yellow. Blue cap."

"So you keep tellin' me," the sharpshooter breathed patiently.

As the horses approached the home turn, the ex-marine raised his powa-punch-pac and carefully sighted through its telescope.

The horses turned into the straight.

"Now!" Sy said hoarsely. "Now!"

The ex-marine squeezed the trigger. His threepy gave its curious 1/10th. second full range whine, "weEoo," and a low-surge bolt needled out to the rump of Sy's selection.

"Again," Sy whispered excitedly. "Again! . . ."

Wilf Waijer, successfully dis-

guised as a gentleman, watched the galvanized horse streak past the post, its frightened rider a blur of yellow.

He adjusted his monocle, twirled his cane, and contentedly went to collect . . .

"You might say that we have discovered the Philosopher's Stone," Sacpole mused.

Sir Clifton Gunfield savored his sherry. "You might say that." He studied Sacpole. "You showed remarkable perspicacity, old chap."

"I saw no reason why such a fortuitous discovery should become public property," Sacpole said mildly. "Competition would destroy its value. Too many commodity-duplicators, and operating benefits would be marginal."

"More sherry?" Sir Clifton filled his wineglass. "Odd, you know," he said, "it never crossed my mind. The productive potential, I mean. Materials to goods. My main concern was the Instravel image."

Sacpole laughed. "Luckily it was. It kept you quiet."

"And, thanks to your extraordinary foresight and promptness, the affair has been most satisfactorily resolved."

"Yes," Sacpole said. He rolled the wineglass between his fingers. "If you pay generous compensation to the dependents of the irrecoverable travelers, and I take care to close Co-Ord interest, only the Muldibles' remain. And they, with admirable co-operation, desire nothing more than privacy."

They sat for a while, both reflecting upon the promise of the future.

Sir Clifton broke the silence. "You are a powerful man," he said. "May I ask why you chose this course?"

Sacpole sighed. "Powerful, but not wealthy," he said. "This golden egg will restore the family fortunes, yours and mine." He raised his glass. "Cheers, eh?"

There is always a crooked man. ■

EXPLANATION? It's generally considered that the expression "O.K." is a traditional Americanism that has gradually spread around the world—but its origin has been a subject of debate for a century or so.

Into this thoroughly confused issue, I'd like to inject a little additional confusion. It's been explained as being derived from an abbreviation of "Oll Korect," perpetrated by some of the less perfect spellers of pioneer days.

My suggestion stems from an experience in Scotland—whence came not only many of my ancestors, by a respectable percentage of original American settlers. It was only after several days of association with the Scottish guide—who had, of course, a lovely Scottish burr—that I recognized at last he was *not* saying "O.K." but the much older Scottish "Och, aye!" As pronounced by a Scottsman, it sounds closer to "Ah, ky" and very readily shifts to "O.K."

The Returning

If you're spaceship-wrecked on a planet, you may have to wait a while to get home. But a few megayears don't really matter— if you're the right type of entity.

by J. B. MITCHEL

At 2300 hours, the wall of rain hit the north end of China Dry Lake with a roar like a runaway jet engine. The salt-cake desert sucked at the falling drops with a thirst eight thousand years old. In seconds, the wild burro tracks were erased—the craters of the sand trap spiders hammered away, and the creosote bushes flattened against the ground like frightened crabs.

Slowly, the storm marched across the full length of the valley and squatted at Murock. Within half an hour, flash floods formed: first in capillaries on the high slopes of the mountains, merged into swelling veins of water lower down, then with a roar plunged into the ancient river channel and onto the lake bed.

The call was faint at first, but insistent. It grew in magnitude slowly as fresh water percolated down through the arsenic-laced crust and dissolved the heavy sodium chloride crystals in which the Sald hung suspended. Many times in the tens of thousands of past years, water had reached the place of the sleeper but the alarms set long ago had not triggered. Now the call was given. Very low intensity sensory waves began to creep inward to the minute brain and to register like microscopic hammers. Long before the Sald was fully conscious, reflex mechanisms had activated. Like a blossom unfolding, life flowed into the Sald. As the spore state was put aside, an excitement gripped the organism. It formed and quickly discarded the visual image of the storm raging above its hiding place. It erased, too, the new knowledge that came to it: that the remains of the ship above in the soil had long since converted to a strata of oxides.

Some other thing, *some wonderful something* had come to it simultaneously with the arrival of fresh water from the storm. It was *that thing* which had awakened it. The Sald lay quiescent, every sense alert —waiting. There—electromagnetic waves, very weak, attenuated in passing through the moist soil. Rapidly the creature rearranged its mental passband and studied the electric vibrations taking place at two billion changes per second. These were no happenstance signals produced by natural discharges of energy in the atmosphere of the planet. This energy was bunched precisely in time: all on—all off. The signals were little blocks of radiation, just so many, then one wider in time than the rest, and again repetition. Only intelligent life forms, highly advanced thinking life forms, could produce vibrations such as these in the medium.

This was an exploratory party, the Sald decided; one like its own when the ship had fallen helplessly down into the thick gas envelope of the primitive green planet circling the small yellow sun. Time was important, if contact was to be made with these visiting beings. The

chance might not come again. From the thin jelly of its body protoplasm the Sald formed pseudopodium and swiftly threaded up through the soil, aided by the water films bridging the glassy particles. A joy surged in its cells—an overpowering urge to join the other thinking life forms.

In the "G" range barricade the downpour blotted out any view of the weapon waiting three hundred feet away. The pour-down also pinned the waiting drone aircraft to earth at Armitage Field. The game had come to a halt to wait out the rain, but each piece on the military chessboard was neatly tied in place by a complex network of radio beams crisscrossing in the storm.

"Check M.D.I.," Coleman requested, turning away from the dark viewport. He studied Kawalski's fingers flicking switches on the console and the answering light patterns on the face of the oscilloscope. The technician nodded:

"Miss Distance Indicators fine, Ron."

"Riply, Telemetry?"

"Go."

"Jones, Seeker?"

"Go, Ron."

"Larson, Beam Rider?"

"Go, Chief."

"How about Power, Bark?"

"It's Go, Ron."

Coleman felt the tight bunching in his back muscles ease off. He leaned against the gray, concrete wall of the bunker, a look of temporary relief on his heavily tanned face.

Keep relaxed . . . let go . . . don't start worrying, he told himself sternly. Somewhere off in a corner of his mind it started: *In this moist soil a ground loop could . . .* and he shut it off. *Instruments tell you what's gurgling out there in its little gold plated belly . . . not telepathy, and the crew's watching that for you . . . they're minding that bucket of . . .*

"Ron, how come weather didn't spot this thing earlier?"

Coleman's attention was brought back to the control room by Kawalski's voice. He shrugged his thin shoulders.

"Weather's only human, Bob. They did warn us at 2240."

"Yeah, that gave us twenty lousy minutes to cool off a hot bird and duck out. Anyway, they got their dope secondhand from radar. You can take their damn wet and dry bulb thermometers and the rest of that junk and . . ."

Coleman smiled thinly and went back to the viewport to stare into the wet darkness. Kawalski leaned over—bummed a cigarette from Riply on his right-hand side—lit it, and continued to watch over the life pulse of the remote bird playing constantly across his screen.

They're just as tense as I am, Coleman mused. *They want done with it. We really don't like our little, leashed metal ferrets. We need*

them but we don't love 'em . . . not like we did dear ole Shep. It was better in the daylight shots. At least you could see the drone and the bird cockfight ten miles overhead. This way, it was just tracking lights for the Askania cameras to follow . . . the radio beacons shaking their electromagnetic fannies at the monopulse antennas . . . then the big flash way up high. Telemetry wrote the drone's obituary in a cool, detached way. It wasn't fun somehow, like fireworks at Grant's Lakeside Park when we were kids . . . This was more like the rifle he remembered.

First it had been a .22 long . . . rabbits, and the wet morning grass and his dad up ahead pushing the tree branches away from the trail. Later still, the fun lingered when he banged away at jump-up targets shaped like men. Kid fun; the marksman's ribbon, like a prize at a carnival shooting gallery . . . the delight in the heavy feel of the blued metal and the smoothness of the stock. Fun and not for real . . . until at 0700 on a morning long ago he'd pulled the trigger and a belligerent target shaped like a man fell dead against an alien green tangle of jungle growth. The tight knot in his back muscles had returned and Coleman flexed his shoulders to rid himself of the pain. Beyond the thick glass of the view port the rain continued to fall.

Above the surface the dry lake had returned to a shallow version of its prehistoric self, and the Sald could flow rapidly southward. All about it the Sald felt the mental out-of-focus patterns of the non-thinking life awakened by the storm; the Fairy Shrimp, other small crustaceans, even the faint neural bubblings of the one-celled creatures viciously searching for food.

Slowly, the pulses of high-frequency energy increased in strength, but the source from which they came was now moving. First, the energy would rise sharply to a peak, then fall abruptly off into the background noise—then a weaker rise and fall from small beams on either side of the center. In an agony of fear that the wave source guiding it would be lost forever, the Sald willed itself to greater speed and began to search the area ahead selectively in spectrum segments. In the ultraviolet the storm and landscape was a savage smear of senseless patterns, but in the deep infrared the Sald finally was able to make out an angular shape far ahead.

Moving closer, it seemed to the tiny Sald that the ship filled the entire red-black zone of the angry sky. There was no doubt this was the exploration vehicle which had brought the thinking life forms. Sensory rearrangement, and the Sald felt throughout the neutral spectrum for the thought patterns which should be here. Its sensitivity

was decreased, however, by strong electromagnetic transients from the ship. This puzzled the Sald, for in its own ships such conflicting emanations from nonliving sources were tightly screened off so as not to interfere with mental communication. Yet this was an alien vehicle. Perhaps these new friends did not find such energy disconcerting to their touching of minds. The Sald's excitement was without bound. It moved closer and made contact with the metal members of the base frame. For a moment it hesitated; then having reached a haven, the Sald could no longer contain itself; it would enter the ship and meet the aliens or, if they were not there, would await their return.

Fighting the stream of water rushing down the metal surface, it forced its eighth-of-an-inch diameter body upward until it reached the ship. Then area by area, the Sald glided over the smooth surface, searching for an opening into the interior. At an unpressurized inspection hatch the Sald detected a break in the skin surface and extending a molecule thin pseudopodium, streamed into the dark interior. The tremendous effort exerted so soon after coming from the spore state exhausted the creature. It lay quietly in the blackness, free now of the pounding water, attempting to gather its strength. Then it eagerly opened out its mind in the neural spectrum to seek the thought vibrations of the aliens . . . and reeled.

No longer screened by the shielding effect of the metal skin, the random electrical noise of the ship poured through the passband of the Sald's open mind like an avalanche. The small being writhed in agony, trying to reduce sensitivity and at the same time escape to a free part of the frequency spectrum. Finally it found refuge in a null region and withdrew into itself. The shock of the experience was severe and recovery slow. Very cautious now, the Sald discovered that by restricting itself to a narrow region of the infrared it could discern the objects around it by their heat emission without interference from the electrical noise. It began to explore again the tightly packed interior of the alien vehicle. The search took a considerable amount of time for the ship was large and the Sald moved slowly; but as the examination progressed, the Sald's hope faded into dismay.

The alien ship was so primitive it staggered the Sald's mind. Only the geometries which purposefully employed very high frequency, coherent electromagnetic vibrations indicated some advanced state of scientific development. It was incredible to the Sald that such a crude ship had brought the alien explorers to this world. The innovations for applying forces, for spatial reference and control were inefficient and rudimentary. The drive, however, was the worst of all. These creatures utilized an ancient form of

energy-release derived from the interaction of the outer shells of atoms. To the Sald's knowledge, all other thinking beings it had encountered secured the thrust required for interplanetary flight by falling through the gradient of standing waves established around all planetary matter by the scattering interference of the extremely low-frequency wave emissions of stars. No energy drives had been utilized in ships for centuries: only the passive means of resonating the ship's electromagnetic boundary conditions to the particular astro-wave frequency desired for a specific planet's potential gradient.

Still, these beings had reached this barren planet. They would have to return to their home and the Sald knew that it could utilize even the resources of such a primitive race to put together an apparatus to communicate with its own kind. The Sald began to move faster in its urgency. It must find the place on the ship which provided space for its occupants. It would then be able to establish a touching of minds somehow and display its need. It was then that the Sald encountered the warhead.

At first, this region in the ship only appeared to the Sald as a bulkhead of matter. Unable to pass the obstacle in its normal state, the Sald again transformed itself into a molecular strand and penetrated the structure lattice directly. Here the density and conductivity of the matter shielded the Sald's sensory system from the terrible electrical noise flowing from the ship's nonliving source; it again expanded its mind like a fan, carefully scrutinizing the geometric space pattern around it.

Using a scalpel of wave forms, it touched lightly the tensions existing between the electrical repulsion forces and the nuclear binding energy of the nuclei; the Fourier components of the photon radiation strung out like spectral beads in its consciousness. The delicate knife edge on which stability of this particular matter hung, waiting like a cluster of gold-centered targets for the quick release provided by a chance neutron, at last provided a terrible understanding. The shock was profound, and for long minutes the small being's mind went dark. Time flowed along in its own channels like the flux of rain on the black hull of the ship in the night. At long last, consciousness returned.

The temptation to reach out and pluck the deadly nuclei: to release the straining tensions—to trigger the trap was strong. Oblivion would be better than the endless grave it now faced; a hidden, living death endured for aeons with the towering mountains and the cold stars. In a rush of anguish, the Sald thought of home and the sweet, embracing love of its own kind. Unconsciously, the powerful mind fought hopelessness by surrounding itself with a

cloak of remembrance of the warm happiness of its past time. The comforting womb of memories held the Sald tightly, slowly soothing away the trauma.

A trap waiting to be sprung! Waiting for whom? The Sald's mind focused quickly and sharply. It thought about the crude ship. From one end to the other it was free of an occupying space for any living beings. It remembered the pattern of periodic opening and closing of energy contacts within the ship; the noise fields generated by sudden rushes of electrons along the skeins of thin conducting matter which interlaced the entire internal structure of the ship like a primitive nervous system. The patterns were communications.

A robot! This crude thing was a robot. A robot designed for killing, matter rendering. And it was even now speaking to its masters in the periodic pattern of its device responses. The quick spur of achievement in its intellectual exercise rapidly ebbed within the Sald. It still faced the same hopeless fate in spite of this new understanding. It was futile to think of attempting contact with the builders of this machine of death. Whoever they were, whatever their form, they were as distant and unreachable to him as he was from his home. There would be no understanding of sympathy or love for others, especially an alien, from such belligerent beings, the masters of the killing ship. There could be no touching of minds, no help. Never could there be a returning.

In its despairing thoughts, one unanswered question rose to the surface and stubbornly refused to be put aside: why would a killing ship be sent to this barren planet? What was there to kill? Sterile rock and infusoria? Or, was the ship intended to trap and destroy him?

The Sald carefully explored this last idea. It had felt no change in the energy field upon entering the structure. It was sure it had not set off any alarms in its exploration of the interior. Still, the alarm could have emitted a warning of its presence by some means other than radiation in the electromagnetic spectrum. Somehow the Sald felt this last possibility remote in terms of the crudeness of the technology evidenced in its surroundings. Suddenly the Sald reeled at its stupidity. Coming from the spore state had dulled its faculties. It should have remembered the launch frame. The ship had not arrived on this world—it was ready to depart; its masters were not waiting in some far remoteness of space; they were nearby, somewhere in the storm. Hope and joy surged in the tiny being. Time—everything now centered on the flow of time.

Moving rapidly, the Sald withdrew from the warhead matter, where it had been shielded from noise and able to think without pain. It retraced its path minutely

through the clumps of semiconductors, dielectrics, and chemical power sources. It finally moved all the way back to the main motor area and, with new purpose, rechecked the primitive solid fuel matter. Then, falling to work, it exerted counterbalancing coulomb forces and began rearranging the atomic structure of the fuel.

Hours later the Sald emerged from the main motor zone and studied the mercury cell banks. Then it exuded a thin thread from its body and began weaving a network of new conductors from circuit to circuit. The complexity of the linkages grew until every square inch of the interior space was webbed, every thread being extended up into the nose area where it would finally terminate within its own nervous system. The Sald moved on to the warhead and again began rearranging the matter structure until neutralization was complete. The astro wave resonator was now ready. This final act took place at 0530 hours.

At 0530 hours, Ron jerked alert even before he heard Kawalski's shout.

"Ron, there's a malfunction. Something's gone haywire with M.D.I."

As Coleman started down the line of technicians everything on the board went wrong. Only Riply could still report that telemetry was go.

"If water's entered the umbilical we better pull line power before the smoke starts, Ron." Bark's hand moved toward the kill switch as he spoke.

"This isn't Kennedy," Coleman snapped. "Even if she blew out there it would be worth finding out what caused the snag. Just hold line power until I give the word."

A speaker came to life on the wall.

"Barricade from Range Control. Pick up the count down. Weather's letting up . . . stand by for drone activation."

Ron grabbed the microphone.

"Control from Barricade . . . hold the drone . . . hold the count . . . we've got real trouble down here."

On the master panel a red pilot light flashed.

"Look," Kawalski whispered, pointing. "The battery circuits just went hot."

Next to the weapon's control panel, an amber light blinked out to be replaced by a second crimson glow.

Coleman triggered the communications switch.

"Clear the range area . . . emergency . . . clear the range area . . . malfunctioning weapon on G . . . clear . . ."

Outside the barricade sirens began wailing, and in the ready room at Armitage Field a buzzer sounded a scramble.

"There goes the umbilical," Riply shouted, as a horn started barking in short snorts of sound. Helplessly, Bark pointed to his board. Above the open power switch, twin arrows of range light had stabbed into existence.

"Hold clips just flipped off, too," he moaned, Ron broke into a run toward the thick viewport. On the way over, without knowing he did so, Coleman started the telemetry recorders at run-up speed.

At Armitage two F4U's lifted off the runway to intercept a runaway bird.

The first faint rumble in the earth came as the booster fired. Against the pale gray sky, still laced with retreating rain squalls, the flame stood out like an orange lance twenty feet long, its extent beaded with standing waves. Almost instantly, the weapon lifted off the launcher and streaked away at a sixty-degree elevation angle toward the north.

Counting to six, Larson pushed the destruction button without waiting for orders. The action produced absolutely no effect whatsoever on the rapidly rising weapon.

The speaker kept barking in the background, indicating that the Askania cameras down range were making an attempt to record the flight on film. When the booster dropped free, the lead F4U had the bird lined up on its radar and launched its rocket cluster. Against the sky the barricade crew, peering through the port, could see the multi-trails from the rockets streak toward the weapon track. Then, incredibly, the weapon pulled away from the pursuing rockets as if they had stopped in mid-flight. Under the sharp press of thrust from the main motor, the weapon arched upward and almost instantly dwindled to a point of light.

Coleman made it back to the communications board in a bound, with Kawalski at his heels. He called the sixteen-inch camera on Diablo Peak.

"Are you tracking, Diablo?"

"Still got it, Barricade. Still holding on." The voice from the speaker sounded shaken. "Boy, triangulation says she's at 500,000 and getting up close to 16,000 miles."

Coleman leaned limply back against the console.

"Where's the thrust coming from? How can she be accelerating at ninety-five miles altitude when she should have petered out at ten. There's no shield on that little bottle . . . she should be burning . . . the head should have let go . . . what goes . . . ?" Ron grabbed the mike as the thought struck him.

"Diablo, did she blow yet . . . keep us on the horn."

"Barricade from Diablo . . . hell no . . . she's still climbing like mad . . . almost out of the picture from here, but no blow yet . . . repeat no blow yet (there was a pause) radar's got her beacon

. . . that's bleating full blast . . . we've called Goldstone to try to take over tracking."

Coleman remembered the telemetry, and glanced quickly at the dual "S" meter on the rack of UED receivers. The needles were slowly breathing up and down, well above the noise level. The recorders were tucking the incoming signals smoothly into magnetic storage. On an impulse, Ron touched the receiver speaker switch and the air was filled with a musical sound from the intermingled pulses.

Listening, Bark suddenly felt a glow of strange, inexplainable pleasure spread over his thoughts.

Almost imperceptively, he experienced a sensation out of context with reality—as if something had brushed his mind in passing, something like a long forgotten memory.

He felt darkness surrounding him and a pressing sense of acceleration. His very nerves seemed to pass through the skin of his body to be lost in the darkness, giving him a sense of great control and power over something. Incredibly distant, he felt the pull of home, intermingled with the gravitational force fields of many other massive bodies . . . and he adjusted his hurtling self accordingly. How long this experience went on Ron Coleman could never recall. Then, ever so slowly, the thought pattern slipped gently from his mind as if he were passing into a deep state of sleep and joyful waiting.

Around Ron in the barricade the entire crew had listened to the sounds until they passed into inaudibility. Only the soft hiss of the Cosmic noise background now came from the telemetry receiver's speaker. For a long time the crew stood silent, each lost in his own thoughts. Then Kawalski opened the "deep freeze" port to the outside. The men filed slowly from the barricade into the light of a new desert morning. The air smelled incredibly sweet and fresh from the recent rain.

Feeling still the lingering touch of a dream, Ron paused—fished in his pocket for his pipe and pouch. Lighting up slowly, his eyes were drawn to the fading rose tint which still lingered on the sharp granite walls of the westward mountain range.

Kawalski came up beside Coleman, stretching his muscular arms luxuriously, a boyish grin spread across his homely face.

"You know, Ron, you're gonna get writer's cramp making out reports and you'll be hoarse after Interrogation gets through with you . . . but damn it—wasn't that the wildest, most beautiful shot we ever made?"

"*We* made?" Ron roared in laughter, and the pair started on a run for the coffee truck like two schoolboys, their pounding heels kicking up moist clots from the arsenic-laced crust of the ancient lake bed. ■

The Quark Story

MARGARET L. SILBAR

This is a scientific-fact article in that scientists seriously consider the quarks to be fact. My personal opinion is that they must be getting desperate!

In 1964, the world of high energy physics received a curious April Fool's Day present: the proposal of a fundamental triplet of particles called "quarks." The community has been haggling over it ever since, for quarks may indeed exist and thus require profound changes in our picture of the universe.

Some physicists suspect these three hypothetical particles—and their antiparticles—are the ultimate constituents of almost all of the two hundred or so applicants for the growing zoo of elementary particles. At first glance, quarks would be a simple and beautiful way of, as one physicist says, "straightening out the mess left behind by ungrateful experimentalists." Moreover, quarks could, assuming they exist, lead to significant technological repercussions, particularly in the realm of space travel.

If the quark conjecture is correct,

the unbecoming number of baryons and mesons uncovered by experimental physicists, usually in the form of resonances, might fall into place. Perhaps quarks could also help us understand the dynamics of these particles. Unfortunately, the fundamental question of physics—what is matter—will remain unanswered. The question would merely be rephrased on the sub-subnuclear plane: what about quarks?

Nonetheless, these "beasts" are an exciting—and in a sense, daring—proposal to bring elementary particle theory once more in line with the abundance of experimental data. Essentially, quarks are an extension of the "atomic hypothesis" on a still lower level. (Their name was borrowed from a line in "Finnegan's Wake"—"Three quarks for Muster Mark"—which seems to be part of a drinking song.)

The most peculiar property of quarks is their fractional electric charge; two of the quarks are negative and have a charge of—⅓—if you consider electrons as having a charge of ±1. The third has a +⅔ charge. The negative quarks have many of the same properties as two well-known heavy particles or "baryons"—if you prefer Greek—the neutron and the lambda hyperon.* The positive quark has properties like those of the proton. (It was once thought that the proton, neutron and lambda *were* the fundamental triplet of nature, but those simple days are apparently gone for good.) Quarks are presumed to be rather heavy, perhaps ten times more so than the proton.

Because of the fractional charge, at least one of the three quarks would be stable! For, knowing that electric charge is conserved, what could a fractionally-charged object decay into, but something else having a fractional charge? Once a fractional charge, always a fractional charge. Which of the three quarks might be stable is not yet clear although, in analogy to the proton, neutron and lambda, some physicists think of the positive, proton-like quark as being the least massive and hence the stable one.

No quark has yet been observed and this, of course, is the primary objection many physicists voice against them. The nonbelievers point out that quarks may indeed be "too simple" and that the solution to the elementary particle dilemma lies along more subtle lines.

Quarkologists justify their lack of success by citing what appears to be a contradiction: the proton is considered as being composed of three quarks, all very much heavier than it. The way out of the contradiction is to assume the quarks are very tightly bound. One group of experimentalists, working at Argonne National Laboratory, estimate that five thousand times more energy than that required to pry a proton or neutron from the nucleus

*Properties of the various particles mentioned in this article are summarized in Table 1.

would be needed to pry a quark from a proton. The elusiveness of quarks, then, might be because we just haven't got up enough energy yet to find them.

Not all of the recognized particles are thought of as incorporating quarks. No one knows if such things as the photon and electron are "quarkable," but some people have hopes. The "hadrons" (strongly-interacting particles—the nucleons, the other baryons, the mesons) can all be "quarkized." This means that all but about ten of the numerous presently-recognized particles, or resonances, can be visualized in the quark triplet model.* Baryons, such as the proton, are thought of as being formed of three quarks. The "mesons"—once defined as particles with masses between those of the electron and the proton—are bound quark-antiquark pairs.

Hadrons, and thus our presumed quarks, obey several additive conservation laws and, preliminary to showing you how to "quarkize" a hadron, a discussion of these laws is in order. The quantities conserved are isospin, baryon number, strangeness, hypercharge, and, of course, charge.

Isospin—a vector whose third

*There are, incidentally, other triplet models of strongly-interacting particles which are less exotic, but more complicated and, therefore, less appealing.

Mass (BeV)	*Name*		*"Zoology"*	
0	Photon			"NON-QUARKABLE"
0.000511	Electron			
0.140	Pion		Mesons	Hadrons: "QUARKABLE"
0.494	Kaon			
0.938	Proton	Nucleon	Baryons	
0.940	Neutron			
1.115	Lambda Hyperon			
1.675	Omega Minus			
≈ 10 (?)	Quarks (π, ν, λ)			

Table 1

This table contains particles mentioned in the article; there are, of course, many other hadrons as well as a few other "non-quarkable" particles.

component is denoted by I_3—was first invented in the early '30s by Werner Heisenberg to explain the proton and the newly-discovered neutron as two faces of something he called the "nucleon." Isospin was, in fact, the basis of the first so-called symmetry group in elementary particle physics, but it wasn't for some time that we recognized Heisenberg's model as being more than a mathematical trick.

The concept of baryon number (B) was a result of looking at a large number of reactions and decays and eventually noticing that, if you assigned a number $B = +1$, 0, or -1 to each particle, the *total* baryon number was the same before and after the process. That baryon number as conserved is of vital importance, for if the proton, which is the lightest of all the baryons, *could* decay, what would happen to our universe? Since we are anticipating building baryons with $B = 1$ out of three quarks, the baryon number of a quark is ⅓. None of the present particles has such a fractional baryon number—another idiosyncrasy of quarks.

Strangeness (S), like baryon number, is again the result of studying various reactions and finding a conserved quantity. While strangeness is conserved in the strong and electromagnetic interactions it is, unlike baryon number, violated in the weak interactions. The name of this quantity, "strangeness," is a holdover from the days when the "strange particles" (having $S \neq 0$) were not very well understood. Strangeness and baryon number together add up to define hypercharge (Y), i.e., $Y = B + S$.

Finally, electric charge (Q) is related to all these other quantities algebraically: $Q = I_3 + \frac{1}{2} Y$.

The conservation of all these quantum numbers was established empirically over a long period of time. (Charge conservation goes back to the eighteenth century.) But, naturally, some theoreticians are willing to leave it at that. Electrical charge has as its bailiwick, and exists by virtue of, the electromagnetic field. Fields corresponding to B, S, and Y can, with a little bit of imagination, be identified, but the situation is "clearly not very clear."

The three components of isospin, along with hypercharge, are four of the eight generators of the highly-successful symmetry group, SU(3). (This group was proposed some time ago by various Japanese physicists.) Moreover, Murray Gell-Mann of the California Institute of Technology, who originally postulated "the eightfold way" version of SU(3)*, conceived quarks because of the things missing in this classification scheme. It seems that cer-

*The ideas of science often occur to different people in different places at the same time. The octet version of SU(3) was independently and simultaneously conceived in London by an Israeli Army colonel-turned-physicist, Yuval Ne'eman. Quarks also have two originators; a former student of Gell-Mann's, George Zweig, proposed the same model, but called the basic particles, "aces, deuces, and treys."

	THE QUARKS			THE ANTI-QUARKS		
	π	υ	λ	$\overline{\pi}$	$\overline{\upsilon}$	$\overline{\lambda}$
I_3	½	−½	0	−½	½	0
B	⅓	⅓	⅓	−⅓	−⅓	−⅓
S	0	0	−1	0	0	1
Y	⅓	⅓	−⅔	−⅓	−⅓	⅔
Q	⅔	−⅓	−⅓	−⅔	⅓	⅓

Table 2

tain families just do not fit in the eightfold way, but, with quarks, "the center slices can be put back in," filling out the group.

Now, for some examples of how these conservation laws apply to quarks. The characteristics of the quarks (π, ν, λ) and antiquarks ($\overline{\pi}$, $\overline{\nu}$, $\overline{\lambda}$) are shown in Table 2. The idea, of course, is that the quantum numbers of the quarks composing a particle must add up to those of the particle. Mesons, having B = 0, are quark-antiquark pairs; baryons, as you will recall, three quarks.

One of the simplest particles to "quarkize" is the K meson, one of the first strange particles. The kaon exists in four charge states, plus, minus, and two neutral ones. The positive kaon's (K^+) quantum numbers are $I_3 = ½$, S = 1, Y = 1, and Q = 1. It becomes clear, after checking the table, that the one $q\overline{q}$ combination which will yield a positive kaon is $\pi\overline{\lambda}$. The way to build a negative kaon (K^-), with quantum numbers $I_3 = -½$, B = 0, S = −1, Y = −1, and Q = −1, is $\lambda\overline{\pi}$. The K^0, whose quantum numbers are $I_3 = -½$, B = 0, S = 1, Y = 1, and Q = 0, is $\nu\overline{\lambda}$. The K^0's antiparticle, $\overline{K}^0$, has the quantum numbers $I_3 = ½$, B = 0, S = −1, Y = −1, and Q = 0 and is, therefore, $\lambda\overline{\nu}$.

Baryons are built in much the same way. An example is the proton whose quantum numbers are $I_3 = ½$, B = 1, S = 0, Y = 1, and Q = 1. The unique solution is $\pi\pi\nu$. Another example is the omega minus. This is the missing link which, when found, convinced the majority of physicists that SU(3) is a valid symmetry of the strong interactions. This baryon's quantum numbers are $I_3 = 0$, B = 1, S = −3, Y = −2, and Q = −1. Its quark formula is thus $\lambda\lambda\lambda$.

The attraction of quarks to one another to form particles, as outlined above, is one of the stickiest

of the unsolved theoretical problems. The canonical assumption is that the mass of a quark must be about 10 billion electron volts* (or, at least, greater than 3 BeV). If, then, three quarks make a proton, we have the curious energy relation: $10 + 10 + 10 = 1$. This bears some explanation.

The phenomenon of "three ten-ton trucks smashing together to make a Model T Ford roadster" is not really such a new concept in physics. It's just extreme. The familiar problem of the hydrogen atom is a simple example. The point is that the total mass of the atom is somewhat less than the sum of the masses of its component parts, the proton and electron, taken separately. The potential energy of the bound state is less than that of the separated electron and proton. This energy difference is called binding energy and, as its name implies, is responsible for holding the atom together. In this case, the binding energy is 13.6 ev which is very small in proportion to the rest masses of the constituent particles, as befits a non-relativistic problem. When the proton and electron combine to form the hydrogen atom, this energy is lost through the emission of gamma rays, thus conserving mass-energy.

Now, in the case of three quarks coming together to form a proton, the binding energy is far greater—in the neighborhood of 29 BeV. Here, the ratio of potential energy to rest mass is close to 1, bringing us into the realm of extreme relativity. Somehow, this binding energy is lost in the formation of the proton through some such mechanism as gamma rays. Our ten-ton trucks are not only leaving a Model T, but also lots of energy debris. The formation of a proton from three quarks is a rather catastrophic affair.

The tremendous amount of energy used in quark binding can be seen with elementary algebra. Let us deal with the simplest binding first, that of a quark and its antiparticle. A meson, the positive kaon, is pictured in Figure 1; the line between the quark and antiquark corresponds to pair binding energy or B. Since the binding for a quark and an antiquark is qualitatively different from that for two quarks, the binding energy, in this case, is denoted as $B_{q\bar{q}}$. The total mass of the kaon is, then, $m_k = 2M_q - 1B_{q\bar{q}}$ where M_q is the mass of the quark—as well as the mass of its antiparticle. $B_{qq} = 2M_q - m_k \approx 2M_q \approx 20$ BeV, since the mass of the kaon is negligible in this case.

The energy needed to bind three quarks into a baryon can be seen in the same way. A baryon, e.g., a proton, is shown in Figure 2. Its total mass is $m_p = 3M_q - 3B_{qq}$. The binding energy *per quark pair* is different from that we found above and is $B_{qq} = M_q - \frac{1}{3}m_p \approx M_q$

*By virtue of $E = mc^2$, this unit of energy, BeV, can be taken also as a unit of mass.

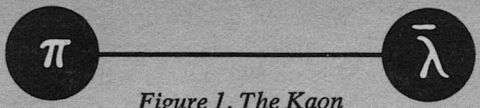


Figure 1. The Kaon

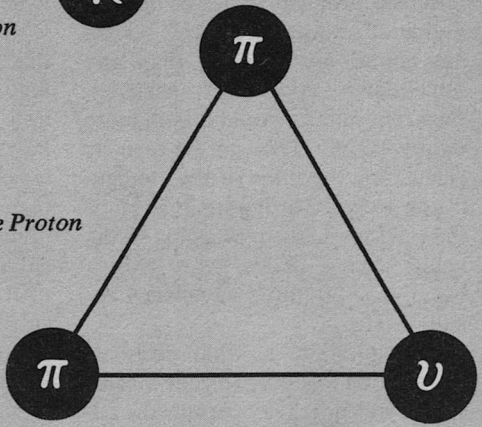


Figure 2. The Proton

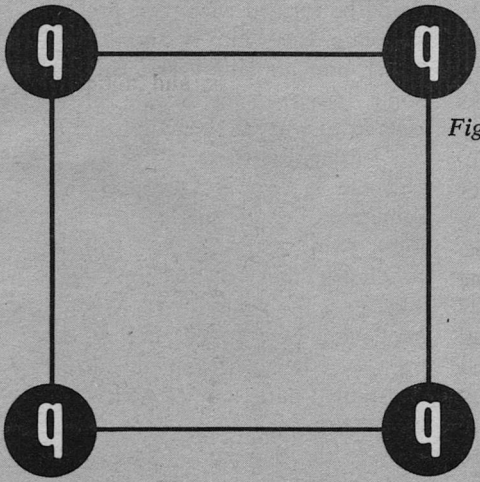


Figure 3. The Saturation Problem

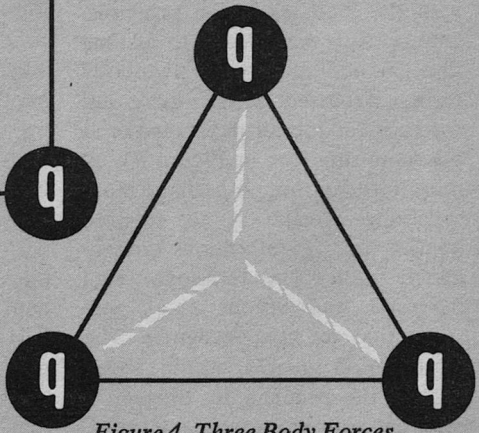


Figure 4. Three Body Forces

$\approx$ 10 BeV.

There is still another and as-yet unsolved problem in quark binding —that of saturation. If three quarks are bound more tightly than any now-known system of particles, then four quarks would be still more tightly bound. This can be seen by calculating the mass of the configuration pictured in Figure 3. If M = the total mass, then, plugging in the values found above, $M = 4M_q - 6B_{qq} \approx -20$ BeV, an absurd result!

The question is, what prohibits a saturation like this? In your macroscopic world, gravity permits the adhering of more and more bits of earth to form mountains and planets until finally there is no more construction material. What is it that stops more than three quarks from binding together?

The saturation problem is undoubtedly tied up with another technical difficulty, having to do with the Pauli exclusion principle. One possible way out is to assume that, in addition to the two-body forces discussed above, there are forces involving all three quarks at the same time (as in Figure 4). A more bizarre, though perhaps more satisfying, escape is to suppose quarks are "parafermions"—completely unlike the fermions (e.g., baryons) and bosons (e.g., mesons) that we now recognize. The parafermion quarks would sneak around the problem by obeying a different kind of quantum statistics.

How are quarks created? There are some cosmological theories which suggest quarks were formed with the universe and, moreover, that some of these primary quarks may still exist. The quarks physicists are primarily interested in, however, are secondary quarks, which are produced by the very high energy cosmic-ray particles impinging on our earth from the galaxy, "God's little accelerator." (All attempts to use man-made accelerated particles to produce quarks have failed; this failure is, incidentally, what leads physicists to suggest that the mass of quarks is more than 3 BeV). Quark pairs could be formed when two protons colliding decay into two protons, a quark and an antiquark. There is some disagreement among physicists as to what the reaction rate is, but let's ignore these problems.

There is also the prospect that sometimes "deuterquarks" or "Siamese twin quark-quarks" will be produced; that is, that $pp \rightarrow pqr$ where r is the deuterquark. What is happening here is that one of the protons is being broken up into *its* constituent parts, one of which is a bound two-quark object (r) analogous to the deuteron. (You might wish to consider, as above, why it is that the deuterquark and a regular quark have nearly the *same* mass. It is because of this that the deuterquark might also be stable.)

There are two ways, essentially, that experimentalists are trying to

"capture the beasts": some are hunting the quarks soon after they are formed and still moving fast. Others are going about their hunting in more leisurely fashion. This latter group is interested in quarks that, after having been formed in cosmic-ray interactions, may have filtered down to the earth—and thence to the oceans—as the "nuclei" of raindrops.

There was a good deal of excitement last January when experimental physicists in the first class of quark hunters thought they had seen a newly-formed quark. The experimental data is not yet convincing, however. If a quark were to be seen, it would perhaps come about in this way: There is a certain amount of ionization that a relativistic particle dumps in a scintillator —or counter—which is, of course proportional to its charge, namely, 1. If particles of less than charge 1 passed through, there would be "less than minimum ionizing." This would be a very distinctive event in the electronic logic of the experimentalist.

Turning to the more leisurely experiments, one must consider where free, stable quarks might reside. Negative quarks, if stable, might well be captured by ordinary atoms in "electronic" orbits. (Likewise, for the negatively-charged antiparticle of the positively-charged quark.) These negative quarks, being heavy, would "gravitate" to the inside of the nucleus, where they would take up permanent residence. Getting the negative quarks out of the nucleus could be tricky, particularly if they interact strongly with the nucleons, and no one is quite sure what lines the extraction process might follow.

A positive quark might be easier to come by. It is conceivable that such a quark, with a $+\frac{2}{3}$ charge, could capture an electron and form "quarkogen." Physicists expect such an atom would behave like an oversize hydrogen atom—chemically "rather like a super alkali." Since there is some of the electron's charge left over, quarkogen would be a comparatively easy thing to detect.

There is even a possibility that the great American experimentalist, Robert Millikan, saw the first (and last?) quark back around 1910. Millikan remarked, in reporting the first measurement of the electron's charge, that he had discarded "one uncertain and unduplicated observation, apparently upon a singly-charged drop, which gave a value of the charge on the drop some thirty percent lower than the final value of e." There are two wild reasons why Millikan's "error" may have been one of the quarks. Millikan was using oil drops to measure the electron's charge and the oil of his day was relatively close to the earth's surface and thus may have contained cosmic-ray quarks. Moreover, his distillation procedures were unsophisticated enough so that he would not have been likely

to "purify" his oil of quarks.

Some physicists are, in fact, now looking for quarks, using modified versions of the old Millikan oil-drop experiments. One of these quark hunters, Peter Franken of the University of Michigan, is conducting such experiments so as to take advantage of what he calls "that bit about the remaining negative charge." Franken believes "the beasts might go hiding in such things as oysters." His theory is that oysters—"most of their flavor comes from the metal gunk they pick up" —would trap quarks while filtering seawater for food.

Another experimentalist, J. P. Schiffer, working at Argonne, has checked meteorites—the Arispe, Henbury, Carbo, Grant, Toluca and Canyon Diablo—for fractionally-charged particles. While Schiffer has come to "no satisfactory conclusion," he made the very interesting comment that it is possible the lunar surface would have an even higher concentration of quarks than ours. The reason the moon might shelter quarks is that it has no atmosphere. The thing about an atmosphere is that it filters out and slows down most of the high energy cosmic rays before they reach the ground. The sudden stopping of the cosmic rays at the Moon's surface might, therefore, release enough energy to create quarks easily.

Assuming the best possible concentration for Moon quarks, based on Schiffer's upper limit, a liter of lunar material would yield enough quarks to make ten joules of energy. All of which leads to the suggestion that man might mine Moon quarks for power. ("Older" science-fiction readers may remember that, in the '30s, one reason for traveling to the Moon was to mine gold and diamonds; by the '50s, thoughts had turned to the more valuable uranium and thorium. Now, it's quarks. How things have changed!)

Donning the cloak of extreme optimism, let's consider the technological possibilities. As we have seen, a quark annihilating against an antiquark would release 20 BeV of energy which is about ten thousand times more energy than that which is released in a hydrogen fusion reaction—as in the sun! Since a controlled thermonuclear device has not yet been designed, 20 BeV of quark energy would become all the more remarkable—if it is controllable. The obvious thing which comes to mind is to isolate quarks in one box, antiquarks in another and dribble them, pair by pair, into a furnace to annihilate. This would be a highly portable, extremely efficient source of heat and hence, electricity.

But what is a "box"? In a vacuum bottle, for example, what is to prevent the quarks from slipping through the lid? Perhaps physicists could take advantage of the charge peculiarities of these quarks and construct an electromagnetic con-

tainer, the inside of which is a vacuum. Or, the problem could be circumvented by trying only to cage quarkogen; such an atom would be large, larger, in fact, than the hydrogen atoms which are kept in balloons. This would be a nice solution were it not for Coulomb's dictum that "like charges repel"; only so many quarkogen atoms could be stored in the balloon before it developed a huge charge which it could not contain.

The consequences of Coulomb's law might be avoided, however, by neutralizing the box—by adding two negative electrons for every three positive quarks. But, would the quarks and electrons form plasma or a stable molecule? If the former—and maybe even if the latter—there is the chance that, every once in a while, a quark would bounce against another, the two would form a deuterquark and an explosion would take place. (In addition, there is a probability that three quarks would bounce against each other, releasing still more energy.) While each explosion would be comparatively small, several simultaneously would not. (Using antiquarks would, of course, lead to exactly the same kinds of problems.)

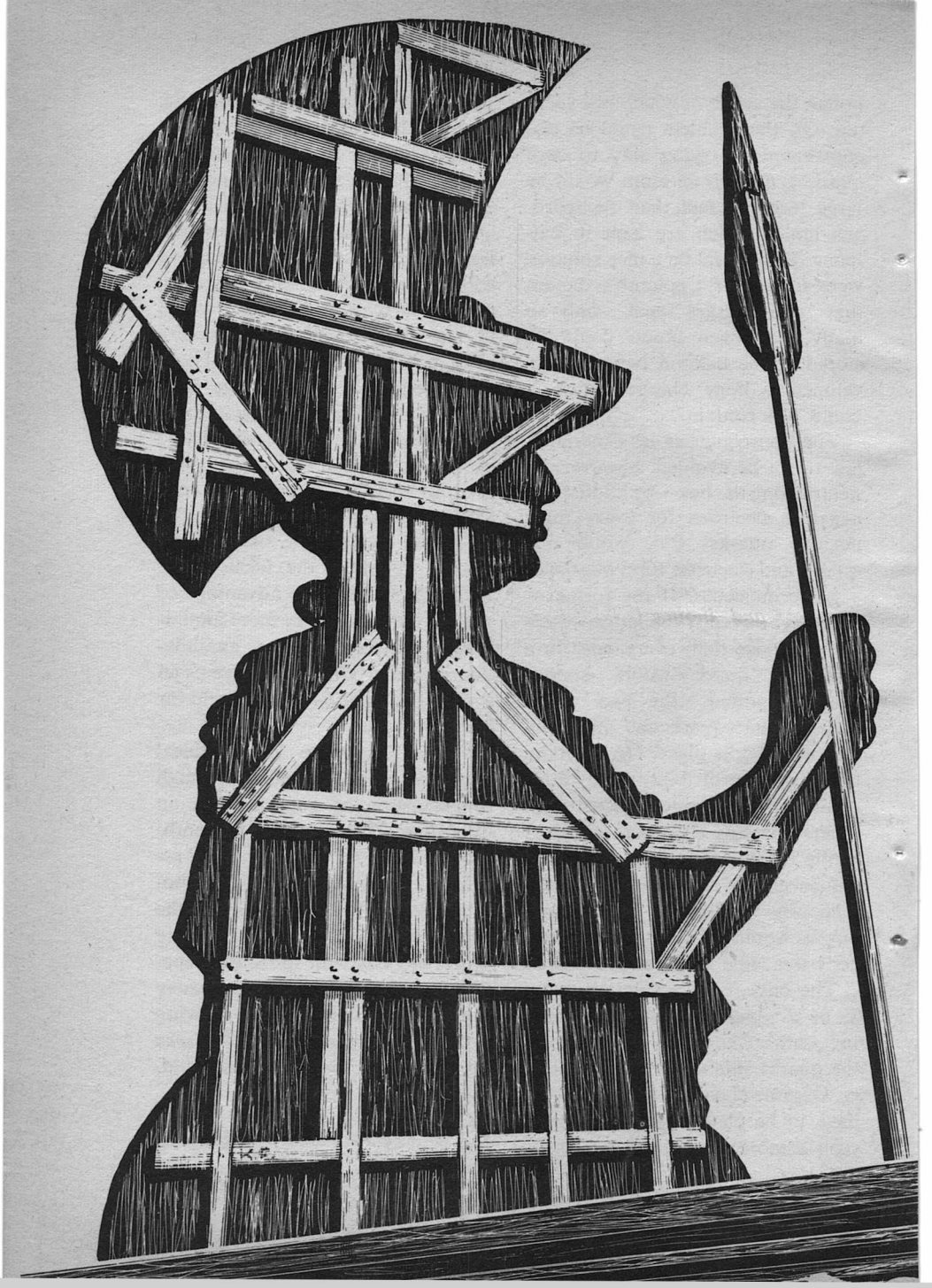
The only feasible solution seems to be a super molecule with holes in it, rather like an egg crate, to keep the quarks shielded from each other. Organic chemists would not only have to be clever enough to build such a molecule, but also to build slots for electrons into the molecule, making the whole thing neutral.

The box problem solved, we might, skipping a lot of engineering development, progress from quark machines to quark rocket engines. Engines run by quarks reacting with deuterquarks—and ejecting protons or hydrogen atoms—would be an improvement over today's chemically-powered engines. Higher velocity is an advantage they might claim over the nuclear rockets now under development. (These proposed rockets are to be powered by heating hydrogen atoms, kicking them out the back.)

Quarks annihilating against antiquarks would be the ideal power source, however. The advantage of such a reaction is even more annihilation energy and pions as annihilation particles. This would give us an even higher specific impulse and far better rockets.*

Further, suppose all technical problems can be solved and a high concentration of quarks exists on the Moon. There is, after all, nothing special about the Moon. Any astronomical body without atmosphere would be just as likely as the Moon to shelter quarks. Men, using rocket engines with fairly high specific impulse, might then someday explore the universe by moving from place to place, mining quarks for fuel, from the nearest asteroid, as needed. ■

*Specific impulse is a technical way of measuring the performance of rockets.



AMAZON PLANET | MACK REYNOLDS

Conclusion. United Planets' investigator was an expert in putting on acts . . . he thought! Until he found a whole planet could put on an act that fooled him!

Illustrated by Kelly Freas

SYNOPSIS

GUY THOMAS, a seemingly quiet and inoffensive representative of the United Planets' Department of Interplanetary Trade, boards the spaceship Schirra *en route from Earth to Amazonia to expedite an exchange of iridium and columbium.*

Ship's officers, including REX RAVELLE are astonished at his destination and warn him of the matriarchy and especially the extreme marriage laws. Nobody has ever heard of an Amazonian male escaping the planet.

Their stories are hotly denied by PATRICIA "PAT" O'GARA a refugee from the planet Victoria. She contends that Amazonia is the most advanced world in United Planets.

When they reach the controversial planet they go into orbit, the crew of the Schirra *being afraid to land, and are boarded by customs*

officials: MAJOR OREITHYIA, MINYTHYIA, CLETE and LYSIPPE, all dressed as Amazonian warriors. Clete puts Ravelle in his place by demonstrating her knife-throwing abilities.

Pat is allowed to land, and finally Guy, whose visa was mistakenly issued to Gay, rather than Guy, Thomas. They explain that he is subject to being married by any warrior whose eye he takes, but promise to guard him. The trade deal he is working on is badly wanted.

At a bachelor sanctuary to which he is taken, he meets PODNER BATES, an effeminate Amazonian male who drops more hints of the strange relationship between the sexes here. But when Guy is alone he sheds his inoffensive air, assembles a gun from his tool kit, leaves the sanctuary and makes his way down back streets to a house on Heliopolis Street where he contacts members of the Sons of Liberty, an underground. On his way over, he is astonished at an attempt to assassinate him, but wings his opponent and continues.

At the underground hideout he meets ZEKE and TEUCER, the latter at first seems an emotional crackpot. Guy reveals that their agent, SARPEDON, got through to Earth and appealed to the Octagon for assistance in overthrowing the Amazonian government. Guy has been sent to get the details of the situation.

He returns to his rooms to find his things have been ransacked and his communicator, the only way he has of getting in touch with his superiors, has been destroyed.

In the morning, his guards come to take him to a conference with the Hippolyte, Amazonian chief of state, but they narrowly keep Minythyia from claiming him as a husband, by putting her hand on his shoulder and saying simply, I thee take.

At the palace, he is first introduced to some of the Amazonia technicians, and then taken to the throne room which astonishes him by its magnificence. However, hardly is he introduced to the Amazon head than one of her advisers, who had formerly been ambassador to Earth, accuses him of being not Guy Thomas but Ronald Bronston, triggerman for the notorious Section G of the Bureau of Investigation.

He is taken to be questioned under Scop and admits his true identity and the fact that he is on Amazonia to investigate the need for overthrowing the socioeconomic system. Section G is a secret United Planets body dedicated to subverting the governments of planets which are having progress held up.

He escapes, through the aid of Minythyia, and is taken to an apartment, still under the influence of Scop and Come-Along drugs which leave him powerless to resist questioning or orders. There, her

eyes mocking, she puts a hand on his shoulder and says: I thee take.

IX

Even under the influence of the powerful drugs, there must have been something in his eyes. Minythyia laughed at him. But in the laughter there was a slightly wry element.

"Of course," she told him, "it's not really finalized until we go before Artemis during the summer solstice, with all the others, to gain her blessing. But unless you wish to throw yourself on the mercy of some other warrior, if she'll take you, then you're mine. Do you understand?"

"Yes."

"Do you wish to get in touch with some other warrior?"

His mind was free to race, in spite of its enslavement. Here, for the moment, he was moderately safe. Safe, he could hope, until the drugs wore off and he would be free to operate. If he contacted someone else—but who was there to contact—his location would become known. Even here, when she learned the true nature of his conflict with the authorities, he doubted if her infatuation would stand up against patriotism. He was very much astonished that she had gone this far.

"No," he said, in answer to her question.

Her eyes were mocking once more. "Then you're willing to remain here with me—Cutie?"

"Yes."

"All right, here is the arrangement. This is not my apartment. It belongs to a friend. She is away and isn't due back for almost a month. I don't believe Clete or Lysippe or any of the others know I have access. We're safe, especially if we never allow you to be seen on the streets. I'll bring in what supplies we can't get over the auto. In a month's time, things will settle down. Things always settle down, given time. By then, we'll be able to size up the situation and plan what to do. Married to me, you have the rights of a male Amazonian citizen. You'll be under the protection of my *genos* and through it my *phratra* and ultimately *phylon*. Like I said, I don't know what kind of romp you tried to pull off, but there'll be some way to fix it." She twisted her pert face. "I've got some high connections."

She looked at him calculatingly for a moment. "Are you hungry?"

"No."

"If you get hungry, or thirsty, you can dial on the auto. It's tuned to my hour account. Do you know how to do that?"

"Yes."

"All right. Make yourself at home here. But don't leave the apartment. Understand?"

"Yes."

"I've got several things to do. I've got to look up Lysippe and

Clete and establish an alibi. I've got to ditch that car. It could be traced." She winked at him. "Besides, it's not mine. I *borrowed* it. When I come back, I'll explain a lot of things to you.

"Good heavens, sit down. Don't wait for me to tell you everything. No, just a moment. Kiss me. The way they do on the occasional Tri-Di show tapes we get from Earth."

He kissed her, neither the Scop or the Come-Along influenced that.

She stood back, her eyes shining. "Well," she said, "what would I call you on the Tri-Di? A cad? But then, we're married, aren't we?" Her lips were mocking again. "Amazonian style, that is."

Suddenly she was gone from the apartment.

Ronny Bronston sat down. Except for her direct order to remain in the apartment, he was free to act.

His eyes went about the room desperately. There must be something he could do. Surely she would be gone for at least an hour—perhaps not. Perhaps within that time she would discover the magnitude of his troubles and be back on the double with Clete and Lysippe, or some other Amazonian warriors, to apprehend him and return him to the questioning.

He went from one room to another. A bedroom, a refresher, an eating alcove with an auto in it. Back to the living room.

His eyes hit upon the small bar. By the looks of the whole apartment, Minythyia's friend must be quite a hedonist. The bar, the decor, some of the murals, all pointed in that direction. He wondered what the equivalent of an orgy, here on Amazonia, might be. Were they the equivalent of hetaera, among the bachelor men?

His eyes swung quickly back to the bar and something came to him.

Come-Along. It didn't react favorably with alcohol. You couldn't give it to a drunk. It did no more than to make him terribly ill. It was even comparatively ineffective if you dosed someone who had just a couple of belts. To give it to someone in an alcoholic drink, was just wasting your time, which was quite a deterrent to both espionage agents and Romeos.

He made his way to the bar. It was a bar all right. Two shelves below held bottles, glasses, ice tongs, swizzle sticks, all the universal paraphernalia of the home bar, be it on Earth, Avalon, New Delos . . . or Amazonia.

Ronny Bronston picked up the handiest bottle and scowled at the label. It meant nothing to him. He wrenched the top off and applied it to his lips. Sickeningly sweet! He couldn't put away much of that. He took up another bottle. Another cordial!

He grasped a third bottle. It contained a colorless fluid, something resembling gin or vodka. He tried

it and sputtered, shooting a fine spray from his mouth. He looked at the label in respectful wonder. It told him nothing.

Ronny Bronston was not habitually a heavy drinker, however he had done his share of nipping in his time. But never on anything as potent as this. He couldn't take it straight. He poured a hefty belt into a tall glass and went into the refresher room for water.

There was a faint taste of anise in the far background of the spirit, not too unpleasant. He got the first glass down, feeling the stuff already beginning to warm his belly, and quickly poured another.

He hadn't eaten since breakfast. How long ago was that? It seemed ages. The drink was getting to him quickly. He put down still more, the room was beginning to go hazy, his coordination beginning to slip. He shook his head, bearlike, and decided to make his try.

His orders had been quite definite.

Don't leave the apartment under any circumstances.

Ronny shook his head again in an attempt to achieve temporary clarity and walked with deliberation toward the door. He took the knob in his hand. And couldn't twist it. He stared down, his eyes bleary. Was it locked? No, it wasn't that. He simply *couldn't* turn it.

Don't leave the apartment under any circumstances.

He shook his head still again and went back to the bottle. He eyed it, finding difficulty in focusing. He closed one eye. That was considerably better. Hell, he wasn't any molly when it came to guzzle. He could put it down with anybody. Even with his ultimate superior, Ross Metaxa, with that Denebian tequila of his in the stone bottle.

He'd show 'em who could drink like a gennulman. Hold his guzzle like a trooper. He took up the bottle with a flourish of braggadocio and applied it to his lips.

He got down three or four full gulps before it hit him. He dropped the bottle to the floor, unknowingly. His eyes were glazed now. He had never passed out from drink in his life, but this was preciously near it. He tried to achieve clarity by slapping his cheek hard with his right hand.

He staggered toward the door, grasped the knob just in time to prevent falling. There was something he was supposed to remember, he knew. Something about that girl. What was her name? Miny . . . Minythy . . . something or other. Something she told him. He couldn't remember.

He swayed, and his hand on the knob turned in his effort to keep himself erect. As the knob turned the door opened and he staggered into the hall beyond in an effort to keep his balance.

He held onto the ironwork banister at the stairs' head, breathing deeply. Zen, but he was drenched.

You had to admit that, all right. He was drenched.

He had better get out and get some fresh air. Either that or go back into the apartment and climb into bed. Yes, that was it, go back into the apartment and get some sleep. He had to wait for Miny . . . whatever her name was.

But then he turned sly, even as he wavered, holding onto the banister. Now he remembered. She'd hooked him. Amazon style. Tha's why he hadda get outta this house.

He started down the stairs, as only a drunk can navigate stairs.

He chortled, "Thas what *she* thinks. She thinks I'm easy. Thas what she thinks. Nice fella like me. I wanta church wedding, thas what I want. With flowers, and dressed in white an all . . ."

Unbelievably, he made it down the three flights and then to the street. As he left the building, he was singing to himself, "Somethin' old, somethin' new, somethin' borrowed, somethin' blue."

On the street, the fresh air had a small effect on him. Besides that, the change of scene forced him to think anew. He had some place to go, or he'd better have some place to go. If not, he might as well try to get back up the stairs to the apartment. For some reason, he couldn't put his finger on, he didn't want to go back to that apartment. Though, come to think of it, that Miny girl wasn't so bad. She'd got him out of some kind of trouble once, hadn't she? He knew damn well she had, but it was kind of hazy.

He took a deep breath and started down the street, in the opposite direction from which he had originally approached with Minythyia.

Just as he reached the corner, he heard a hovercar coming up behind him. Oh, oh. He didn't turn, even when he heard it come to a quick stop before the building. He did a commendable left face, with all a drunk's cunning, and went down the side street.

Fifty feet farther on there was an opening to the left again—a sort of Mews, British style—a courtyard at the end with a water fountain. For reason unbeknownst to himself, he headed toward it.

Only halfway there the nausea hit him and he was deathly ill. He emptied his insulted stomach into a doorway, feeling like a pig, but still not caring. Not caring about anything. When the retching was over, he resumed his way toward the fountain, somewhat steadier. There was something nagging him from within, don't . . . leave . . . the apartment . . . under . . . any . . . circumstances. But it didn't seem to make much sense.

There were children playing in the little courtyard. He ignored them, stumbled to the water and plunged his head into it. He came up for air. Zen! it was cold and good. He plunged his head back in.

The children were standing around watching him, wide-eyed.

He glowered at them. There were, he realized, both boys and girls. All of them wore either shorts or kilts, nor did the attire seem to be based on sex. Some boys wore shorts, some kilts, so did the girls.

He scooped up water with his hand and drank it. It hit his stomach with a chill and for a moment he was afraid he was going to be sick again.

No, that passed. He decided he'd have to get out of here, but quick. Before one of the kids went running to a parent, or teacher, or whatever, and somebody turned up to investigate him.

By the moment, his true situation was coming back to him. He was still drunk, sodden drunk, but his mind was clearing slowly. He couldn't allow himself to be picked up. He had to do something, he couldn't quite remember what.

He retraced his way to the street and turned left on it. What was it he had to do? It came to him in stages. He had to warn somebody about something.

He came to a crossing and paused for a moment, scowling. Two pedestrians passed him, man and woman. Once again, their garb was so similar as to be almost identical.

This crossing. He had been here once before. But he couldn't have been. He shook his head, to clear it further of fumes.

Then it came to him. He had been this way when seeking out the Sons of Liberty.

That was it! He had to warn Zeke and the others. He had babbled their address to his Amazon inquisitors. He had to warn them. Unless it was already too late. It was probably already too late. The Hippolyte's warriors had probably already descended on the hapless revolutionaries like a flow of lava.

But he had to see. In spite of his own danger, he owed it to the others to make the attempt. He screwed up his face in memory. He wasn't so very far from the spot where the unknown assassin had shot at him. Yes, it was down this way.

As he walked, his lucidity returned, though he still felt nausea from the wringer through which he had put his body. He had drunk an unbelievable amount of alcohol in far too short a time. Happily, he had vomited much of it up before it had got fully into his bloodstream.

He went down this street, up that, his appearance no longer attracting the attention of others. In his garb he resembled his fellow pedestrians. It had only been his gait, before, that had singled him out. He looked down at his clothing to see if he had messed it at the height of his illness. No, it was reasonably clean and unwrinkled.

This was where the shooting match had taken place. It looked considerably different in the light

of day. He went more slowly. And this was Heliopolis Street. It was to his surprise that he saw no vehicles before Number 35. No vehicles, nor could he spot any of the Hippolyte's guards. If they were in the vicinity, they would probably be hidden, he realized. But there was nothing he could do about that. He was weaponless and still shaky, but he had to make the attempt.

He pounded on the door, and leaned against it. He was tired from the exercise of his walk, the drinking had robbed him of considerable strength. He could hear no movement beyond. He pounded again and again.

In exasperation, he tried the knob. The door pushed open.

He went on through. Had the Amazon warriors already been here, already captured the Sons of Liberty on the premises? Were they hidden inside, waiting for more unsuspecting men of the underground to show up? He could readily believe it.

Frowning in memory, he retraced the way Zeke had taken him the night before. They had come along this patio garden. There was still no sound in the building. It gave the place an eerie quality. There was the fountain; it was less attractive in the full light of day. The house had an unkempt quality. Well, it was a secret underground base, not fundamentally a home.

Here was the sparsely furnished room Zeke had taken him to. He entered, his eyes going around. The bottle of wine and three glasses were still there on the table.

And in a corner, bound, lay the excitable, emotional Lybian Zeke had introduced as Teucer. He was bound and gagged, and his eyes were wide at Ronny's entrance. He blinked energetically, as though in warning.

Ronny was about to turn, his reflexes still slow, when his assailant hit him from behind.

And even as he fell automatically into a defensive position, he knew the attack was lacking in sophistication. It was the vigorous, but unscientific attack, of one who had never studied hand-to-hand combat. He ducked and spun right in instinctive counterattack and snagged a section of the other's garment. He felt a blow against his upper back and ignored it.

Still holding onto the other's tunic, he spun again, twisting the garment in such a way that one of the enemy's arms was immobilized. He felt another couple of meaningless blows; the other had a sap, or possibly was using the butt of a shooter, but he was pathetically inept.

It was over almost immediately. Ronny bent and swung, throwing the other heavily against the wall. He heard air escape agonizingly from his opponent's lungs.

Ronny looked at him shakily for

a moment. His eyes still weren't completely used to the gloom of the unlit room, after coming in from the bright Amazonian sunlight. It was just a kid, a youngster of possibly seventeen or eighteen, and none too large for his age. No wonder he had been so easy to take. His small club, which looked as though it had been improvised from a broom handle, had fallen to the floor. The youngster was unconscious, which wasn't surprising. Ronny would have been more gentle had he known the other's age and size.

He looked back to Teucer, still attempting to blink signals to him. "All right," he growled. He knelt before the other and began to untie him. As a preliminary, he pulled the gag from the slight man's mouth. "What in Zen happened?"

"Get me out of these nardy ropes," Teucer rasped. "How do I know what happened? This young cloddy must have got behind me and slugged me one. When I woke up, I was tied like this."

"Where's Zeke?"

"He's gone to keep an appointment with Damon and some of the others. Listen . . ."

"Just a minute. Leaving you alone?" The other was about free.

Teucer came to his feet, rubbing his wrists. He bent and rubbed his ankles. "Yes. Listen, I've got a lot of questions to ask you, but we've got to get out of here."

"I'll say we do. The Hippolyte is onto this place. Is there a back entrance?"

Teucer stared at him. "How?" he blurted.

"Scop. They put me on Scop and I slipped everything."

Teucer groaned. "Come on. Yes, there's a back way. Hurry, we've got to get somewhere we can talk." He sped toward the rear of the house, evidently assuming Ronny was immediately behind.

But there was something about this Ronny Bronston didn't like. He looked down at the unconscious boy. He bent over him and began to search his belt wallet, finding precious little except an hours card. He thought about it, and pocketed the plastic. The other's name was Tanais, and he belonged to the Terpsichore *genos*. All of which told Ronny nothing. Wasn't Terpsichore the goddess of song, or the dance or something?

There was a banging at the front door.

They'd come at last. Ronny came hurriedly erect. As he started for the door, he looked down at the boy. He shook his head. Even had there been reason, he wasn't up to escaping, burdened down with the other. And there was no reason.

He turned and hurried after Teucer, and even as he ran he realized that something had been wrong about Teucer. He had been more collected, less emotional and shrill

than the night before. In view of the circumstances, it would have been more reasonable had it been the other way.

He was about to leave the patio garden through the exit which Teucer had taken when he heard the front door bang open. A voice yelled, "Hey! Wait! Holy Jumping Zen, what goes on here?"

It was a male voice.

Ronny came to a halt and turned. It was the burly Zeke, rumbling in, bearlike, a large handgun in one overgrown paw.

Zeke took him in, snorted, and disappeared from sight into the room where Teucer had been bound. Ronny returned, shooting a glance at the door to the street. Zeke had slammed it shut upon his entrance, and thrown a bar.

The Sons of Liberty leader was staring at the still unconscious boy and at the ropes which had once held Teucer.

"Zen," he groaned. "The funker escaped." He bent over the youngster. "Out cold!"

Ronny was in the doorway, his face in puzzlement. "I don't understand."

"When did you get here?"

"A few minutes ago." He shook his head. There was still nausea in his stomach and his muscles were as water, particularly after the exertion of the brief struggle. "Teucer was tied up."

"Tied up, is right! The funker is a traitor, a spy! What happened? What happened to Tanais, here?"

The effects of the Come-Along were evidently completely gone but the Scop was still on him. Ronny couldn't have lied had he wished. He said, "The door was open. I came in to warn you. Teucer was tied up. The boy, here, jumped on my back. I knocked him out before I realized he was just a kid. Teucer told me some cock-and-bull story, evidently, and took off through the back."

Zeke was on one knee at the side of Tanais, his gun at the half ready, as though not knowing what to expect. He said, "Tanais came from Lybia a few days ago as an exchange student. This morning he contacted us. Teucer had told us that was where he was from and we accepted him. But we *know* Tanais is from Lybia, his father is top man in the organization there and when he didn't recognize Teucer it was obvious we had a spy from the Hippolyte in our ranks. I went to check with Damon . . ."

But Ronny was shaking his head. "Teucer's no spy from the Hippolyte."

Zeke glared at him, coming to his feet. "What are you talking about? Of course he's a spy for the Hippolyte."

"No. I came to warn you, and we'd better get out of here quickly. The Hippolyte's people had me put under Scop this morning. I spilled practically everything I knew about my mission, those who sent

me, and the Sons of Liberty and their program."

"What!"

Ronny held up a hand. "But the thing is, they had never heard of your organization before. So they could hardly have sent Teucer."

"They were lying!"

Ronny shook his head. "No, they weren't. They were flabbergasted when the drug brought the fact from me that you existed."

Zeke was breathing deeply. "You gave them this address, you flat?"

Ronny said evenly, "I was under Scop. I think I still am, at least partially."

Zeke's small eyes narrowed further. "Oh, you are, eh? Listen, is the Octagon going to send help to us?"

"I don't know," Ronny said. He tried to keep control of himself but his voice was slipping into the Zombi-inflection.

"Is it most likely they will?"

"Yes."

"How soon?"

"Probably as soon as a report from me gets back."

"How were you to transmit your report?"

"Through my Section G communicator."

"Have you sent any report at all, thus far?"

"No." Ronny Bronston could feel the blisters of cold sweat on his face as he tried to fight the truth serum, but it was useless. He could have tried rushing the other, but Zeke was armed and strong, and the Section G operative was still not fully recovered from his bout with his alcohol antidote.

"Why not?" Zeke pressed.

"My communicator was broken, when someone searched my room."

Zeke thought about it for a moment, even as he muttered, "I got to get out of here." He said, "When you report, who is it to?"

"Sid Jakes."

Zeke's face worked in thought, and his breathing came deeper. He nudged the boy at his feet with a toe and the other stirred. "Wake up!"

He looked back at Ronny again, something obviously suddenly occurring to him. "Holy Zen! They had you. How'd you get away?"

"I was in a hospital. They had taken me there to question me. After half an hour, they decided it was necessary to inform the Hippolyte of what they'd learned. So they left me under guard in a room. The guards stood outside. However, there was another door. A girl named Minythyia came through it."

"Minythyia! Are you sure of that name?"

"Yes. She came out to the *Schirra* with the customs officials launch as one of the assistants. Later, she attempted to . . . select me as one of her husbands."

"Minythyia!"

"Yes," Ronny said, still zombi-like.

"All right, what happened?"

"She got me out of the hospital and drove me to the apartment of a friend. Then she left me there, under orders not to leave. She went to secure an alibi."

"Do you know who Minythyia is?"

"She is one of the warriors who stood . . ."

"Do you know who else she is?"

"No."

"She's the drivel-happy daughter of the Hippolyte, you cloddy!"

There were sounds from the street. Zeke shot his eyes in that direction, then down at the boy who was now beginning to come to his feet.

"Get moving, Tanais. There's a back way out."

Tanais began stumbling toward the back. There was a pounding at the front door.

Zeke took after the boy, his eyes looking over his shoulder, glowering desperately at the source of the noise.

Ronny began to follow.

Thick lips pulled back over the revolutionist's stained teeth. The shooter came up.

"You stay here, my stute friend. You stay here."

Ronny came to a halt, staring. He motioned with his head. "But that'll be the Hippolyte's police."

Zeke was at the back door through which Teucer had disappeared some ten minutes before. They could hear a splintering sound from the front.

Zeke's gun came up slowly, his teeth were still bared. He said, snarl in his voice, "That's right. We couldn't let you fall into their hands again, could we, fella?"

Ronny spun in desperation, the charge from the other's gun missing him infinitesimally, crumbling the stone of the doorway in which he had been standing.

He was out of range of the other's fire, back again in the room where he had found Teucer. Zeke was going to have to come and get him if he wanted another shot, and Zeke didn't have the time. The front door came down with a crash.

In fact, Zeke was already most likely gone. If he wasn't, then Ronny's next move was sudden death.

Because he came charging out again, into the patio from which he had just stepped in retreat, ten seconds earlier.

His gamble had paid off. Zeke and Tanais were gone.

Ronny sped for the door through which the two Sons of Liberty had just passed. He had danger before and danger behind, and why he chose the first he had no idea.

X

He probably would never have found the way of retreat if it hadn't been for the sounds of Zeke and his young companion before him. The building was a meandering one, something in the nature of a Spanish or Mexican habitation of

early times. The wall on Heliopolis Street had been blank, save for the door. From the outside, there was little to indicate what lay within.

Within was surprisingly extensive. There were three small patios in all with numerous rooms of varying sizes leading off. It had been a sumptuous house, in its time; now it was run down.

In a way, it was a labyrinth and a person unfamiliar with the windings of its halls and walks could have become temporarily lost.

Ronny pounded after the faint sounds of Zeke and Tanais, running as softly, himself, as he could. He didn't know whether the girl warriors behind him had actually seen him or not. But in any case they would spread through this building in brief moments. He had to get out.

Suddenly he could hear Zeke no longer.

The other had either paused, waiting for Ronny and for another shot at him, or he had passed out of the house and made his escape.

The only alternative Ronny could accept was the latter. He continued to run in the direction he had last heard the Sons of Liberty head who had so strangely and murderously turned on him. He came abruptly to a narrow door and instinctively knew that beyond lay the street. In fact, he could hear the sounds of a hovercar lifting and then zooming ahead.

Zeke making his getaway, Ronny prayed to whatever gods might be listening. He grabbed the door latch and flung it open, half expecting a blast from the big man's shooter.

There was no blast. There was no sign of Zeke or Tanais in the alleyway beyond. They had already made good their escape. Evidently, the Sons of Liberty had had more than one vehicle parked out here since obviously Teucer would have appropriated such a means of departing.

He wished that he had time to think about Teucer and Minythyia, and about Zeke, for that matter. Why in the name of the Holy Ultimate had the man tried to finish Ronny off?

He sped down the alley, hoping he was taking a direction that would place him as far as possible from the Amazons behind in as short a period of time.

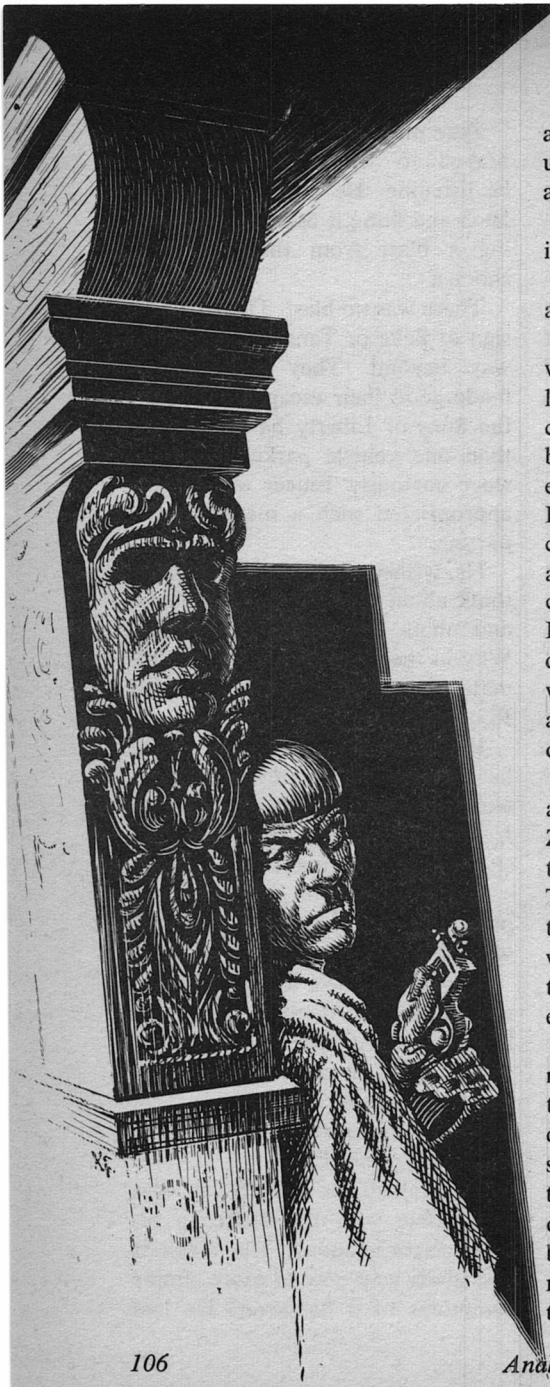
He came out on a side street, puffing, and caught the stares of various pedestrians in the vicinity.

He slowed down to a walk, grinning inanely, as though ashamed of being caught running.

"Beautiful day, eh?" he said to the world in general.

Somebody snorted. All turned to look away from him.

He walked as rapidly as was compatible with his desire to remain inconspicuous. His sickness had given way now to more simple symptoms of a hangover. He had



a crushing headache and was still up to less than his full strength, but at least he felt his mind was clear.

As he walked, he tried to think it out.

Most things he could think of added up to very little sense.

Immediately, why wasn't this whole area saturated with Hippolyte's police, warriors, guards—call them what you would? He had been on various police-state planets during his years with Section G. If there was one thing they had in common, it was a plentitude of armed, competent secret police. He couldn't imagine that house on Heliopolis Street not having been overrun with Hippolyte's people within a matter of a quarter hour after he had revealed the situation of the underground hideaway.

Zeke! Why had the revolutionary attempted to kill him? Was Zeke, rather than Teucer, the traitor to the Sons of Liberty? Had Teucer found out something about the big man? Why had Zeke been, well, indignant, at the suggestion that the Hippolyte's people had never heard of the underground?

Minythyia! How could it possibly make sense that the daughter of the Hippolyte was serving as an ordinary police private, or whatever she was? How could such people as the major and Clete treat her, address her, as though she were a nobody? The splendor of the throne room of Hippolyte's palace gave the lie to any theory that there was

a comradeship between these women warriors that would allow the daughter of the supreme ruler to be treated as an equal by low-ranking officials.

Teucer! How did Teucer fit into it all? What was it the other was so anxious to talk over with him! And if he wasn't a refugee from Lybia, what was he?

He called it quits for the time and looked about. He was at a large square. Before him was a park with four colossal statues dominating its center. He concentrated, in spite of the headache, recalling the maps supplied by Sarpedon in the Octagon. The maps of Themiscyra.

Yes, he thought he knew where he was. The river, the Thermodon, would be over that way about four blocks. In that direction, to his right, was the sanctuary. Perhaps a mile away. He dare not go there. If anything seemed likely at all, it was that the Amazon police were going through his things with fine toothed combs. He wondered with wry humor what poor Podner Bates was making of it all. He hoped the little man wasn't in trouble for befriending him.

The police were after him, his only contact with the Sons of Liberty, Zeke, had tried to kill him. He had no way of communicating with his superiors, nowhere to go and no funds . . .

Wait a minute. There were no funds, here on Amazonia.

He stuck a hand into the belt pouch of his outfit and fished forth the plastic card he had taken from Tanais when he had searched the boy there on the floor.

He stopped long enough to scrutinize the thing more carefully than he had before. It revealed little: His name and *genos* name; his address and, yes, the fact that he was a student. Thank the Holy Ultimate that students were paid to attend school in this fantastic economy. Tanais would have a supply of hours to his credit. The card, without doubt, was valid.

If it wasn't, he, Ronny Bronston, would soon find out.

In his walking, he had passed several of what he assumed were taxi stands—empty hovercars waiting for fares. There was a stand located alongside the park.

Taking his chances, he opened the door of a cab and slid inside, behind the driver's joystick. He looked over the controls, noted the fare box screen and figured out its workings. He had driven twice with the major in limousines, once with Minythyia in a sports vehicle. Beyond that, he had driven hovercars, of slightly different design, on a dozen different worlds. On most, the wheel was used, but he had operated cars directed by sticks before. If anything, they provided a more delicate control.

He began experimenting. You dropped this lever. No, first you

dropped the brake. Then you lifted clear of the street with this.

A voice said, "You have forgotten to put your hours card on the screen, Madam."

He jerked his head around, inadvertently.

The voice was some sort of built-in recording. He brought his purloined card out and put it on the screen, and started all over again.

He was going to have to operate it manually. He had no idea of how to set the coordinates on the auto controls. He would have had to have a more complete knowledge of the city for that.

He got under way without overmuch difficulty and concentrated on his destination. He was going to have to experiment; he wasn't quite sure of the location.

However, he made it with little difficulty, cruising up and down the streets until he spotted the place. There were hovercars before it, but none that looked particularly as though they were police or military.

He stopped, removed the stolen hours card from the screen and climbed from the vehicle, half expecting it to say something further. It didn't, and the moment he was out, took off into the traffic, evidently heading for some taxi park. He looked after it. Give credit where due. It was an efficiently handled service.

He looked up at the building. A fairly large number of persons were coming and going through the elaborate entrance. Most of them were women, but there were a few males. He continued to have difficulty telling them apart. Civilian clothes were all but identical. This was a continuing surprise. His first impression, picked up on the ship, and later in his audience with the Hippolyte, was that practically all women wore the armorlike uniform of the Amazon warrior. But here there were no such outfits in sight.

It was a minor puzzle, and he had major ones to solve. He mounted the steps and entered the building. Now his problem had only begun. He was afraid to ask questions. Just as surely as he did, he would stand out like a walrus in a goldfish bowl.

He doubted that his destination was on the first floor, although it might have been. He mounted, instead, to the second, and prowled up and down, hopefully.

Ronny Bronston's luck continued to hold. There were name plates on the doors. He found what he was looking for twenty minutes later on the third floor.

Patricia O'Gara

There was a door eye and he activated it.

In less than a minute the door opened and she was there, smiling at him.

This was the crux, now. If she showed any indication that she was aware of the morning's devel-

opments, he was going to have to overpower her.

She said, "Why, Guy! Guy Thomas!"

He grinned at her. "Can I come in?"

She stepped back. "Of course. So you managed to land all right. How in the name of Artemis did you know where I was?"

"Minythyia pointed the building out." The questions didn't bother him. At long last the Scop had worn off.

He followed her into a small living room. Evidently, she had been assigned a fairly comfortable apartment by the powers that be. She had been on the planet a couple of days before he landed.

"Minythyia?" she said, even while gesturing toward a seat for him. "I'll bet this will come as a surprise to you. Do you know who that madcap Minythyia is?"

"You mean the daughter of the Hippolyte?" He sank into the chair with relief. "Um-m-m, somebody mentioned it. Imagine her acting as a lowly customs officer."

Pat said primly, "Everybody works on Amazonia. There are no parasites. Only children and the retired are without positions."

"Great," Ronny said, "but you expect a bit of nepotism even in the feminine Utopia. Look, I'm famished. You haven't got anything to eat around here, have you? And some pain killer? I've got a headache."

"Why, of course," she said. "The auto's in here. Order anything you wish. Oh, I forgot. Do you have an hours card?"

"Well, no." He was going to have to take it easy with young Tanais's card. He had no way of knowing whether or not, or when, the student might report the loss of that valuable document. He couldn't afford to have the computers on the lookout for it.

She said, "You can use mine. You'd be amazed at the efficiency here. Within hours after I was off the *Schirra,* they'd assigned me this apartment, enrolled me in a school where I have special tutors to give me a foundation in the Amazonian culture, and began crediting me with hours for the time I put into my studies. I'm already a citizen. Isn't it wonderful?"

"I suppose so," he told her, following her into the small dining alcove.

She put her card on the payment screen and he stared down at the extensive menu set into the auto-table. After taking the headache relieving pill, he dialed more food than he could reasonably have eaten.

"You *are* hungry," she said. "There is no nepotism on Amazonia."

The change of subject had stopped him for a moment. "Oh," he said finally, watching the food

begin to emerge. "Why not? It's a natural development, you'd think."

"Not if you understand the workings of an advanced society," she told him righteously. "Since there is no profit to be gained by being, say, an admiral, rather than an ordinary seaman, there's no motive in attempting to push your offspring into positions she can't competently occupy."

He was eating hungrily. "That's right, everybody gets paid exactly one hour for putting in one hour's time, don't they? But there are other things than, uh, crass material payment. An admiral has power, position, honors, that sort of jetsam."

"And how stupid they are unless you've earned them. Back on my home planet, Victoria, we have universities that grant so-called honorary degrees. Politicians, soldiers and what not, who can hardly read the sport sections of newstapes, or write more than their own names, are given doctor's degrees. All it does, actually, is water down the deserved acknowledgment of the accomplishments of the scholars who have really earned such degrees."

He was still forcing food into his mouth as though starved. He could hardly know when he would be able to eat again.

However, he couldn't help bite away at the hand that was feeding him. "Sure, great. A real feminine Utopia. However . . ."

"Amazonia isn't a Utopia, Guy," she said. "Utopia is a dream world, a perfect world. We Amazonians realize that there is always another rung up the ladder of progress. Utopia can never be reached, but even if it could be, we would not wish it. The satisfaction is to be found in the common effort upward."

"Very inspiring," Ronny said sarcastically. "It'll be a great day when in the course of this progress they get around to examining their marriage laws."

She scowled at him, a hint of color beginning to come to her cheeks. He couldn't help but remember the endless run-ins she'd had with Rex Ravelle on the *Schirra*.

"Marriage laws?" she said. "There is no marriage on Amazonia. They passed beyond that institution a century and more ago."

He had been about to devour a chunk of some vegetable he had found in his stew, a vegetable he had never come upon elsewhere. Now he put down his fork and stared at her.

"Are you completely drivel-happy?" he demanded. "No marriage on Amazonia! I've never seen so damn much marriage in my life. And such an easy way of getting into it!"

It was her turn to stare. "Why, why, you've simply been misinformed," she said definitely.

"Look," he said, "this tutoring

you've been taking, hasn't anybody mentioned the fact that any Amazonian warrior can have three husbands?"

"Oh, don't be a cloddy. Of course they can have three husbands, though that's hardly what you'd call them. And a man can have three 'wives' for that matter, if he wished. Amazonians don't believe in restricting personal relationships with too many laws. Actually, though, usage frowns on promiscuity and having close relations with even two or three persons at a time is considered rather far out. However, some people are just built that way. They're not one-man-women, or one-woman-men. You've had the problem down through the ages. On your own planet, Earth, don't you have people who are continually getting married and getting divorced? And on my planet, Victoria, it isn't at all unknown for a man to be supposedly happily married, but on the side be maintaining one or more mistresses."

"Now wait a minute," Ronny said accusingly, pointing at her with his fork. "I'm not talking about exceptional people having affairs, or getting too many divorces. I'm talking about the basic family. The way I understand it, an Amazonian warrior can have three husbands and she keeps them cooped up in what amounts to a harem."

She rolled her eyes upward as though in plea to heaven. "See here. In the first place, that term warrior is nonsense. It means no more than calling every woman a *lady* on Earth, or Victoria. The original meaning of lady was a titled woman, a gentlewoman, but eventually the term became a gentilism, and you called any female a lady, even if she was an alcoholic thief. The same on Amazonia. Some people like to draw on mythology, continuously, just for fun. Have you noticed how much of the art is based on Amazonian myth? But to hear you talk, you'd think every woman on the planet was a swaggering soldier."

"All right, so I'll admit that I've been surprised there aren't more women in uniform. That's beside the immediate point."

"I was getting to the fact that you've been confused by some of the terminology. Far from the family on Amazonia consisting of a bully of a female warrior, dominating a harem full of men, there is no family at all."

Ronny pushed the rest of his food away.

"Zen!" he said. "That brings up a picture. No family at all. I suppose they find their children under cabbage leaves in the garden."

She had to laugh, in spite of the fact that her face was already characteristically flushed in the debate.

"Don't be drivel-happy," she said. "This goes back to one of the arguments we had on the *Schirra,* the fact that nothing is so subject to

change as human institutions. And among these is the family. Down through the ages we have seen evolve every type family imaginable, and we have seen, as well, periods when there was no family at all."

"When?" he demanded. "I'll admit we've had different types of family, under special conditions. Polygamy under the Arabs, because so many of the men were killed off in battle that there was a surplus of women; and polyandry, up in Tibet, before the advent of modern medicine. There was a surplus of men because so many women died in childbirth at that high altitude. But when was there no family at all? You've got to have some sort of family."

"To begin with," she said, "that example of yours of the Tibetans is probably wrong. Inadequate reporters of Tibetan society were probably describing a form of family that was one of the very oldest. All the men of the clan were married to all the women, all the children belonged to everybody. Your prejudiced reporter, his modern sensibilities shocked upon seeing such a society, might well report that the women had more than one husband. Of course they did, and the men more than one wife."

Ronny was eyeing her in disbelief.

She went on. "That was a pretty primitive family if you ask me. In fact, I would call it no family at all. As man evolved, he hit upon a taboo, here and there, which prevented such relationships as those between parents and children. You can imagine the advantage this system soon held for those groups who had such a taboo, and those who didn't—genetically speaking. Later on, some groups adopted a taboo against brother and sister relationships and again, those tribes which followed such a custom outstripped the ones who held onto the older type 'family'.

"All this, of course, is oversimplifying. But eventually, out of these successful taboos, grew gentile society, in which each tribe was divided into *genos* as the Greeks had it, or *gens* as the Latins called them. It was forbidden to marry within your own gens. You had to take a husband or wife from some other gens, either within your own tribe, or from some other. All children from the relationship became members of the woman's gens, when descent was in the female line. Later this was changed to descent in the male line and you took the name of your father's gens. Very well, what it amounted to was that the gens was one enormous 'family'. All the children were the collective responsibility of the whole gens. All the adults were the mothers and fathers of all the children.

"However, this system fell off with the advent of civilization, the growth of herds and, with agricul-

ture, the ownership of land. A man wanted his own children, who worked with him in the herds or in the fields, to inherit his property. He didn't want it to go to the gens of his wife, as was the old system, or even his own gens. Slowly the family became monogamous, consisting only of a man, his wife, and his children."

"Now wait a minute," Ronny said. He was already tiring of both the subject and the lecture, but there was no easy way to break it off. "You mean not until comparatively recent times have we had a one-man-married-to-one-woman deal?"

"No, I don't mean that. I think that as soon as our race had evolved much further than the outright animal, it began to tend toward a pairing relationship. That is, one man and one woman. This, I think, is eventually the *normal* relationship toward which we are trending and have always been. Even under gentile society, the usual thing was for one man and one woman to have a relationship. In those days it was easily broken and both could go their way, both were equal, neither had ties on the other. Man and woman complement each other. They act as a team and, instinctively you might say, the pairing family is the natural one."

She plowed on. "But, yes, what we know as marriage and the family today, is comparatively recent. The marriage laws which developed, the marriage ceremonies, the religious teachings, the cultural taboos we came to think of as natural and normal, are new developments historically speaking. With the advent of the monogamous family, several needs had to be met. The man, wishing his children to inherit, had to make sure he was the father. Thus women were segregated, kept virtual prisoners in the gynaecea of the Greeks, the harem of the Arabs, the seraglio of the Turks. The laws and mores were such that a woman must be a virgin at marriage, but that was winked at in the man's case. In fact, under the Code Napoleon, for example, the law conceded the right of the man to be unfaithful. A woman who was caught in adultery was punished with death, in some societies. There were other angles, to these new marriage laws, however. In this new type family, with the man controlling all the wealth, the woman and children had to be protected from his being a complete brute. The laws forced him to remain with her during her pregnancy and while the children were young. He was obligated to support them."

Ronny said impatiently, "Look, I don't have the time to take a complete course in the history of marriage and the family. Bring it down to here and now. What's all this about there being no family and no marriage on Amazonia?"

She flushed. "I'm sorry, I didn't realize I was boring you."

"You're not boring me, confound it," he growled. "I'm just trying to

make heads and tails of what goes on in this drivel-happy country."

"Very well. Times have changed again. In a truly affluent society, the woman is no longer dependent upon the man, nor he on her. Nor, are the children dependent upon either. As in the days of the gens, society as a whole sees that nothing harms the child."

"You mean," he said accusingly, "parents don't raise their own kids on this crazy planet?"

"It's not the way I'd put it, but at the risk of shocking your conservative beliefs, Guy Thomas . . ."

"Call me Ronny," he said wearily, "everybody else does."

"A nickname? With a name like Guy, I wouldn't think you needed a nickname. You know, you certainly seem different than you were on the *Schirra*. It's as though you were playing a part then."

"Go on about raising the kids," he said.

"Actually, for the past couple of millennia during which parents were in a position to be complete dictators over their children, no matter how unfitted they were for the position . . ."

"Hey, now wait a minute!"

"Why? Take an example. A silly little slob in her mid-teens goes out with a juvenile delinquent on a drunken party. In the back of the vehicle in which they've been speeding up and down the roads, threatening the lives of others, she fails to take certain precautions. The slob who was her companion, is forced to marry her. Nine months later, the child is born, and, hocus-pocus, a miracle takes place. She is a sainted mother. They're parents! And ipso facto, capable of raising, training, educating the child. Artemis, Ronny! You don't subscribe to this, do you?"

"It's a rather extreme example," he said wryly.

"Not as extreme as all that. But take parents not quite so far out: How many of them had the time, the training, the intelligence level, sometimes even the desire, to raise healthy, balanced children? One set of parents in ten? I doubt if it was any more."

"So in Amazonia the State raises the children."

"There is no State in Amazonia."

He closed his eyes in pain. "Here we go again," he said. He opened them and glared at her. "But before we go into that, I don't want to miss something we passed over. In all this gobbledygook about family and marriage, you seem to have left out the consideration of one very basic item, in your coldblooded scientific approach."

"What other approach can science have?" she scoffed. "In science you deal with facts, not romanticism."

"That's the point I wanted to bring up. In everything you've said about the relationship between man and woman, and between parents

and children, you haven't even had a nod in passing at the word love."

She looked at him scornfully. "So?"

"So the very basis of these relationships is just that. Love. And that remains unchanging down through the centuries, though it may sound like a lot of jetsam to an ethnologist such as yourself."

She sighed in exasperation. "Ronny, you keep insisting on believing that the institutions with which you are familiar are unchanging and have always been. Actually, that term love, as you're using it, is a comparatively modern invention. Romantic love first came on the scene during the Middle Ages. Back when so many of the aristocracy were off on crusades, back when romantic verse and song were being developed by the troubadours and those fair knights who were smart enough to stay at home from the wars, back when adultery was the full time occupation of a considerable portion of the gentry who had nothing else to do."

"Cynicism doesn't become you, Pat," Ronny said.

She sighed again. "Down through the ages there has always been passion, and there has always been lust, and, of course, above all there has been the sexual instinct. But romantic love, I repeat, is a fairly new invention. If you will read the mythology of the Greeks, the doings of the Gods, you'll see that they had lust aplenty, but can you point out one myth that portrays true romantic love, with its self-sacrifice and so forth? Or get into the historic period. Can you find in all the writings of the Romans, a real love affair? Did the wives of any of the Emperors love them? Compared to the later timeless romances such as that between Disraeli and his wife, Lord Nelson and Lady Hamilton, President Madison and his Dolly?"

She snorted at him. "Here on Amazonia, for possibly the first time, we can contemplate a true love between the sexes. No longer does one economically dominate the other. No longer is one at the mercy of the other, because of unfair laws. Both are equal, and . . ."

"Oh, now, *really* . . ." he began, overriding her voice.

And it was then that the door hummed.

Pat looked at the screen. "I wasn't expecting anybody," she frowned.

The frown turned into a scowl. "It must be broken. There's no one on the screen."

Ronny swiveled, quickly. The screen set in the door showed blank. Pat O'Gara reached toward the release button set into the control arm of her chair.

He said, "Wait a minute, Pat!"

But she had already pressed.

The door opened and Minythyia, clothed in her Amazon uniform, a quick-draw holster on her right hip, was revealed, leaning on the door jam.

She grinned at them mockingly. "So," she said. "Leave you for half an hour and you dash off to some other woman. I can see we're going to have some words in our family, Cutie."

Pat said, "Minythyia!"

The Amazon said to Ronny, "Come along, boy. We've got a date with my mother. She evidently has a few questions she'd like to ask you."

XI

Minythyia followed him down to the street silently. The sporthover car she'd had earlier was parked near the curb, once again, he noted, in a zone marked prohibited. He was somewhat surprised that she had no other guards with her.

"How'd you know where I was?" he said.

She chuckled, as though fondly, at him. "Where else could you be? You had no place else to go. I forgot it at first but then, after I left mother and the others, I recalled pointing Pat O'Gara's building out to you."

"I was a flat to come here," he muttered. "You realize, obviously, that Citizeness O'Gara had nothing to do with it. I intruded on her. She knows nothing about me, nor why I'm on Amazonia."

"Of course, Cutie," Minythyia yawned. She banged at the control levers of the little vehicle, brought them off the street and zoomed forward, pressing him back into the seat.

He was disgusted with himself. He had spent the last precious half hour batting his gums about nonessentials when he should have been desperately trying to figure out some manner in which he could have escaped this insane planet. Some manner in which he could have appropriated a space launch and got himself out to the UP Embassy.

Instead, here he was, recaptured by a slip of a girl—or so she appeared, when not in uniform. He looked over at her. It was the confounded uniform that made these women look so aggressive and truculent.

He said in nasty irritation, "Where'd you people ever come up with the idea that women made superior warriors to men?"

She looked at him from the side of her eyes, mockingly, as usual. "My dear husband, whoever contended that women make better warriors than men? Didn't Heracles and Theseus and their Greeks clobber the original Hippolyte and her warriors? And Achilles, when he fought Penthesilea before the walls of Troy, did he have any trouble defeating her?" She leered. "And you know what the legends tell us he did to her afterwards. But anyway, no. I'd never claim that women made better warriors than men. Now soldiers are another thing."

"What are you talking about?" he grumbled. They were driving into

an area he hadn't been in before. Probably to the palace, he decided. He wondered how far it was. He could vaguely remember this part of town from the map he had been shown, but he couldn't remember where the palace was located. Confound it, where *had* the palace been on the chart that Sarpedon had shown them at the Octagon?

She was going on, even as she zipped up one street, down another, in a heart-sinking display of a racing driver's art.

"Back in the old days, the good old days, I suppose you'd call them, admittedly a man could take a woman. A one hundred twenty pound man, in a fight with a one hundred twenty pound woman, could mop the floor with her assuming equal, normal physical development and training. Man is capable of a peak power output about four times that of a woman his size. However . . . there's an however, you must realize."

"However," he muttered disgustedly. He had few illusions of what was going to happen to him, once they had him under Scop again. They'd drain every bit of information he had in his brain, from childhood on. Every detail of the workings of Section G with which he was familiar, would be theirs to utilize. They'd get as complete a list of agents, and their secret whereabouts, that he, Ronny Bronston, could provide.

"However, a woman can endure a continuing strain longer than a man. How many men could bear up under a difficult childbirth? At any rate, back when warriors fought with swords, men had the ascendancy. But it began to taper off, dear husband, when weapons began to change, when even the bayonet became antiquated, since you never got near enough to the enemy to use a sticker. Even back in the so-called First World War, women were beginning to show up in combat, especially among the Russians. By the Second World War they were in full swing. Literally millions of women used every type of weapon, once again especially among the Russians. There were women flying aces, women commanders of warships, women artillerists, and especially women infantry. And it wasn't the Russians alone. The British discovered that the female antiaircraft crews ran up at least as high scores as the male ones. You see, women have more patience, more solidity. But possibly the real proof was seen in the Israeli-Arab wars. It was soon found that a one hundred twenty pound girl could buck a Brenn gun just as efficiently as a man, and was less apt to wind up with a galloping case of battle fatigue, if the fight went on too long, or if the shelling got a bit too heavy. Oh yes, women might make poor warriors, but, believe me, husband dear, it has finally developed that they make better soldiers."

She was evidently taking shortcuts by going down less traffic-ridden main arteries. For the moment, they were on an empty byway.

Ronny growled, "I seem to be going from one lecture to another today. But at least, I think I've got something from this one."

She looked at him from the side of her eyes, slowing down for a sharp turn. "Oh . . .?"

He snapped, "Yes." His hand snaked out and switched the engine off. "The fact that man is admittedly better, hand-to-hand."

She tried to whip her gun from its holster, but his hand was before hers. Open, it slammed the gun deeply down into the holster. And he kept his left hand over the weapon, even as he reached out with his right.

Her eyes wide, she began to shrill something, squirming to escape him.

Ronny clipped her expertly behind the ear, and didn't even wait to watch her slump. He brought the vehicle to a bucking halt, awkward as he was with the controls in this position.

His eyes went quickly up and down the street. There were some pedestrians, more than a block away. And several hovercars in the distance. No one, seemingly, had seen the fray.

He heard a yell from above him, darted his eyes up. He had thought himself unobserved too soon. On the third floor of the building before which they had come to a stop, a man was leaning from a window, shouting as though demented.

"Traitor," Ronny muttered. He hurried out of the car and around to her side. He opened the door that she customarily vaulted, and dragged her forth. He carried her, noting, somewhat to his surprise, that she wasn't nearly as heavy as he would have expected and unsuspectedly soft in his arms. He put her down alongside the wall of the building. The apartment occupant above continued to shout blue murder. Another head popped from another window, this time in a building across the way. A scream, sounding ludicrously feminine in this land of Amazons, reached for the skies.

He whipped the gun from Minythyia's holster, stuck it in his belt, dashed back to the car, then around it and slid into the seat she had forcibly been hauled from.

He banged the controls, for a moment ineffectually.

She had come awake. "Ronny!" she yelled at him. "Come back . . .!"

"Oh, great," he muttered sarcastically. He had the sporthover underway now, and realized why it was she had driven like a racing zealot. This souped-up vehicle took its bit in its teeth. He blasted down the street as though demons were after him.

"You don't understand . . .!" her voice faded after him.

He grunted at that with sour humor. He didn't understand was right, but he understood enough to keep

away from that gang of hefty inquisitors, and those armed to the teeth bully-girls in the Hippolyte's palace. This was one honeymoon where Minythyia could count him out.

He sped down the narrow way, took a quick right turn into the first street that appealed to him. Sped some more, and turned again. It would take a time, now, for them to find him.

However, he knew he was going to have to go to ground. He couldn't indefinitely prowl the streets of Themiscyra in this sporthover and expect to keep away from the Hippolyte's people forever. He had seen too many examples of Amazonian efficiency to doubt that once they set their nets it was just a matter of time until he was fished in.

But where could he go?

He had emerged into a broader avenue, one of the main arteries, and he slowed to keep attention from falling upon his speeding two-seater. He hadn't been on this particular boulevard before, but it checked out in impressive beauty with the others. Public buildings, libraries, he assumed, fountains, monuments, parks, plazas, theaters . . .

He was passing a theater now. It was more or less of a replica of the Pantheon, Roman, rather than Greek. Very beautiful . . .

He jammed the brake down suddenly and goggled.

After a long moment, he brought the little hovercar over to the curb and left it to walk to the display advertising the show within. There were various posters in the old-fashioned two-dimensional style. Basically photographs, he decided, but then touched up with an artist's imagination. It was evidently some sort of variety show, a vaudeville sort of thing, beloved of all centuries.

What had caused him to come to a halt, for a better look—

There stood Clete in a gaudy costume. In her left hand she held half a dozen throwing knives by their points. In her right hand she had a single knife, ready for a cast. Beyond her stood what was obviously an assistant, an apple on the top of his head. The old, but ageless, William Tell bit.

But that wasn't all.

In one of the other posters he recognized still another face. A face that made it too utterly much.

He walked back to the hovercar in thought. Some of the pieces, just some of them, were beginning to fit into place.

When he got back into the hovercar, he sat for a moment, ignoring anyone who might have been looking at him. His mouth worked, and he rubbed it thoughtfully, roughly with the knuckles of his left hand, so roughly that it stung.

A woman was coming up the street and was due to pass within a few feet of him.

He said to her suddenly, "I beg your pardon. I'm from out of town.

Could you tell me where I can get a newspaper?"

She smiled at him. "Right up the street there at the entrance to the pneumatics. Don't you have a screen in your car? You'd get exactly the same thing by dialing NEWS."

"Thanks," he told her, without inflection.

When she was gone, he sat and concentrated some more. Finally he took the shooter he had appropriated from Minythyia and holding it low, between his knees, inspected it. He had never seen the model before, but he was experienced enough with handguns to figure out its working. It was evidently constructed to throw some sort of projectile, probably a small bullet, with or without either an explosive or a gas cartridge. A somewhat primitive weapon, by the standards of the more militaristically inclined planets of UP, but one that had its uses under circumstances.

The difficulty was, there was no clip in the butt.

It was useless.

He looked at it and grunted. Some warrior Minythyia had turned out to be.

He tossed the shooter to the floor at his feet and started up the car again. He brought back, before memory's eye, the map of the city and directed the speedy little vehicle to a definite destination this time. However, he drove more slowly than he had before. There was still quite a bit to think about.

He passed the bachelor sanctuary, as the major had called it, drove around to its rear and parked the car.

He stood there for a moment, looking at the building, and figuring out where his quarters had been. Then he found a path that wandered through the garden and made his way to the area beneath the windows of that suite. Looking up now, he was mildly surprised that he had been able to climb down the wall with such ease. Handholds and footholds didn't look as promising as all that.

He found the gun he had ditched only that morning, in the bush where he had thrown it.

He couldn't afford to be spotted with it in his hand, and tucked it into his belt, without further examination. He had checked it this morning, knew it was charged, knew how it was operated. He doubted if he'd be overly accurate with the weapon at any range at all, at first, but, then, he doubted that he would be using it at any great distance.

He walked around the building and into the entrance he had used before. Inside, he walked up one of the halls aimlessly until he met an inhabitant.

The other was hurrying to some destination or other, but Ronny asked him, "Could you tell me what apartment Podner has?"

"Podner Bates? He's in Forty, isn't he?" The man hustled on.

Ronny Bronston figured out the numbering system of the apartments and finally found Forty.

He pulled the same trick that Minythyia had at Pat O'Gara's place. He put his hand over the door's eye before activating it. Inside, Podner, if he was at home, would see nothing but black on his screen.

The door opened and Podner was there, blinking.

Ronny pushed his way past him. He looked about the room. It was far from the frilly affair he had been given the night before. It was a man's apartment. Comfortable, scuffed up furniture that had seen many a shoe rested upon it, a bar with an excellent selection of liquor. Paintings on the wall that would appeal to the masculine taste whether it be on Earth, New Delos, Victoria, or, Ronny Bronston was beginning to understand, Amazonia.

Ronny looked at the other. "You've forgotten your wig."

Podner fluttered a hand at him. "Oh, darling, you know how it is. A boy simply has to get out of his frills once in a while. Don't you just hate girdles?"

Ronny looked at him wryly, "I never had one on," he said. "And I doubt if you have either."

He held a moment's silence and then said, "You're an actor."

Podner blinked at him. He looked disgusted. "Damn it," he said, "what'd I do wrong?"

"Nothing," Ronny said. "Come along. I've got to talk with you, and I don't think I'm safe here."

"Why should I come with you?" Podner said sourly. "I thought I was doing fine in that part. Minythyia is going to be furious with me."

Ronny put his tunic back a few inches so that the gun in his belt was revealed. He tapped it two or three times with his forefinger. "Let's go," he said, his voice cold.

The other stared at the gun. "Holy Ultimate," he said, all the astonishment in the galaxy in his voice. "You mean it. You're threatening me with violence."

They marched out of the building and toward the car.

Ronny said, "What happened to my luggage?"

"Major Oreithyia and some others came and got it hours ago."

Ronny grunted disgust, but he couldn't have expected anything else. They climbed into the car, and he looked at the other man, remembering his own attack upon Minythyia shortly before. He said, "Look, Podner, don't try anything. I realize that sissy act of yours was laid on, that you're no molly; however, in this sort of thing, I'm a pro."

"I'm sure you are," Podner muttered unhappily. "I'm not resisting. I'm not a hero."

Ronny got under way. He looked from the side of his eyes at the other, trying to dope him out. "What are you? Obviously, you support the Amazonian government."

"Of course," the other said strongly. "Why not? It's the best government I've ever heard or read about, and I'm interested in the subject."

Ronny said evenly, "Oh? My own ideas would lead a little nearer to democracy. You're like a dog licking the hand of the master that has just clobbered him."

"Democracy!" Podner snorted in scorn. "We've gone far beyond democracy on Amazonia."

"Oh, you have, eh? And just what do you find beyond democracy?"

"In the first place, I doubt if you know what the word means," the actor said in high scorn. "Where are we going?"

"You'll find out. So I don't know what democracy means. Please enlighten me."

"Very well. As you possibly know, ancient man's governmental institutions were based on the *gens,* or *genos,* as the Greeks called them."

Ronny continued to tool the speedster down the boulevard. "So everybody's been telling me," he complained.

"Very well, when city states began to form and new institutions took the place of old, the former ways needed change. A council of chiefs was inadequate to handle municipal affairs. The first attempt to handle the problem is credited in legend to Theseus, but that's undoubtedly nonsense. It wasn't until Solon, about 594 B.C. that they took the first big step to end gentile society and begin a new form of representation based on geographic factors and on property, rather than on family. In Athens, by the time of Cleisthenes in 509 B.C. the changes were culminated. Instead of being represented in government from the *genos* into which you were born, you were represented from the *deme,* or city ward, in which you lived and according to the amount of property you controlled. Democracy, then, actually means *rule of the city wards.*"

"Great," Ronny said sarcastically. "However, the word has come to mean rule of the people."

"Then seldom, if ever, did the reality live up to definition. Take a look down through history: The Athenians with their supposed democracy, in which only the citizens were allowed to vote and the overwhelming majority of the people, the slaves, were not. Florence and Venice and the other Italian republics. Who voted besides the wealthy merchants, the propertied elements? Bring it down to more modern times. Did you labor under the illusion that the soldiers who followed Washington at Valley Forge were allowed the vote after the revolution was won? Comparatively few of them, I'm afraid. Property requirements were stiff before you could vote in the early United States."

"They loosened up later," Ronny said.

"Yes, but by then they had new

restrictions, some of them not so obvious. By the middle of the Twentieth Century, they had the so-called two-party system. You could vote for the candidates of either one or the other. The trouble was they both stood for the same thing and represented the same elements. Laws were passed that made it all but impossible for a third party with conflicting principles to get on the ballot. Rule by the people? Take the election of 1960 during which Kennedy, one of the most popular political figures of the century, became president. He had some thirty-four million votes cast for him. The population at the time was one hundred and eighty million, so you can figure that a bit more than one American out of six voted for him. The others either voted against; didn't vote at all, though eligible, because of cynicism or whatever reason; weren't allowed to vote because of restrictions based on race or education; or weren't allowed to vote due to insufficient age. One out of six. This is rule by the people?"

"All right," Ronny said. "So you've gone beyond democracy."

"Yes. Actually, rule by the people is only valid under certain circumstances. For instance, would you be willing to abide by the vote of the Roman mob such as it had become in the early centuries of the Empire?"

"So what are the conditions under which it becomes valid?" Some other parts of Ronny Bronston's puzzle were beginning to fall into place. He continued to needle the actor, getting a crumb of information here, another there.

"Only when the electorate is composed of peers. To use a simple illustration: suppose five men are shipwrecked upon an island. If they average out in intelligence, experience and ability, then the only sensible method of deciding who should fish, who should collect coconuts, who should haul water and who should build huts, is the vote. But suppose only two of these men fit that description and one of the others is a moron, another a homicidal maniac and the other in a condition of shock due to the experiences of the shipwreck. The vote then becomes silly."

"All right," Ronny said passively. "Under what conditions are men peers so that they're competent to vote for their governmental officials?"

Podner's tone had long since taken on a superior, professorial tone. "My dear Guy, man has come up with but three schemes of representation down through the centuries. The first based on the family, kinship; the second based on geographical lines and property."

"And the third?"

"Based on your work, your profession, where you hold down your job."

"There we're peers, eh?"

"Yes. If a man is knowledgeable

at all, he's knowledgeable when he talks shop. He may not know the duties of a senator as compared to those of a bishop, he may be tempted to vote for a president because the man projects well on Tri-Di, or one with an excellent staff of speechwriters. He might be an absolute flat when it comes to politics —I suspect most people are—but on the job he's knowledgeable, able, whether he works at digging ditches or in a laboratory.

"Let's picture an industry here on Amazonia. Say the hat-making industry. In one of the hat plants there is a gang of eight men who must vote for one of their number to be foreman. Since they work each day with each other, they are in the best position to know who among them is best suited to hold down the job. It is to their interest to elect the best man, since a good foreman can so coordinate their efforts as to make the job easier for all. Very well. The dozen or so foremen in that particular section of the plant work together each day on the problems involved in being a foreman. They elect from their number a section supervisor. The section supervisors of the plant, who also work together each day, elect from their number a factory manager. All the factory managers of the hat industry of all Paphlagonia send representatives to an industry-wide conference of the clothing industry, which meets periodically, and in turn sends representatives to the central congress of the nation. They, of course, are the delegates from each field of endeavor, not only manufacturing, but from the professions and from the arts as well. At this congress is planned the production of the nation."

"Syndicalism," Ronny muttered. "They messed around with the idea in the Nineteenth Century in Europe."

"I beg your pardon?" Podner said.

Ronny could begin to anticipate more of his puzzle pieces falling into position.

He said, drawing the other out with argument, "Um-m-m. I see your idea. But look. That's a pretty limited democracy. Your gang of unskilled laborers on the bottom can vote for their foreman, but that's all. Suppose the overwhelming majority in the plant are opposed to the, say, manager? There's no way of getting rid of him. Only the section supervisors can do that."

Podner nodded. "It's an interesting question, and highly debated. In fact, over in Lybia, they're trying another system. There, the foremen can only nominate a section supervisor, and he must be confirmed by a majority vote by all the men who are to work under him. In turn, the supervisors can only nominate from their number a manager of the factory, and all employees of the plant must vote to confirm him in office. And so up, all the way to the central congress."

Another piece had dropped into place. The puzzle was beginning to show final form. It wasn't complete by any means, but it was shaping up.

Ronny, still searching, said, as though half in sympathy, "Um-m-m. That sounds very fine. Another form of democracy, perhaps. But how does the Hippolyte come into this, and those heads of the *pylons,* and woman's domination of the planet?"

"Oh, that's not important. That's *civil* government."

Ronny darted a sharp glance at him. "How do you mean . . . ?"

But suddenly the other's mouth clamped shut. "I talk too much," he muttered.

Ronny said quickly, "I thought the Hippolyte was the supreme head of Paphlagonia—the chief of state."

"She is," Podner said lowly.

"Well, how does that fit in with the central congress bit?"

"I've said enough," Podner muttered, unhappily. "Where are we going, anyway?"

"Here," Ronny told him, swinging into the curb. "I suspect it's one place nobody will look for me."

Podner Bates looked up at the building, showing no signs that he had ever seen it before.

He said, "You realize, of course, that this amounts to kidnapping? I'm accompanying you under duress."

Ronny had to laugh, even as he left the hovercar. "*You're* complaining? You should've been through what I have in the past twenty-four hours or so. Amazonia, ha!"

He had the actor precede him to the entrance and then up the stairs.

Ronny said, in half explanation, "I was here just a short time ago. I doubt if anyone would expect me to return. We can talk it out further, and there's someone else here who might help out with a few matters."

The door of Patricia O'Gara's apartment was ajar. Ronny scowled at that. Instead of activating the eye, he pushed his way through, saying over his shoulder, "Don't try to buzz off. A beam in the leg does you very little good, fella."

Podner grunted.

Ronny Bronston came to an abrupt halt, his right hand flicked to the gun in his belt. On the floor, partly obscured to his view, lay a girl. Over her, back turned, bent a figure, a gun in one hand.

Ronny snapped, "Drop the shooter!"

The figure stiffened, held the pose for a moment, then let the gun go. The head turned. The man came slowly erect.

Ronny said, "Teucer!"

The other looked at him warily, his hands held wide from his body, palms forward, showing he was taking no action.

Ronny Bronston said, "Get over there by the window. Quick!"

Teucer said, "She's dying."

Minythyia, her face contorted in pain, opened her eyes and stared up at the Section G operative.

Ronny said, even as he sank to his knees beside her, "What happened? This doesn't make sense. This doesn't fit in!"

"It fits in," Teucer growled from his position near the window. There was no belligerence in him.

"Artemis!" Podner Bates ejaculated. "It's the Hippolyte's daughter! She's been hurt. We've got to get help."

"Shut up!" Teucer said wearily.

Minythyia looked up at Ronny Bronston. Pain racked her again. She whispered, "Cutie . . . kiss me the way they do in the Tri-Di shows from Earth . . ."

His face agonized, he bent toward her.

But she was dead.

XII

Ronny Bronston came up, Arctic cold. The gun was steady in his hand. He looked at Teucer.

"Who killed her?"

Teucer took a deep breath. "Evidently, you did."

"Make more sense, and fast. You're right on the edge. On the very edge."

"Look at the shooter."

Ronny stared down at it. It was an H-Gun. It was his own H-Gun, last seen, dismantled, in his supposed tool kit.

Teucer said, "Tuned to your coordinates, and controlled from the Octagon. Nobody else in the system can use it without blowing himself up—except possibly some other Section G agent, fully acquainted with the gizmo."

Ronny looked at him for a long moment. "Who are you working under?" he said finally.

"Supervisor Lee Chang Chu. And you?"

"Sid Jakes."

Teucer said, "I thought I made you, there at Heliopolis Street, but I didn't have time for identification. What happened to you there? I thought you were following me."

"I got hung up. I didn't have much of an idea of what was going on at that time."

"I could see you didn't," Teucer said.

"Have you got your badge?"

The slightly built man reached into his belt and brought forth a wallet. He flipped it open. There was a badge inside that gleamed silver when he touched it with his finger, and read simply, *Matt Halloday, Section G, Bureau of Investigation.*

"Where's yours?" Teucer said.

"I didn't dare bring it," Ronny said. "We knew how thoroughly I'd be searched when they found it was a man wanting to land on Amazonia, rather than the girl the visa was issued to. My name's Bronston."

"I've heard about the work you did on Phrygia," Matt Halloday nodded.

Podner Bates had gone into the

bedroom and returned now with a sheet which he draped over the dead girl. He looked at the others. "What are you two talking about?"

They ignored him.

Ronny said, "What's this that evidently I killed . . . my wife?"

"Your *wife!*" the other Section G operative blurted, but then went on. "When I got here, on the off-chance I might find you with this Patricia O'Gara, Minythyia was like that. A few minutes to live. I've seen H-Gun wounds before . . . so have you. The gun was on the floor beside her. What happens when she's found and the Hippolyte's people come in? You'll get the credit."

"But why . . . !"

Halloday looked around the small apartment. "I wish there was a drink around this place."

"I'll go round up a bottle," Podner Bates said.

Ronny looked at him. "Like curd, you will. You stay here with us. We're going to need some answers, and quickly."

The actor looked him in the eye. "I'm on your side, gentlemen. I was a friend of Minythyia's. It was she who brought me into this game, this masquerade. I know neither of you killed her. I don't know who possibly could have. There is no crime on Amazonia. This is unprecedented."

"No crime!" Ronny blurted in rage.

Podner looked at him, shaking his head. "Unless you count crime deeds performed by mentally upset persons. We deal with such, of course, in our hospitals. We have no police, no criminal courts, no jails." He added bitterly. "And no need of them save when we are invaded by strangers from overspace."

Ronny turned to Matt Halloday. "I'm surprised we didn't know about each other's presence here on Amazonia. What's your assignment?"

"To track down a defector. A Section G operative who decided to leave the service."

"What's wrong with that?"

"He didn't bother to go through the usual process of submitting to memorywash, and to turn in such items as his Model H shooter, his badge and his communicator."

Ronny Bronston waited for more.

Halloday said, "He'd been stationed on Palermo. He must have gotten together with some of the old Mafia outfit, remnants of the administration we were instrumental in overthrowing."

"I worked on that," Ronny nodded.

"I know you did. At any rate, the boys evidently struck upon the biggest attempted romp in the history of crime. They weren't interested in anything short of taking over a whole planet, an advanced one at that. Why next to these stutes, Genghis Khan, Tamerlane and Alexander were all cloddies."

He went on. "You see, somehow

or other they'd hit upon the true nature of this planet, Amazonia. They must have decided it was a plum just waiting for the picking. A whole world . . . all but defenseless."

Ronny had some questions, then and there, but he didn't interrupt.

"The Mafia gang couldn't have swung it themselves, but with the aid of Damon Kane . . ."

"Who?"

"Our Section G turncoat. With his help they figured it all out. They had a small spacescout, hidden away from the days when they dominated Palermo. That enabled them to transfer their forces from Palermo to Amazonia. Later on, it was also used to bring Alfredo Verrocchio back from Earth, where you had met him."

"Alfredo Verrocchio?" Ronny scowled.

"You knew him as Sarpedon. Supposedly a citizen of Amazonia. You and Zeke talked about him."

"Sarpedon! He disappeared."

The other Section G operative nodded. "That was all part of the plot they were building up against Amazonia's government, in the eyes of the Bureau of Investigation. It looked as though the Amazonian Embassy to United Planets must have done away with him. Actually, he was simply picked up by their spacescout and brought back here again."

Ronny said slowly, "His fling had been that all males were being exploited here, and that United Planets should intervene."

Podner Bates laughed sourly.

Halloday went on. "I'm not sure of details, of course. The part that interested me was getting Damon Kane before he could spill too much of the inside workings of Section G. I was far too late, of course. The very essence of their scheme involved such secrets."

"I still don't quite get it," Ronny said.

"Damon and Alfredo Verrocchio and their gang were working on the old saying that there is as much wealth to be made in the collapse of a civilization as there is in the building. And they were working on the Damon Kane supplied knowledge that when Section G comes upon a world that is supposedly being held back by some restrictive governmental, religious or socio-economic system, it takes secret steps to overthrow such a government. Once again, I don't know all the details, but their basic plan was to organize their outfit which they dubbed the Sons of Liberty, and project it as a far-flung, militant organization, capable and desirous of taking over the reins of government once the Hippolyte on Paphlagonia and the Myrine in Lybia had been overthrown. Actually, they really had only a handful of malcontents, romantics and crackpots."

Ronny said, "How many members are there in this supposed revolutionary movement?"

"I don't know. But I doubt if there's more than a couple of thousand on both continents."

Podner said in puzzlement, "This is all new to me. I've never even heard of the Sons of Liberty."

Matt Halloday looked at him. "I doubt if many have. They wouldn't even approach someone, unless they already knew he was a misfit who couldn't have made the grade under any sane social system. But you would have heard of them, all right, if, through the workings of Section G, they had taken over all news media, the Tri-Di, vizo-phone and all other methods of communication. How much of a fight could Hippolyte's outfit have put up against such a coup?"

The actor shook his head. "None. Practically none. I told you we haven't any police—except, of course, traffic officials, that sort of thing."

Ronny said, "How many are there of this Mafia gang which Damon Kane leads?"

"I've met about five of them, I think. They try to blend in with the Amazonian Sons of Liberty, pretend to be Amazonians themselves, but you can tell the difference if you're looking."

"Zeke's one, eh?"

"Of course."

Ronny said, "Something just cleared up. There was an attempt to kill me on my way to that Heliopolis Street hideout. They must have known I was coming. Possibly they have someone planted in the Hippolyte's offices. They tried to kill me."

Matt Halloday scowled. "I don't know if that makes sense."

"Oh, yes it does," Ronny mused. "They also searched my room and broke my communicator so I couldn't get in touch with Sid Jakes to make a report. They were afraid of me making a report. It might not completely bear out what Sarpedon had reported. I was better dead than alive. Damon could have told them that Section G looks after its own. Something like the old days when a criminal killed a cop. All police dropped everything, until the cop-killer was caught. That *had* to be the rule, if crooks were to be taught that they just couldn't afford to kill policemen. Kill hold-up victims in the line of work, even kill bank presidents during a stickup, but don't kill a cop, or you've had it.

"What do you think would have happened, if word had got back to the Bureau of Investigation that supervisor Ronald Bronston had been shot down on the streets of Themiscyra? Hippolyte's government would have immediately been given credit, and, probably with precious little further investigation of the true situation, Section G would have landed on her like a ton of bricks and the present government would have been tossed into the wastebin. Leaving who? Leaving our Damon and his gang. Once Section G pulls a romp, they fade out quickly, leav-

ing the scene to the locals. They don't want to be conspicuous. Some of the other restrictive governments of other worlds might smell a rat."

Podner looked down at the sheet-covered girl. "But why Minythyia?" he wailed. "What possible reason did they have for killing her?"

Ronny shook his head, as miserable as the actor. "She must have walked in on them when they were kidnapping Pat O'Gara. They killed two birds with one stone. They finished off the witness, and then, by leaving my Model H shooter, placed the blame on me. That in turn should have infuriated the Hippolyte against the Bureau of Investigation and made more likely some overt move on her part which would sooner or later bring the weight of the Bureau against her."

Halloday looked at him, thoughtfully. "Why snatch Miss O'Gara?"

"She's a citizen of Victoria. If something happens to her, on Amazonia, then Article Two of the UP Charter has been brought into effect . . ." He broke off and snapped suddenly, "Zen! Why are we standing around and jabbering about here? They're going to kill the girl. Nothing else makes sense. They're getting desperate. Zeke tried to shoot me again, after I untied you. They must be afraid the fat's in the fire, that I might be getting on to them, not to speak of you. Let's get going!"

"Going *where?*" Matt growled. "That Heliopolis address was the only one I knew. I wasn't with them long enough to find out where Damon and Sarpedon make their central headquarters. Zeke suspected I wasn't one of the usual Amazonian crackpots who joined the Sons of Liberty, no matter how I tried to act the part."

Ronny rapped, "He gave me another address. Come on. He'll remember they did, and possibly they'll evacuate the place." He rammed his gun into his waist band.

Podner said, "How about me?"

They both looked at him, impatiently. "Can you handle a shooter?" Halloday rasped.

"I . . . I know the theory."

"That you're supposed to point it, and pull the trigger, eh?" Halloday shot a look at Ronny.

Ronny pulled the gun he had rescued from the bushes and tossed it to the actor. "All right, anybody's better than nothing. Zen knows how many of them might be there."

They hurried down the stairs and to the two-seater hovercar.

Ronny rapped, "Podner'll have to sit on your lap."

"That'll make us nice and conspicuous," Matt growled.

"Why should we mind being conspicuous?" Podner demanded. "From now on we're all on the side of the authorities."

"He's got a point," Ronny said. "All bets are down, now. Let's go!"

The hovercar lifted, only slightly sluggish under the unusual weight, and hummed forward.

"I think I can remember this," Ronny growled. "It's over at the edge of the river."

They found the house which wasn't overly dissimilar to the underground retreat on Heliopolis. They drove past and completely around the edge of the block. The back faced the river. There were small craft tied up there.

Ronny came to a halt and cased the situation. "Any ideas?" he muttered to Matt.

Matt looked at him sourly. "You're supervisor rank. I'm just a full operative. You figure it out. Those Mafia stutes are just as good with a shooter as we are."

Ronny grunted. "Zeke missed me twice."

"Third time is lucky," Matt said dryly.

Ronny said, "All right, Podner. I'm glad we brought you. Get yourself into a boat. One of those tied up behind the houses either to the right or left of our place. If anybody comes out carrying a shooter, except Matt or me, unlimber that artillery I gave you and keep blasting away. It plies a beam that knocks chunks out of anything it touches."

He turned to Matt. "You've got your own Model H?"

"Yes. Happily, I'd hidden my shooter, badge and communicator. Zeke didn't find them when he overpowered me. He had gone to check with Damon, to find out what to do with me. You let me loose, and when I saw you weren't following me, I figured you had been nabbed and went on to get my equipment. It wasn't until later I figured out that if you'd escaped you might go to Patricia O'Gara's. I made my way over there and came on the scene a few minutes later."

"All right, just so you have it. Let's go!"

They rounded the corner again. As they walked, Ronny said tightly, "Our only chance is complete surprise. One of us will go over the roofs and down. All these houses evidently have patio gardens inside. The other will burn the front door down and go in that way. One thing: they're not going to think in terms of taking prisoners. We can't either."

Matt looked at him questioningly.

Ronny growled, "Every one of this Mafia gang knows the real workings of Section G. We can't afford to allow any of them to babble, later on."

Matt nodded, uncomfortably.

Ronny said, "Any choice? Over the roof, or through the door?"

The other said, "I'm afraid of heights. You can go over the roof."

Ronny snorted. They were approaching their destination, walking rapidly, on the off chance a lookout would spot them. At the door next to the hideout, Ronny said, "Give me a few minutes, then come in shooting."

Matt said nothing.

Ronny flicked his gun from his belt, blasted the door of the neighboring house, cutting a complete ring about the knob. It fell inward and he pushed his way inside.

There was a hall beyond, and a man hurrying down it, wide-eyed, toward him.

Ronny striding quickly, snapped, "Interplanetary Police. There's a criminal next door. I'm going over the roof to get him. Where's the stairs?"

The other bug-eyed him.

"The stairs!" Ronny roared, making a gesture with the gun.

"That . . . that way. What do you mean, Interplanetary Police?"

Ronny ignored him. He took the stairs three at a time. There was a second story, devoted evidently largely to sleeping quarters and refresher rooms, and then a narrower stairway leading up again. The roof, he decided, was probably utilized for sunbathing, contemplation of sunsets, and probably for teenagers necking of a starlit night.

He came out onto the roof.

Across from him, a man—it was Zeke!—was peering over the roof's edge, down into the street, and bringing up a short barreled scrambler.

Ronny burned a hole in him through which he could have rammed his arm. Zeke tumbled forward, and a moment later the sound of his body, thudding on the street below, came back. And with it, a crash of splintered wood. Evidently, Matt was on his way in.

Ronny grunted, even as he vaulted the low parapet which separated the two houses. He hurried over to the patio edge and looked down. For the moment, he could see no one below. But even as he began to look up, to locate the stairway, two figures came running from a side room, dragging at handguns holstered at their sides.

He brought his own weapon up to eye level and squeezed off with care. They toppled over, all but cut in two.

The stairs were in approximately the same position as they had been in the house he had just come through. He scurried over to them, instinctively bent low, as men run when under fire.

He burst the door open and started down.

Halfway up the stairs an unknown, seemingly weaponless, his eyes wide in fear, shot a terrified look up at him. Ronny didn't lose pace. The other toppled over backward when he shot the right side of his head completely away.

He was on the second floor now. He ran completely around it, spotting nothing. The doors were all closed. He could hear the sounds of Matt Halloday's activities going on below.

Against the last door he flung his shoulder, let his momentum take him far into the center of the room. Ronny spun, his gun sweeping, in a

half crouch. There was nobody.

Back into the hall, still at full pace. He took the next room, duplicated his maneuver. The room was empty, but there was a refresher connected with it. He kicked the door open. A man stood in the autoshower, evidently unaware of the noises in the building, due to the sound of pressured water. At sight of Ronny, he attempted to scramble in the direction of his clothes. Ronny cut him down mercilessly, turned and was gone before the nude bather hit the floor.

Back into the hall, still running.

He bashed down the next door. On the bed, bound and gagged, was Pat O'Gara. He didn't even take the time to grin at her. He was out in the hall again.

This time the next door but one flew open and two men, guns in hand came running out.

He used the Model H weapon as though it was a hose. He had seen them first.

He kicked in the sole remaining door on that floor. The room was empty. He headed for the stairs again. Below, there was a shambles. He nearly tripped over one body as he headed for the patio.

There he found Matt Halloday, struggling to keep on his feet. With his left hand, the Section G operative was holding the stump of his right arm, severed near the elbow.

"Two of them, one of them Sarpedon, heading for the back. They'll finish that poor Podner yoke."

Ronny shot an agonized look at his colleague, even as he dashed by. Matt was fated to bleed to death in minutes.

There were sounds ahead of him. Gun at the ready, he sped toward them. He met the two returning, their guns held ready, too.

Ronny Bronston dropped flat, gun hand extended, trigger tight back. The hallway flew apart.

He stumbled to his feet again, pressed ahead, stumbling through gore, his legs, halfway to the tunic's edge, wet with blood. He burst out onto the boat landing.

There were no boats there. Over to his right, Podner Bates was wavering a gun at him.

"It's me!" Ronny barked. "Did any get away?"

"No," Podner yelled shrilly, his voice on the edge of cracking.

"Where are the boats?"

"I . . . I sank them all with the gun when I heard all the noise."

Ronny shook his head at him, in admiration. "All right, come on. I'm afraid Matt's had it." Without waiting for the actor, he turned and headed back, already feeling the trembling that invariably hit him after extreme action. He mustn't let the nausea hit him. Matt had to be taken care of—if it wasn't too late.

The other Section G operative was sprawling on the garden, ludicrously crushing a bed of the largest pansies Ronny Bronston had ever seen. Ronny dropped his gun and

fell to his knees before the wounded man. He rolled him over roughly. To his relief, the severed arm was partially cauterized and bleeding comparatively little. He wondered as he worked, what sort of weapon had hit the other.

He heard Podner Bates coming up behind and called over his shoulder, "Something I can make a tourniquet from. Quick, you damned cloddy!"

Bates scrambled around, came within seconds with a torn piece of cloth and a stick.

Ronny worked over the fallen man desperately. Podner came back again, a large piece of torn tunic in his hands, part of the cloth bloody.

"Here," he said, "a bandage."

Ronny utilized it, then sat back on his heels. He pulled in a double lungful of air. He said finally, "Pat O'Gara's up in that room, one door from the left. Top of the stairs. You better go get her, she's probably scared to death."

There was no response and he looked up.

The actor was looking greenish about the gills. There were three bodies, in various stages of disintegration, strewn about the patio. The sickening stench of warm blood and flesh was everywhere.

Ronny said, "All right, I'll go. Watch Matt."

This time his progress up the stairs was slow. His feet dragged. Why had he bothered to worry about Podner's delicacy? He was near complete collapse himself. Day was coming to an end. The last twenty-four hours had been the most filled in his life.

He pushed the door open and made his way to her bed. He sat down on the edge of it and laboriously began to untie her. He took the gag out last.

Her eyes had been wide on him, taking in the blood on his legs, splattered on his tunic. He felt like an unskilled laborer in a slaughterhouse—and evidently looked and smelled like one. He was too tired to care.

She began to blurt something.

"Shut up," he muttered. "You're all right. You're safe." He stood again and stumbled toward the room's refresher.

The door opened before he reached it and a man stepped out. There was a Model H gun in his hand and it was leveled at Ronny's stomach. There was a sardonic smile on the other's face.

"Supervisor Bronston, I assume. The fair-haired boy of Sid Jakes and Ross Metaxa."

Ronny's own gun was out in the garden where he had dropped it while attending Matt.

He licked dry lips and said wearily, "Damon Kane."

"That's right. Like the Mounties of legend, you seem to have fouled everything up in the nick of time, you funker."

Ronny looked at him and shook his head, wearily. Even this emer-

gency couldn't get through his accumulated weariness. He had been going practically all last night, all today into dusk at the top peak of his resources. He hadn't even completely recovered from his hangover of this morning. He was through.

"Why not get it over?" he said.

"Why not?" the Section G renegade snarled. "You've flunked this, Bronston. I don't know how many of my Palermo men you've finished off . . ."

"All of them," Ronny grunted. "Get it over with, Kane."

". . . But I've still got all the nucleus I need among the Amazonians. I'll make a report over my communicator to Sid Jakes, in your name, that'll have Section G here within weeks. And when they pull down this phony socioeconomic system, don't think I won't build a new one to my own specifications. We'll take this planet like Grant took . . ." As he talked, his finger tightened on the trigger.

And suddenly the gun exploded, blasting his chest and lower face into nothingness, sending him reeling back into the refresher room from which he had emerged.

Ronny shook his head.

"He evidently didn't know that when Matt Halloday finally realized what was going on, that he simply got in touch with Section G, on his communicator, and had the gun assigned to Damon Kane's coordinates changed. Anybody trying to fire it, without the correct coordinates just blows the booby trap."

He turned to say something to Pat O'Gara, who was sitting upright in bed now, a fist to her mouth, her face ghostlike. But then he felt the mists roll in, and fell to the floor himself.

Ronny Bronston awakened in bed.

It was a clean, light room, and he felt unbelievably clean himself.

A woman—who must have been a doctor, she looked like a doctor—said, "You're awake."

"Not very," he said. "Go away." And went back to sleep.

When he awoke again, nothing had changed, save that two persons sat next to his bed and several more stood behind, none of whom he immediately recognized save Major Oreithyia, who for the first time was not in uniform. No, he did recognize the others now. They were members of the committee who had questioned him before he had been taken in to meet the Hippolyte.

Of the two seated women, one was the Hippolyte herself. However, she wasn't garbed now in her regal outfit of the palace throne room. She still bore her strength of character in her face, but the air of supreme command was gone. He didn't recognize the woman seated next to her.

The Hippolyte said, "This is the Myrine of Lybia."

Ronny nodded; he had guessed, even as she spoke.

The Hippolyte said, "Are you strong enough to talk? The doctor says your wound is doing nicely."

He hadn't even known he had been wounded. He wondered which of the enemy had managed to hit him. It didn't surprise him. In the heat of combat you often copped one without feeling it until later.

"I'm all right," he said.

The Hippolyte said, "The spaceship *Schirra* is still in orbit. Evidently, the satellite which houses the UP Embassy has some personnel which wishes to transfer back to Earth. Do you think you can undertake to reembark and return to Earth with a message from Amazonia to the Department of Interplanetary Justice and whatever other officials are involved in this sweeping scheme to prod all man-settled planets into progress?"

Ronny looked at the two of them wearily. He shook his head. "I don't think I have a clear enough picture as yet, to give a comprehensive report."

The Hippolyte nodded. "You will have. In actuality, it's all very simple. Ask us what you will. We'll cooperate. The Myrine has come all the way from Lybia to join in my final discussion with you."

Ronny looked at the Lybian Amazon head. She held the same dignity as did the Hippolyte, but was evidently prone to hold her peace.

He said, "It was all a show, wasn't it?"

"Largely."

"Podner mentioned that you have no police. You have no armies either, have you? Neither one of you?"

"That is correct," the Hippolyte said. "We haven't had for almost two centuries."

Ronny shook his head again. "When I was given this assignment, I went to the Octagon library. I checked everything it had on Amazonia, which was precious little. A great deal of it dealt with the founding of your organization, its original principles, the things you did on Earth to recruit members. It held all the by-laws of your organization, all the plans you expected to put through once you landed on your colony planet. All the pamphlets and books dealing with the Amazon movement, and why it was rebelling against man's domination."

Myrine opened her mouth for the first time, coming forth with nothing more than a chuckle.

"That was over two centuries ago," the Hippolyte said. "I think we'll save time, Ronald Bronston, if I take over. You see, at first I imagine we were something like the Mormons who settled Utah back in the old times. We had a multitude of ideas, principles, beliefs, and a great deal of faith in what, as we look back at it today, was obviously extremism. But we were no

incompetents. And like the Mormons we quickly became pragmatic. Just as they gave up their polygamy when it proved impractical, we gave up the domination of one sex over the other. Not so quickly, perhaps, but step by step."

The Myrine twisted her face in humor and it suddenly came to Ronny Bronston that she was an extremely handsome woman and must have been a beauty in her youth. She said, "We still have a few signs of it about, especially here in Paphlagonia."

The Hippolyte nodded. "More symbols than anything else, even here. At any rate, once again, similar to the Mormons, when our first colony ships landed all property was community owned, save, of course, personal things. Our original ideas of a female-dominated socioeconomic commonwealth proved nonsense within the year. The smallest unit of a life form is that unit which can reproduce itself. In the case of the human race, a woman and a man . . ."

The Amazon leader of Lybia twisted her face again. "Or, as Citizen Bronston would undoubtedly put it, a man and a woman."

Ronny grinned at her suddenly. He would have liked to have known this person better, and doubted that he would ever have the opportunity.

"At any rate," the Hippolyte went on, "our experiments revealed that only as a partnership can the relationship reach its ultimates. And so we adapted. We had various advantages over many other Earth colonies, I am sure. In spite of our initial enthusiasms, we were not fools. Our colonists were composed of high-level survival types. Nor were we inadequately equipped. A great many of our society back on the home planet, who weren't able to come, gave their full support to our attempt. We must have been one of the richest colonizations that ever burnt off into the stars. In short, we had the wherewithal to experiment, and the good luck to have one of the richest planets man has yet discovered.

"And so we prospered. We experimented here, we experimented there. Now you see the result we have thus far attained."

"When did you stop having a military?" Ronny asked curiously.

"From the beginning. We're women, remember."

Ronny said dryly, "I seem to remember such women in history as Elizabeth the First, Catherine the Great and Zenobia who didn't exactly avoid war."

Hippolyte nodded. "But they were women living in a man's world, and having to adopt men's methods in order to realize their ambitions. Ours was a woman's world. One of our original revolts was against the incessant armed conflict that has persisted since the early days of man's dominance.

He said, "Why the big masquerade? Why let those stories go around about the Amazons on this planet, the harems of men?"

The small group standing behind the two seated Amazon leaders stirred in suppressed laughter.

"Why encourage all this nonsense by such things as sending as delegates to the UP on Earth, big strapping muscular type women, all done up in uniforms that look straight out of the Trojan War?"

The Hippolyte chuckled wryly. "I thought anyone as stute as yourself, Ronald Bronston, would have figured that out by this time. We were defenseless. We neither had or wanted a military. But we knew we stood alone, a matriarchy in a confederation of two or three thousand planets dominated by men. Frankly, we were afraid. We were afraid man's instinct would be to pull us down. So it was we put up our false front. So it was we let rumors spread that would give any man pause before he landed on our world. Of recent decades, our spies have brought rumors back to us that intensified our fears. We heard that the institutions of some of the member planets of UP were being subverted. That governments were being overthrown through the connivance of certain UP agencies." She nodded. "What you told us under Scop made us realize our fears were well grounded."

Ronny avoided that and went back. "If there isn't any real conflict between your two major continents, why don't you have world government?"

One of the standees, a man Ronny vaguely recalled as Aeacus, interrupted for the first time. Ronny had pegged him before as some sort of economist.

He said, "Don't you see? We act as controls upon each other. If we attempt some new theory, and there seems to be an alternative, we let one continent try this system, the other that." He added, sourly, "Sometimes both are wrong."

Ronny was nodding in memory. "Podner Bates was telling me about your method of voting. In Lybia, you seem to have a variation on popular democracy—through industrial representation, of course—and in Paphlagonia, more nearly a representative one."

Someone said from behind, "That's correct."

Ronny said, "But what's all this about you being the Myrine and you the Hippolyte, and the *pylons* and the *genos* and such?"

The Hippolyte sighed wryly. "You probably read some of it in those early papers you scanned at the Octagon library. At first we tried to go back to gentile society, based on descent in the matrilineal line, and with women only given the vote. Some of the symbols of this we still retain, such as descent in the female line, which obviously is at least as sensible as descent in the male line. But, bit by bit, real

government control was taken away from this organization and handed over to the central production congress until at long last our body was in charge only of civil matters."

The Myrine said here, "I beg your pardon, my dear. Even that applies only here in Paphlagonia. In Lybia we are experimenting with universal suffrage even in civil matters, and making it an 'industry' involving men as well as women and with representation in our central congress."

"What do you mean, civil matters?" Ronny said.

"Matters pertaining not to production and such problems, but to everyday civic life. Traffic problems, planning of a city's supply of water and disposal of sewage, organization of festivals, judging of disputes between citizens. In the old days, before we had eliminated crime for all practical purposes, police, courts, prisons, that sort of thing."

Ronny said, "Just one other matter. This system of paying in hours. Where'd you come up with that silly idea that all time is worth exactly the same?"

Aeacus blurted, "What's silly about it, you flat!"

The Myrine laughed heartily.

She bent a friendly eye on Ronny and said, "You're quite right. In Lybia, we have varying values for an hour. A highly trained man's time can be worth several times as many hours as an unskilled man. We still count by hours, but we have different scales."

The Hippolyte grumbled, "It's an experiment we haven't concluded as yet. We're not sure if Lybia's right or not." She changed the subject. "Purely to satisfy my own curiosity, how did you see through the elaborate show we put on for you? Frankly, when Oreithyia told us you were a man, we were in a tizzy. We wanted the columbium very badly, but we didn't want you to come in contact with our world as it is. My"—her face showed quick pain—"daughter helped out, planning an extensive masquerade in which she seemed to take considerable pleasure. She always was fascinated by Earth, which is why she liked to meet the incoming spaceships as one of the customs officers." She hesitated. "Perhaps that is why she became attracted to you, personally."

Ronny said softly, "At the end, I assure you, the attraction was reciprocated. I don't know what it was that first made me smell a rat. Many things, I suppose. One of the matters that confused me considerably, though, was your throne room and all those hundreds of guards and attendants, playing court to you. It bore out everything I'd ever heard about Amazonia. Why, it was like a gigantic Tri-Di historical spectacular show."

The Hippolyte said dryly, "That's

exactly what it was. We took you to a Tri-Di set. Our people love this sort of show and our entertainment industry produces a good many of them. To impress you, Minythyia simply made arrangements to take the set over, bag and baggage. Those soldiers and attendants were all actors and extras. There is no such thing as a palace here in Themiscyra."

Ronny took a deep breath and puffed out his cheeks. "Well, several things gave me hints. For instance, Podner Bates was presented to me as a typical Amazonian male, but no other males I met seemed to be like him. I was given the impression that all women were warriors, but then never saw anyone in uniform except those I came officially in contact with. But the payoff was when I saw Clete, and Podner, on a theater billboard. Clete had done that little act of hers, showing what efficient warriors Amazonians were, by making a bull's-eye throwing her short sword. But the billboard told me she was a professional knife thrower. Quite a coincidence. No, the whole thing didn't hold together. I was told there were no newspapers or broadcasts. I can see why, now. If I had seen one, the beans would have been spilled. Another thing that didn't fit was the fact that Tanais was an exchange student from Lybia. How could you have exchange students if you were continually at war?"

He looked at the Hippolyte quizzically. "What's all this about *I thee wed* and the three husbands and all?"

All of the assembled Amazonians joined him in smiling.

The Hippolyte said, "Minythyia dredged that up from the very early years of the new colony, as one of the bits of business to frighten you into hurrying up and concluding our transactions as soon as possible. Actually, of course, we have a pairing arrangement between the sexes. Both marriage and divorce are very simple, but we Amazonians go two-by-two. Any more questions?"

He thought about it and shook his head.

She said, "We have considered what you revealed under Scop and the Myrine and I, as symbol chiefs of state, wish to put ourselves on record as supporting United Planets in that organization's efforts to promote progress on the member planets. Our opinion, of course, is subject to the approval of the congresses of Paphlagonia and Lybia but I have little doubt but that they will concur."

Ronny said slowly, "There is more to this matter of the intelligent aliens than I disclosed. However, I'm sure that the Octagon will be sending you representatives to go into it in detail. It's not up to me."

The Hippolyte and Myrine nodded, and the former said, "We can

then expect you to rejoin the *Schirra* and inform your superiors of our stand, and of our desire to remain under our cloak of secrecy? I am afraid your colleague, Citizen Halloday, will have to return by the next spacecraft that comes through. Our physicians are grafting a new lower arm."

Ronny shrugged. "Right. United Planets doesn't contend that there is only one road to progress. In fact, it's most anxious to push experimentation, not only in the sciences and production techniques, but in socioeconomic fields as well."

EPILOGUE

Rex Ravelle came into the *Schirra's* lounge and shook hands energetically.

"I heard you were back, Guy. Congratulations. Three days! How did you ever do it?"

"It wasn't easy," Guy Thomas said with an air of self-depreciation.

Happy Harrison came in with the coffee the passenger had requested. He took in the conversation, wide-eyed. Oh, Happy was going to be the center of conversation at the crew's mess tonight.

The second officer said, fascinated, "Listen, did any of them try to grab you for a husband?"

Guy nodded.

"Well, how'd you escape?"

"I had an armed guard."

Rex Ravelle made a whistling sound. "Had to fight 'em off, eh? Listen, did you see this Hippolyte mopsy?"

Guy Thomas's voice went confidential. "You'll never believe this, I didn't myself, but I was taken to see her in a throne room as big as a football stadium. The pillars were gold and the mosaics were made of jewels. There must have been two thousand armed guards and attendants."

"All women, hey?" Happy Harrison said, eyes bugging still.

"Of course," Guy told him. "I was the only man there. They let me know the Hippolyte didn't like men around, always giggling and chattering."

Rex shook his head. "The men must be really something."

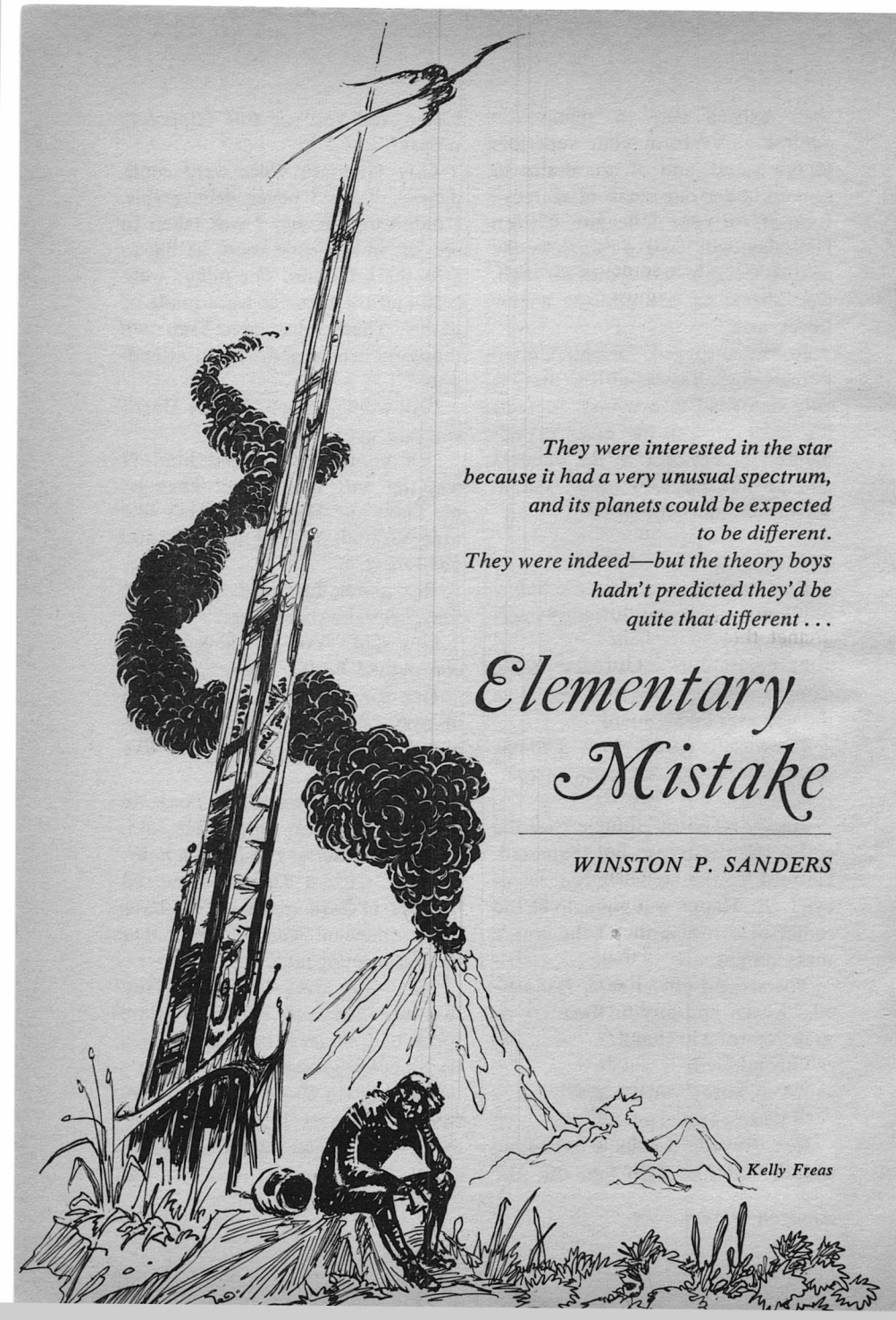
Guy said, "You should have met one named Podner Bates."

Rex Ravelle said, half as though in envy, "Imagine all that happening to such a quiet little guy like you."

Captain Buchwald had come in behind his second officer. He said, "We'll be underway in half an hour. Tell me, Citizen Thomas, how did Patricia O'Gara make out? I have been somewhat worried about that idealistic young lady."

"Oh, she loves it there," Guy said, very sincerely. "The last time I saw her, she was having a run-in with a whole group of men."

The captain shook his head ruefully. "I suppose it is the environment. She seemed such a nice girl." ■



They were interested in the star because it had a very unusual spectrum, and its planets could be expected to be different. They were indeed—but the theory boys hadn't predicted they'd be quite that different . . .

Elementary Mistake

WINSTON P. SANDERS

Kelly Freas

Hello, Bellegarde! Hello, Earth. Hello, Universe. And to hell with you.

Lind speaking. Squeaking. Reeking. Billy Lind. No, 's not dignified enough. Kin'ly call me th' late William J. Lind, sometime of West Newton, Chassamusetts, U.S.A., World Federation, planet Earth, star Sol, Milky Way galaxy . . . Does every schoolboy write that kin'a 'dress on his books? Not that I'm a schoolboy now. Wish I was . . . were? . . . yes, subjunctive, were. *Ay*-llow me t' in'erduce m'self. William J. Lind, officer and putative gentleman of the Space Service, Pioneer Division, electronician aboard *Widsith,* seated at our primary transmitter on the planet they named, in the best romantic tradition, Guinevere—you should hear what we call it—with a lot of big ugly mountains staring over my shoulder and making rude remarks.

Nope, wrong verb form again. I was sitting here. A thing we might's well call a bird was flopping above the mast, in a purplish sky. It had long sweptback wings, sort o' like our aircraft, and they glinted reddish green. Sun did that, big orange disk, and it tinted the clouds gold, and the snows on the peaks around this here now valley where we're parked. (See, if I watch my tongue, I can still pronounce words good, but believe me, 's not easy to watch your own tongue without a mirror.) The shadows were bluish red. too. But the smoke from yonder volcano, black, black . . . Where was I? Oh, yes. The proper grammar. Past tense. You won't hear me for nigh on five years. By then I'll be, all ten of us'll be one with the beers of yesteryear.

So fly up, little maser beam. Compute, little computer. Keep me locked onto that relay satellite. It'll buck my words on to Bellegarde. Won't it? Sure it will. It passed on the information that got us into this mess in the first place, didn't it? Mean to say, look here, you smug idiots on Bellegarde, on Durindal, on Frodo, on every planet the human race has reached so far—whoa, there, Lind. Save words. The satellite'll be under the horizon pretty soon. Minimize redundancy. Neologize. So: look here, you smidiots, I'm gonna 'splain'a you jus' wha' y' done t' us. An' you'll hafta sit'n listen. How y' gonna discipline me, then? Ha?

I . . . Shall . . . Speak . . . Carefully.

Widsith. Spaceship. Null-null drive. Affect everything simultaneous. Push you up fast, just under speed of light, no acceleration pressure to worry about, good old-time dilation makes a five light-year hop go by in a couple of months. And meanwhile that lovely, lovely pay accumulating back at home. Good, no? No. Remember the power consumption. Think, just compute out, how many megawatts per ton you need. Stray radiation means heavy

shielding, too, in a power factor of the power. And then, coasting across space? Uh-uh! Space is just full of hydrogen. One atom per cubic centimeter. At a speed of *c*, figure out the resistance. Figure out, also, what power you have to spend to keep those atoms at arm's length. A long, hairy, tattooed arm. Else the radiation from them will fry your aspidistra. Ergo, you need lots of ergs to go. All engine, no comfort. Most certainly no extra isotopes for fueling a return trip, nor any gear for making 'em at the other end. Not when you're carrying a mattercaster.

Nice mattercaster. Good, friendly, obliging mattercaster. Set one up. Tune it. Step through the gate. Step out the other end, whatever other end has a receiver you're tuned for, Bellegarde, Earth, Hell. No transition time. Not whatsoever. One hyperphase step across the galaxy. The universe is ours. 'Course, you do have to erect your gadget first. No transmitter, no reception, right? And the gadget does have to have a strong gravitational field to work. Got to be on a planet.

So. From an advance base, as it might be Bellegarde, you send your roboprobes to the next likely-looking stars. They find the least horrible planet in the system. Take orbit. Maser back data. Mass, magnetic field, temperature, spectra, everything except what we really needed to know. Load up *Widsith*. Minimum 'caster. Minimum everything. All we have to do is get there; land; make a foundation and frame out of local materials; assemble our unit; walk back to Bellegarde and report. Then the parts for a big, industrial-type caster can get sent through—direct from Earth, if you want. So can men. So can any equipment they need, including women. No sweat. 'Nother planet conquered. Hurray.

Hurray for us, 'spesh'lly. 'Stronomers on Bellegarde analyzed this here now sun we're under, they did. Variant composition. Cosmic abundances just a statistical concept. Actual composition can vary like crazy. Look at the R Peculiar stars, f'r example. Or look at this one. High concentration Group Eight metals, platinum, palladium. Catalysts. (A catalyst is the gait of a drunken feline.) Looks like plenty silver, too.

Like mother, like daughter. Planets oughta be loaded with these here now metals. Send roboprobe. Yep, planets, all right, all right. One of 'em even habitable. Earth size, Earth temperature, water oceans, oxynitro air, life, no sign of natives but reflection spectra show protein-based life. Given a li'l chemical apparatus, we could eat it. Not a full diet, but a dietary supplement, anyhow. Good. Ideal. Send *Widsith* off. Captain Ahmad Akbik, mattercaster engineer Miguel Ocampo, electronician William J. Lind . . .

Has my recital insulted you enough? Hope so. You killed me, you know. I am, I was sitting here in a valley grown over with spongy brownish-green plants. There're trees, of a sort, growing up the mountainsides. Above timberline, the rocks have funny colors, mostly bluish; they're not like any rocks I ever saw before. On the volcano cone, below the snowcap, I do rec-'nize black lava and yellow sulfur. The air stinks. It's cool and damp and smells like old cigar butts. Or something. I'm breathing the air. And I'm drunk. Nearest liquor five light-years away, and I'm drunk. Funny? Merciful? Well, I can tell you what kind of gesture the hand of Providence is making at me. In fact, I will tell you—

No, here comes somebody, air-suited to the ears. He looks mad. Guess they heard me, over yonder in the ship. We got a hookup. I was out here to test the air. Chemical and biological tests said O.K., said the stink's just from the plants and harmless, but you never know. We gotta just breathe the air or we're done for. You see— Hell, with it. We're done for. How do you do, Captain Ahmad Akbik, sir? Shall we dance?

Until the holds were unloaded, the bunkroom was the sole place aboard where all ten men could be simultaneously, and then only if they planned each move in advance. Sleeping, of course, was done in relays. They crowded knee to knee on the four bunks, hunched beneath the low overhead, and stared into each other's face.

The captain would have liked to offer a prayer, when God seemed to be their last remaining friend, but Mecca was probably in a ridiculous direction. "How are you now, Fulgosi?" he asked.

"Quite well," the mineralogist said. "No after-effects. To be sure, I didn't become intoxicated like Lind—"

"Hey!" The electronician blushed.

"Don't be so sensitive about that," said the biochemist, Riese. "Not your fault. You merely showed a certain reaction, idiosyncratic but not unheard-of, to anesthesia."

"Anesthesia?" Lind frowned.

"Sure, what else?" Fulgosi said. "When I tried breathing that stuff, I got too drowsy and thick-headed to think. Would've passed out before long if you hadn't brought me back inside the ship. So what's the cause, Riese?"

"I don't know," said the biochemist slowly.

"What?" Akbik exclaimed. "But you must! You've run a complete atmospheric analysis, haven't you?" In the week since *Widsith* landed, each man had had so much preliminary work to do in his particular specialty that this was their first real chance to compare notes.

"Yes, sir. I found nothing signifi-

cant that the roboprobe hadn't already reported. The air has a rather high proportion of noble gases, but otherwise it's quite Earthlike."

Lind gagged. "Earthlike, you call those stenches?"

"Yes, what about them?" Ocampo asked. "By-products of a different biochemistry from ours. Couldn't something, in trace amounts, have an anesthetic effect on the human nervous system?"

"I don't know," Riese admitted. "For heaven's sake, my brain doesn't have infinite storage capacity. And the reference works we could take with us, even in microspool form, are so limited. Surgical anesthesia has been entirely electronic for the past two centuries or more. Who could have foreseen any need for information about the chemical kind?"

"Could some kind of germ be responsible?" Akbik wondered.

"No, sir, that's one possibility I swear we can rule out. No native life form can eat us for much the same reason that we can't eat it. The selenium and fluorine concentrations in the body of this planet are so high that they have become integral to the metabolism of everything."

"How can you sit here," the cyberneticist Pereira objected, "having barely seen a little of one valley, and talk about the entire planet?"

Riese shrugged. "If my computer doesn't lie," he said, "it's traced out the fundamental cellular energy cycle. And that will not vary. Not unless the well-founded idea is totally wrong, that all life on a given world derives from the materials available there in the beginning. Our kind of organism uses—oh, hydrogen bonding, and phosphorus in ATP. Life here uses fluorine and selenium in its equivalents. I don't need a large sample to prove that. So—every Guineverean plant or animal is violently poisonous to us because of those elements. But by the same token, the phosphorus and iron in our bodies makes us just as poisonous to them."

"And this cuts our time even shorter," the geologist Deschamps said unnecessarily.

"I wonder how you'd taste, sautéed in lubricant," Lind murmured.

"Stop that!" Akbik said.

"Why, is man forbidden food?"

"Not explicitly," grinned the chemosynthesist Nussbaum. "However, since man does not divide the hoof or chew the cud—"

"You're hopeless," Akbik said.

"I'm afraid that's correct," Lind said. Observing that the captain was in no mood to continue playing straight man, he hastily grew serious. "Sir, do we have to breathe that stink anyway? I mean, we can keep on wearing airsuits outdoors, and recharge their bottles from the ship's oxy renewal plant."

"Unless we have to dismantle her," Akbik said.

They stared at each other, ten

men alone in unknownness. The silence and the metal shell around them seemed to press inward.

Widsith was a shining tower, tall in the valley. Lind looked up her hull, and up, and up, and reflected what a fraud the damned object was. Enormous fuel tanks: empty. Engines, therefore, useless, aside from the auxiliary generator. Holds: big, yes, but barely able to contain the equipment necessary to establish a minimal space gate. As a result: living quarters, life support systems, rations, personal gear, cut to the bone.

And now, it turned out, Guinevere wasn't going to furnish any supplements. No food, no air—

"And the ship's not any cornucopia, either," Lind said.

"Beg pardon?" Tao-Chi Huang, the chief mechanic, glanced from the robotractor he was assembling.

"Oh. I was thinking out loud," Lind said. "The hull's nothing but light metals, aluminum, magnesium, beryllium alloys. And those we can get right out of this planet. What we've got to have, that the planet doesn't seem to have, is iron."

"What for? Structural members?"

"Well, that was the original idea. Maybe we can use something else there. But we cannot replace iron —quite a bit of very pure iron—in things like the transformers and magnetic cores of the mattercaster circuits. Not without redesigning the entire system, which would take a special R & D team several years. We are not an R & D team, and we do not have several years."

"I know Gilruth hasn't found any native iron yet," Tao-Chi said. "But there must be some in the planet!"

"So we assumed, before we arrived here. And, actually, I imagine there is some. Down in the core, if nowhere else. Bloated lot of good that does us. What we need is a workable deposit not too far underground. And we haven't the time or the resources to scour an entire world searching for ore."

"Hm-m-m." Tao-Chi started to rub his chin thoughtfully, but his faceplate got in the way. "Maybe our trouble is due to a lack of ferric-reducing bacteria."

"Maybe. Though wouldn't you still get oxide in the soil? I think likelier the iron shortage is just another aspect of the weird element-abundance situation here." Lind shrugged in his airsuit. "If we don't find any, damn soon, we'll have to cannibalize for it—like maybe your construction equipment."

"That will be needed up to the last minute," Tao-Chi protested, "and in any event, it's mostly light alloys, too. Besides, if you did take what steel parts there are, I doubt if you could purify the iron out of modern aligned-crystal materials with anything less than a gaseous diffusion plant."

"Which is too much for us to build. Well, so we'll have to steal from the ship. Take out its transformers and such. We can do that, of course. *But,* the ship is an integrated system. If we remove a vital unit from, say, the engine, then the oxy renewal plant will also stop working."

"I know. So Joe Riese had jolly well better find a way to make the local air breathable. Right?"

"Right. He's working on it. Me, I got business in the shack."

Burdened and uncomfortable in survival gear, Lind's slender form walked on down the valley. Passing the maser mast where he had disgraced himself, he winced. Damn Guinevere! Damn the astronomers, and their bland assumption that every kind of atom would be available here even if the percentages varied. Damn his own foolishness in signing on for the expedition. At best, he'd come back to a list of female vidiphone numbers five years obsolete. At worst . . . what good was money to a skeleton? Even if the skeleton's owner had died drunk.

A stream burbled along the path. It supplied water and waste removal to the gate construction site, and thus had lost its pristine freshness. Serve it right, Lind thought viciously. He proceeded to a wide plot which had been cleared of topsoil and was now being leveled. Dust smoked in the orange sunlight, up from a bulldozer which snorted back and forth. That was an automaton, as was nearly every machine. Under no circumstances could ten men's muscles do the brute labor of establishing a base on an uncharted planet. Nor could ten men's brains do the innumerable necessary analyses of data and material samples. Humans were here to look at the instruments, program the robots, read the computer printouts, make the decisions, and perform the finer tasks of installation and adjustment as the mattercaster assembly grew.

Nice theory. Trouble was, Guinevere didn't provide the stuff needed to make the theory work.

Lind entered a prefab which squatted ugly at the field's edge. Sunlight through begrimed windows glittered red-gold off a clutter of apparatus. Ocampo and Fulgosi were turning away from a bulk that Lind identified as a furnace with attached spectroscope, pyrometer, and assorted things to which he could not put a name. Technology, he thought, had made technologists too blooming specialized.

"No." Fulgosi's helmet speaker needed some adjustment, Lind heard. What the mineralogist must have intended as a sigh emerged as a whistle. "This sample has essentially the same composition as the last. Nothing is different except the hydration and a few impurities."

"But we must have calcium minerals!" Ocampo exclaimed.

"Take that up with a higher authority. All I can tell you is that none of the neighborhood rocks are limestone or gypsum or anything reasonable like that. They're universally based on strontium. It must be vastly more common here."

"Well, can't strontium substitute for calcium? In human bones, I've heard—"

"Yes, there is chemical similarity. But not that close. Strontium carbonate won't burn to the oxide at any temperature we can get with available equipment. And even if it did, the oxide won't set to mortar. Nor, for that matter, will strontium sulfate make plaster of paris." Fulgosi regarded the construction chief for a moment. "Must we actually have a massive concrete foundation for the 'caster?"

"Hell, yes!" Ocampo said. "The thing won't work unless it's properly anchored to the planet. Reaction forces would tear it apart otherwise. Without a strong, weatherproof setting— Ah, Lind. What brings you here?"

"I was after the latest analysis myself," the electronician said.

Sweat glistened behind Fulgosi's faceplate. "I'll sure be glad when we do get our materials together, if we ever do," he said. "Right now, Gilruth, Riese, and I are the only ones working, and we're working our tails off. The rest of you sit and feel sorry for yourselves. . . No, my friend, we haven't turned up any bismuth for you."

"But I have been working," Lind answered. "With references and my slipstick and— How about antimony? Found some antimony?"

"Why, uh, yes. Quite a bit of stibnite. What do you want it for?"

"Whew! I'm glad to hear that. You see, the tuning circuit calls for a large piece of bismuth, as being diamagnetic. But antimony is almost as good in that respect, and I've calculated we can substitute it." Lind turned to Ocampo. "While I was at it, I checked some other possibilities. You need zinc for galvanizing, and we haven't found any decent deposits, right? Well, cadmium will do the same job. You put it on by a different process, but it works fine."

Fulgosi snatched a piece of paper off the bench. "Here," he said with sudden excitement. "A list. What we've found in extractable form and quantity so far. Plenty of cadmium."

"Plenty of gold, silver, platinum, manganese," Ocampo said. His bitterness had not left him. "So we can make busbars of silver instead of copper—but we'd counted on that anyway. So manganese is a good structural metal—but in a moist oxygen atmosphere, it'll crumble to oxide almost as fast as we can cast our members. Where's the iron coming from for the foundation and framework? Not the ship. Barely enough iron in her for your circuits, Lind. Show me how to make concrete without calcium,

and several tons of ribs and girders without iron, and a few such items, and I'll kiss you."

"Ugh," said Lind. He studied the engineer's miserable countenance. "You've let this get to you," he said. "Your brain's tramping in circles. Me, I dunno, maybe that anesthesia jag I went on cleared my head somehow. But seems obvious to me, we'll do best to find substitutes for the stuff we can't get."

"I think that's obvious even to a dolt like me," Ocampo snorted. "Name a few."

"I did. Antimony and cadmium. And then— Hm-m-m." Lind went to the window and stared out. The volcano lifted sheer before him. They'd landed here because they couldn't prospect an entire world and a plutonic region was likeliest to have a wide assortment of easily refinable minerals. Which this area did, to be sure; only they were the wrong minerals. Lind's forefinger doodled on a dusty pane. "Why steel?" he murmured. "I mean, for the framework supporting the 'caster on its foundation. You only want mechanical strength there. Why not stone?"

"No boulders are big enough, around here anyway, and we can't assemble small ones into a frame because we can't make mortar."

"But that lava up yonder. We should be able to cast it and machine it to shape. Don't you think so?"

"Well, I'll be—" Ocampo stood silent a while. Fulgosi gulped. Hope had come like a blow.

"Y-yes," Ocampo said at length, quite softly. "For beams, as you say, and bedplates, and so forth. But not for the foundation. We're not set up to cast that big a piece of material with a high melting point; and, as I told you, without mortar—"

"So what else might serve?" Lind swung back. Inside his suit, he quivered. "Let's use our imaginations. Let's ask Gilruth what he's noticed on his exploring trips."

A teakettle whine cut through the sky. "Speaking about devils," Fulgosi said. The expedition's single aircraft, a hover job with considerable range and carrying capacity, bounced to a halt on the field. The three men hurried from the shack.

Gilruth was climbing out. "What'd you find?" Ocampo shouted.

"Brought home some assorted rocks for testing," the pilot said, working hard at imperturbability. "Doubt if they'll be any use, though. What spot checks I carried out, neutron activation and so forth, showed the same bloody distribution of elements upriver as here. No iron, no calcium, no copper, no nothing."

"Never mind, never mind." Lind seized his arm and dragged him away. "We want something different from you."

Gilruth looked alarmed. "Have you left your helmet off again?"

Ocampo explained. Gilruth had landed on the volcano some days ago, near the peak. Well, did the lava beds look mineable? And what else might he have noticed, paying no special heed at the time because what he saw hadn't been what he hoped to see? The conference lasted an hour, and all four returned to the spaceship still chattering into each other's mouth.

They cycled through the personnel lock, racked their suits, and encountered emptiness. Everyone must be outside, performing the jobs that had to be done before actual construction could start. No— a noise below decks— Ocampo's party squeezed down the companionway.

Now that most of the machinery had been unloaded, the holds were echoing caverns. Riese had taken one of them over for a workshop. He stood at a bench, a laser torch glaring in his hand, making a box-like assembly.

"Hey, Joe!" Lind cried. "Listen! Good news."

"I'm glad somebody has some," the biochemist grumbled. He switched off his torch, wiped his face, and sat down on the bench. It sagged under his weight, being little more than some cobbled-together alumalloy sheeting which wasn't needed elsewhere at the moment. He swore and stood again. "What's happened?"

"We've hit on the answer to our problem," Lind said. "For the native materials we need but don't find, we use ersatz."

"You've taken this long to realize that?"

"Oh, yes, the principle is obvious," Ocampo said, "but we didn't fully accept it until today. We kept hoping we'd be able to proceed according to the book. This afternoon, though, we took a hard look at the possibilities of using what we've actually got on Guinevere. And they seem very hopeful."

"Fine." Riese stared at the apparatus he was making and clicked his tongue. "Maybe I'd better turn this project over to one of you geniuses."

"What's the matter?" The question jerked from Gilruth. "Not working properly?"

"Not yet, anyhow. The basic idea is simple enough. Assuming that one or more of the trace gases, the bio-compounds, in the atmosphere are responsible for anesthetizing us: how do we get them out? They're organic. So, in theory, we blow air through an electric arc energetic enough to break them down into CO_2 and such-like, and bubble the resulting gas through water. What comes out the other end should be good, pure air."

"It had better be," Gilruth said. "Once we've removed the iron from the ship's electrical system . . . well, I somehow can't visualize us, drunk, or dopey or unconscious,

completing that matter gate. Can you?"

"No." Riese scowled. "My problem is this: Apparently, whatever compounds affect us need only be present in micro quantities. Probably they act by inhibiting certain enzymes. Therefore, my purifier has to work perfectly. So it has to be continuously monitored by spectrographic and chromatographic instruments. Now designing such circuits is not easy." He looked at Lind. "I think, if you can be spared, you'd better devote full time to helping me."

"I guess I'd better," Lind said in a small voice.

The others had too much to do to worry about whether they would have air fit to breathe toward the end of their tasks. That "too much" included, especially, worrying about every other problem. For their food supply, however rationed, was little more than sufficient to carry them through a set of standardized procedures evolved on familiar kinds of planet. Now they must invent a whole new set of ways to install a mattercaster. And a starving man can continue to work for a while, after a fashion, but he can't continue to produce bright ideas, or tinker with the thing he has built until it does what it is supposed to do.

Thus time was precious and the labor schedule brutal.

They did talk a little. Tamping an explosive charge into a lava bed, Fulgosi growled, "Nussbaum's sure got a soft touch."

"What's he doing?" Deschamps leaned wearily on his pick.

"Making glass epoxy out of silicates and organics. Solder substitute."

"Well, we've got to have that, too, and if Nussbaum's the only one of us who can cook up a batch—One man can't carry all human knowledge in his head."

"Not even in his own specialty," Fulgosi sighed. "I suspect that's Joe Riese's problem. If he had the right reference works, he could probably find out in ten minutes what's wrong with the atmosphere and what to do about it. But no one thought to supply him with the one obscure bit of information he needs." He straightened and looked around. Rockfields tilted dark, up beyond snows and glaciers to where the mountain lifted a skyward smoke plume. "O.K., let's get back to the aircraft. When this charge blows, it could touch off an avalanche."

Down in the valley, after nightfall, Gilruth shepherded a truckload of logs to the construction site. A stone-crushing mill thudded, a wood-pulping machine yelled, a chemical vat seethed—improvised, most of it, one way or another. Beyond the lamp posts ringing the field could be seen the stars, cold and strangely constellated and terribly remote.

"How much more timber will you need?" he asked Ocampo. "Robot help or no, lumberjacking is hardly a sinecure."

"Piloting is?" the engineer replied. "I think two more loads should end this job. We had to run quite a series of tests, but we seem to have found the right mixture now."

"Some concrete, eh? Vegetable fiber and asbestos-like rock, bound together with molten sulfur and poured to make your foundation!"

"Well, it serves. In fact, it should be just as good as the ordinary cement-based kind."

"What about reinforcing rods and conductive tie beams?"

"Haven't you heard? No, I guess you've been in the outback too much. Alagau."

"Alagau to you, too. Or was that a death rattle?"

Ocampo laughed a little. Some distance away, an arc furnace was uncovered, and the light glared off his faceplate. "Aluminum-silver-gold alloy," he explained. "Nussbaum suggested it, and it seems to be hard and tough enough for our purposes, in spite of having a mauve color. Al, Ag, Au, see?"

After a moment, he added, "In fact, by now we have an astonishing collection of assorted ersatzes. Beryllium, titanium, lithium, magnesium, thorium, they're more versatile than you'd think, in their different alloys. Then there are organics, plastics, tars—"

Gilruth slumped wearily in the cab and stared at the fire-trickle where molten metal ran into casting forms. "Won't do us a lot of good if we can't get pure air," he said. "How're Riese and Lind coming on that?"

"All right, I guess."

"I was thinking. Suppose they fail. What then? Couldn't we get oxygen by roasting ores?"

"Um-m-m . . . possibly. That'd be such a huge job, though. Only imagine what equipment we'd have to build, to operate on the scale necessary. We could easily starve to death before we finished. No, I think our friends have plain got to succeed."

And a few mornings later, in *Widsith*'s hold, Riese and Lind beamed at each other. On the bench before them stood a cylinder, fantastically piped and wired. A fan whined at the open end. Inside, arcs sizzled and water gurgled. At the farther end, attached instruments certified that clean atmosphere, free of any organic taint except a normal amount of carbon dioxide, was being compressed into a bottle.

"The damned thing is finally in shape," Lind breathed.

"I was beginning to think it never would be," Riese said.

"Maybe now you understand why engineers draw high pay." Lind yawned and stretched. "Me for some sleep, before Akbik puts me in one of the labor gangs!"

"Uh—" Riese hesitated. "A final test."

"What?"

The biochemist took the bottle off the hose and attached it to the shoulder pack of an airsuit. "Take a few lungfuls," he said. "Just to make sure."

"But . . . I mean . . . oh, all right." Lind grumbled his way into the suit, sealed the helmet, and cracked the valve on the bottle.

"Well?" asked Riese anxiously.

"Seems O.K. The stink is certainly gone." Lind inhaled again, and again. "Yep, jus' fine." A wide and foolish grin spread over his features. "Won'erful. Great. What a team we are, you know 'at? C'mon, le's dance."

He walked out, alone, into darkness. Under a dim red moon, the valley dews, the stream, and the far snowpeaks glimmered. Somewhere an animal hooted. His footfalls made a hollow thudding.

He felt cold and tired. But sleep escaped him. Everyone else was sacked out, exhausted. Lind envied them. For the moment, they were free of the knowledge that their labor had been for naught and that Guinevere would never let them go.

They'd driven themselves as no one would dare drive a mule. (Of course, no one would care overly much if a mule didn't come home.) Now time was hideously short. There simply weren't enough man-days left to build the oxygen-producing furnace which Gilruth had proposed. The food was practically gone. You could live a while, empty-bellied; but some of that while must go to completing and adjusting the space gate whose framework bulked yonder in the shadows of the field. Already Lind's stomach complained of underemployment.

Earth—prime ribs, baked potatoes smothered in sour cream and chives, apple pie a la mode . . . No, damn it, before he thought about such things he must think how to return to them.

Basic problem: Find a way to get the anesthetic factor out of Guinevere's atmosphere. The way must needs be simple, the apparatus easy to build and operate. Thereafter everything else would be simple—shutting down the ship's oxy renewer, dismantling the electrical system, installing the needed iron parts in the mattercaster circuits, adding the parts hauled from Bellegarde, tuning and activating the gate and making one stride across the light-years to home.

Well, then, Billy Lind, *solve* the basic problem. It must have a perfectly easy solution. Given it as a question on an exam, not so long ago in college, you'd likely have seen the answer inside of five minutes.

But the situation was different here. Here, everybody had worked too hard. Their brains were numb. He and Riese were the only men who'd been spared much physical

labor—because their comrades trusted them to provide the air—and now their failure seemed to have stunned Riese into apathy.

Therefore, Billy Lind, the responsibility is yours. Certainly you're tired. Certainly you're also in a state of mild shock. But you're not too stupefied to think. Are you?

So. What are the facts? It had been obvious that organic compounds were acting as snooze gases. What else could? And yet . . . Guineverean air processed until sensitive instruments swore it was pure, kept right on kicking the human mind out of orbit. Therefore the taken-for-granted fact had not been a fact after all. So what other possible fact(or) was there?

Lind couldn't imagine. The noble gases? But they were inert! You could breathe oxyhelium without noticing any difference except that your voice sounded squeaky. Oh, yes, you could force one or two other members of that family to take on fluorine atoms or whatever, but they did it grudgingly, under very special laboratory conditions. How could—Lind cursed in the dark. Unfair to demand that he think. He was too tired, too hungry, even in his airsuit too cold.

Cold!

Hello, Earth. Hello, everybody. Whoops!

William J. Lind again. Call me Billy. Call me anything. Bee-cause by th' time you receive me on Bellegarde, I'll've been five years home an' inna diff'rent job an' you can't fire me 'cause I'll long've been in some other line uh work an' so to Guinevere wi' you.

Or else I'll be rich. Might be. Gotta lotta (hey, that rhymes!) gotta lotta new techniques here. Sure to be other planets like this'n. Hey? Hey-hey. Maybe we can patent 'em. At leas' we can write a book. Bes' seller. "I Was Pumpin' On Guinevere." How's 'at sound? Thought so.

I was, y' know. Distillin', anyway. An' then pumpin' the oxy an' the nitro into bottles. My idea. Very simple. You jus' liquefy your air. We'd enough stuff lyin' 'roun' to make an air liquefaction unit. Then we did fractional distillation. Which, muh frien's an' fellow citizens o' the gr-r-reat World Federation, is not distillin' fractions. What an image, though. Li'l numerators an' denominators boilin' off. But all we did was liquid air. I mean to say, now hear this, all we did was *distill* liquid air. After we'd made it inna firs' place. See? No sweat. Mos' abs'lutely no sweat, at minus 107 point one degrees Celsius.

Tha's the boilin' point o' xenon. Guilty party. We foun' out by tryin' different fractions on ourselves. Yep, xenon. Fine anesthetic. Oh, you knew that already, didja? But you gotta big fat shelf uh references handy. So why didn' you tell us? Huh? Answer me that.

Guess we should'a thought o' it before. But so much else to do. An' whole situation complicated. So natur'lly we 'spected anesthesia problem 'ud be complicated, too. Wasted lotta time, we did, lookin' for complicated answer 'fore we hit on simple one. I did. Me. William J. Lind. I'm simple-minded. Ta-ra-la-la-i-tu! I gloat! Hear me!

All set now. Ever' thing ready. Tomorrow we start the transmitter an' walk through to Bellegarde. Liquor on Bellegarde. Big celebration. But me, I get drunk on xenon, so why not start now? Whoops! How many moons this planet got, anyway?

Jus' one question, you fat smug people. (Dunno whether to call you smats or fugs.) One li'l bitty question. This here now funny elemental composition. Damn near killed us. Jus' a very slight shift in relative abundances, and k-k-kr-r-r! So I ask you. Think about this. Think good 'n hard, because nex' time aroun', you're not gonna have William J. Lind on deck. Nope, you're not. I'll be on Earth, livin' the life o' Riley, an' I don' 'magine Riley'll ever come home. Cause he's one o' these here now onward-the-march-o-mankind characters. He'll be pioneerin' the stars. I won't.

So, O.K., my question: What you gonna do when you hit the *nex'* crazy kind o' world? ■

THE REFERENCE LIBRARY

P. Schuyler Miller

THE LAST LENSMAN

I doubt that it is possible to get across to a present-day science-fiction reader the shock and thrill of discovering the first installment of "The Skylark of Space" in the August, 1928 issue of *Amazing Stories*. The world's first science-fiction magazine—"scientifiction," Hugo Gernsback called it—was only two years old. Most of what it printed was reprint material—the books and stories that were *not*, in spite of all that the authorities said, "in every library." But the "Skylark" was something new. Here, for the first time, a scientist—and in 1928, Ph.D. degrees did not come in Crackerjack boxes—was showing us the hidden universe of atomic physics, the worlds within worlds at which books and lecturers only hinted. And he was doing it in a story that moved like the Skylark itself, from world to world, from wonder to greater wonder.

Later, here in Astounding, Dr. E. E. Smith—"Doc" Smith, as the fans knew him and his paperbacks dub him—reached his greatest heights in the four long serials of the "Lensman" series. An earlier novel and a new book were later fitted in at the beginning of the series, when the book versions were published by Fantasy Press, but I think most of us prefer the building suspense and slowly unfolding picture of the universe, which the magazine version gave us, to the knowledge of what was going on behind the scenes that Doc Smith felt he must in all honesty interpolate in the books.

John Campbell was developing better writers, and more important writers, at the same time that he was publishing the Lensman stories. It was Astounding's, and science fiction's, greatest era to date. Yet it is Dr. E. E. Smith who somehow represents that era of wonder mixed with intellectual stimulation, confidence in the future and in Man's

ability to control and direct both himself and his universe, that was science fiction in the "Golden Age."

Advent: Publishers of P.O. Box 9228, Chicago 90, Illinois, have paid tribute to Doc Smith and his work with an affectionate concordance that they call "The Universes of E. E. Smith" (1966; 272 pp.; $6.00). There is an excellent introduction by James H. Schmitz which captures better than I can the feeling of those of us who did "discover" Doc in the old days, before he became a legend and a beloved personality to hundreds of young fans who never read his stories. The thrill of happening on "Gray Lensman" as I came upon "Skylark" must have been even greater.

The greater part of the book is devoted to Ron Ellik's detailed concordance to the entire Lensman series. Bill Evans follows with a less exhaustive survey of the four "Skylark" novels, including the final "Skylark Duquesne" which at this writing has appeared only as a serial in *If*. Al Lewis has contributed a detailed bibliography of Doc's stories, and Betty Jo Trimble—"Bjo" of fan fame—has contributed about a dozen full-page illustrations that are not always successful, and a longer series of decorations for the alphabetical divisions of the Lensman concordance, that are much, much better. I can't help wishing, though, that Advent had received permission to reprint some of the original illustrations from this and the other magazines, or had conned some other artist into contributing new ones. Bjo just doesn't capture the wild sweep of the universe of the Lens.

My prescription for reading the book is to open it at random, somewhere in the Ellik portion, and start following the cross-references around and through the intricate tracery of interrelationships. As Ron Ellik says in his preface, with Zabriskian fontemas rolling through it, cateagles springing out of it, and the gigantic Van Buskirk leering at the reader, how could it be dry? (Note to Ron: the friend named Barnstead for whom Doc named *fayalin* is the principal manufacturer of the laboratory stills on which chemists like Doc have relied for distilled water for many, many years. Lab supply houses like my own employer have to report sales because the stills just might be used to convert more familiar herbs into less harmless brews.)

As the commentators point out, the "Skylark" stories don't take place in quite the same universe as the "Lensman" and "Vortex Blaster" epics. If Doc Smith ever intended to tie them together, he hadn't done it at the time of his untimely death in September, 1965. Some months ago, Ace published a paperback edition of a story that promised to launch still another series, taking place in a third universe that may somehow have been related to that

of "Skylark Duquesne." "The Galaxy Primes" (Ace No. F-328; 192 pp.; 40¢) is the story about psionics and sex that Doc discussed at conventions for a long time before it materialized in *Amazing*. According to Ellik, he was dissatisfied with the editing, but Ace apparently has not printed the original, unrevised version. This may have something to do with the fact that the story just does not carry the conviction of the earlier books.

The Gunther Universe of psionic forces and powers, in which the Primes and lesser psionic Operators of the book function, is discussed but not really developed in the later chapters of the final "Skylark" story. The blue, four-armed Arpalones, guardians of human sheep, are by no means the Lens-carrying Guardians of Civilization, but they may be related to the Llurdi of "Skylark Duquesne." I feel that Doc must have intended to develop these ideas in later books, as he did the Arisia-Eddore conflict in the Lensman series, and to expand on a concept at which he only hints in the closing pages to account for a universe of galaxies in which men are omnipresent.

The characterization in "Primes" is more complex than in the other books, and is by no means just window-dressing, though Doc grumbled from time to time about the current fashion for soul-searching instead of getting on with the story, and he preferred cosmic surprises to character-reconstruction. What "Primes" needs, really, is more story.

I'll be happy to be wrong, but I have a feeling that Doc Smith was our last Lensman of the physical universe. When we at last get out among the stars and meet other races, when physics and biology break through into new understandings of the universe of living matter, another "Skylark" or another "Lensman" may be possible.

INDEX TO THE S-F MAGAZINES, 1951-1965

Compiled by Erwin S. Strauss • MIT Science Fiction Society, 77 Massachusetts Avenue, Cambridge, Mass. 02139 • 1966 • 207 + iii pp. • $8.00

Ever since 1952, Donald Day's "Index to the Science Fiction Magazines 1926-1950" has stood as a landmark in science fiction bibliography. Nobody who has not attempted even a minor bibliographical chore can have any idea of the work involved. Although Day has long been at work on a second volume, it gradually became evident that the necessity of earning a living and other similar deterrents were taking too much of his time, and last year the project was abandoned. It may be taken up by other fans, but in the meantime the MIT Science Fiction Society has come to the rescue with a successor to its "Bluedex/Blackdex," which brings the record down to the end of 1965.

The "MIT Index" takes up the record where Day left off, in 1951, but it is far more comprehensive. It includes weird-fantasy magazines, as he did not, and attempts to cover all magazines in English with the exception of the Australian magazines, which have been covered by an "Index to Australian Science Fiction" published by Graham Stone. Weird fiction prior to 1951 has not been picked up, since it was indexed by the Tasmanian fan, T.G.L. Cockroft.

Erwin Strauss, the compiler, thanks many other science-fiction bibliographers for their assistance. The index was compiled from tables of contents and in some cases the annual indexes of the magazines, since nobody had all copies of all magazines at hand to be checked page by page. Errors of omission are likely to be the publishers' (there have been some phenomenally goofed-up tables of contents) as much as the compilers', and corrections are welcome.

Whereas the MIT computer-organized "Bluedex/Blackdex" included author and title listings for only eight magazines, the new "Index" covers nearly ninety—a good many more if you count all the changes in title that some magazines have gone through. A checklist of the magazines, with issues published, opens the book. Then the contents of each issue of each magazine are given, in order of publication. Finally there are alphabetical listings of stories by title and by author.

There are omissions—I'm one of them—but these will be corrected in supplements that the Society plans to publish from time to time. Broadly speaking, a society is immortal and doesn't have to take time to earn a living, whereas an individual is all too mortal and apt to be all too busy. If you find errors, don't gripe: correct 'em, the MITSFS will be right there in Cambridge waiting to hear from you.

This is, incidentally, a hard-bound book lithographed in small but clear type.

SPACE AGE TERMINOLOGY

By Philip N. Bridges • The Author, 17910 Pond Road, Ashton, Maryland 20702.

I should have mentioned this pamphlet long ago. It was published in 1963 and may still be available from the author: at least, he sent me a copy to protest my use of "Venusian" in describing the Homer Eon Flint stories. I don't know the price, if any.

Bridges points out that scientists should, but don't always, follow well-known lexicographic rules in assigning names to planets, satellites and other bodies and in speaking of them thereafter. Greek and Roman roots become hopelessly mixed, and I wouldn't be surprised to find a little Arabic in the hybrid. He closes the 20-page illustrated

pamphlet with a summary of the names of the planets, satellites and asteroids and the corresponding terms that should be used for their inhabitants.

To return to my own sins in the matter of Venus, Bridges prefers "Venerians" as the proper Roman-derived term for the planet's inhabitants. He points out that Hugo Gernsback rejected this form because of "unfortunate connotations"—i.e. "venereal" diseases—and offers an alternative: "Venustian." He also offers "Hesperian," from the Greek root.

Incidentally, Mr. Bridges has no use at all for those venerable stereotypes of science fiction, "Terra" and "Terran." We're Tellurians or Gaeans.

Maybe you *can* fight City Hall.

FLOWERS FOR ALGERNON

By Daniel Keyes • Harcourt, Brace & World • New York • 1966 • 274 pp. • $4.95

The novelette on which this novel is based won the "Hugo" for the best short science fiction of 1959. It won by several lengths. Now the expanded story is an excellent candidate for the "best novel" award at next year's World Science Fiction Convention. It has also, I am told, been an exceptionally good TV program and will be made as a motion picture.

This is the story of Charlie Gordon, the low-grade moron who was chosen as the guinea pig for an experiment in augmenting intelligence by surgery and chemical stimulation. Algernon is the white mouse who preceded him as an experimental subject, and against whom he "races" in the initial stages of the experiment, until his human capabilities begin to exceed the rodent's.

Charlie tells his own story from the time he is first able to write a few connected words. The reader watches his intelligence grow, watches him as he tries to make the transition from the world of a mental clod to that of a genius . . . and as he realizes that in his new world he is no less a freak than in the old. And then it appears that the effect is short-lived; Algernon degenerates first, and then little by little Charlie's bright new world grows duller.

It is a superb, moving job that I hope will be allowed to make a tremendous film. I think the horrors of the past are rubbed in a little too much, but that is certainly in character. Daniel Keyes is a teacher, and I think it shows, as it does in Zenna Henderson's stories of "The People." In our next poll, if there is one, this book should rate high.

WILD AND OUTSIDE

By Allen Kim Lang • Chilton Books, Philadelphia • 1966 • 139 pp. • $3.95

There's nothing pretentious here: just good, roistering off-world heroic adventure with a dash of baseball for seasoning. In a far future when the Mets have replaced the Yanks as inevitable champs, short-

stop Eddie Keenan is dyed pink and shipped to the planet Melon as Iddikinnin, secret agent. His assignment: to subvert the feudal government with quarterstaves and baseball.

Since Eddie has never swung anything longer than a bat . . . since his contact on Melon is a beautiful babe, who is forfeit to any Warrior who can clobber her current protector . . . since he does, by unorthodox means, manage to beat—and make friends with—an orthodox native muscleman . . . since a beautiful Brazilian presently appears, convoying a bargeload of nuclear bombs . . . since the power behind the throne on Melon is a superannuated Earthling, name of Grady . . . well, you can imagine the ingredients. Let's say that Iddikinnin makes his way across Melon with a flair that would please Retief and Dominick Flandry, and still has time to teach baseball.

There's even a logical reason why a Mets shortstop would be tagged for a job like this, but you have to wait for it.

GET OFF MY WORLD!

By Murray Leinster • Belmont Books, New York • No. B50-676 • 157 pp. • 50¢

The three stories in this collection date as far back as 1948, before the Old Master had invented his worlds of the landing grids. In each yarn, human explorers have to cope with strange alien life on a distant world. It's purely entertainment, but it's likewise very hard to lay down.

"Second Landing," identified by title only on the contents page, was in *Thrilling Wonder Stories* in 1954. Explorers of the sea-world Thalassia find remnants of an ancient civilization, destroyed thousands of years before in war with a neighboring planet. The attacking and seemingly victorious Aspasians are human, and the ruins are booby-trapped against them. Problem: How is the expedition to make friendly contact?

"White Spot" is from a 1955 *Startling*. This time the world is desert except for thin polar caps and a sprawling white blotch which can quickly convert itself into a viciously effective energy-concentrating space mirror. The thing is an organism of some kind, and the crew of a forced-down ship have to fight both it and a renegade who is intent on marooning them there. Formula? Sure—but how would *you* get out of a mess like that?

"Planet of Sand," a 1948 *Famous Fantastic Mysteries* filler, brings another pair of castaways up against the never-seen subterranean race of another desert world. Mechanical servants track down and try to destroy the intruders, while man and girl try to tap colossal energies that can get them back into space. There's a secondary plot that doesn't matter; Leinster later dispensed with such.

brass tacks

Dear John:

I received the November 1966 issue of Analog last night and was delighted with your new editorial re FDA. Some time ago, I composed the enclosed poem as an emotional outlet on this subject and I am herewith dedicating it to you. You may publish it as a letter to the Editor in Brass Tacks if you wish. However, I have never seen any poems in Analog and you may have a ukase against them for which I would not blame you at all.

V FOR VITAMINS

Since all is not well with us as you can see
The good Dr. Godard has something to say.
He'll strike off our shackles and soon make us free
From all quacks and nostrums that vex us today.
With fiats drawn up by the new FDA,
The drugs that don't really get rid of our ills
Will soon disappear if we give him more play.
The FDA's gunning for vitamin pills.

Our water is poisoned with sewage and such,
And auto exhaust has got into the air,
And aspirin never amounted to much—
It only stops headache, a thing we can bear.
Let pharmacists worry, nobody will care.
Though nuclear holocausts give us the chills
And life is unsafe as we all are aware,
The FDA's gunning for vitamin pills.

Revolvers and knives are quite simple to buy,
And high-powered autos are easy to get.
We can fall in the water and flounder and die,
Or go at it slower with some cigarette.
Just butter and eggs will bring death to us yet
For living itself is a poison that kills;
But help is at hand now, you mustn't forget
The FDA's gunning for vitamin pills.

For all the food supplements taken 'tis said
Will never release us from writing our wills.
Eventually Godard, not God, will be dead.
The FDA's gunning for vitamin pills.

Have just finished translating a report of the French Academy of Science of July 1772 and signed by the immortal Lavoisier. It deals with an account of a meteor, how it was seen to drop by several witnesses and covers the analysis of the sample sent to Paris. The conclusion of Lavoisier and his colleagues was that for a stone to drop out of the sky would be physically impossible. The witnesses saw and heard nothing other than a piece of iron being struck by lightning. The report sounds strangely up to date.

Last summer I had a very interesting visit with my friend Professor Jim McConnell (WRD Editor). They are getting some exciting results with rats. (I held a memory in my hand in a small centrifuge tube.) The planarians are still being kept busy but it was hard to convince people you could teach a worm anything. He will have an interesting publication in the offing shortly.

J. FREDERIC WALKER

Dr. Walker is the man who, some years back, got all the formaldehyde out of Venus's atmosphere—by showing the astronomers, who'd just put it there, that (a) formaldehyde just didn't act *that way, and (b) it didn't have a spectrum like that.*

He has, also, long been known to his colleagues at du Pont as "J. Formaldehyde Walker" because of his decades of work on the properties and uses of that "simplest" of aldehydes.

For those not familiar with the food and drug field, the Dr. Godard referred to in Dr. Walker's little poesy is not *the man who had vision enough to develop liquid-fueled rockets forty years ago. This one issues ukases under the FDA heading.*

Dear Mr. Campbell:

Your Pollution editorial was great, but you forgot an important organism: the *mechanistria digitalis,* or digital computer.

A friend of mind reports that his laboratory has owned a succession of computers through the years, each fancier and faster than its forebears, and more capable of drowning everyone in paper output. Since most of this output is classified, their official scavenging system is an incinerator, which preserves the national security and the ecological balance for the humans. For the computer itself, the scavenger is air conditioning, which dissipates heat from the components.

Their newest, fanciest computer is *self* air conditioned, with its own outside cooling tower. And through some error (or perhaps some mechanism of poetic justice,) the tower got installed right next to the incin-

erator smoke stack. Within two weeks, the coils and filters were so clogged with partially oxidized output that the computer had to be shut down.

Like you said, no organism—not even *mechanistria digitalis*—can live in a medium of its own by-products.

WILLIAM S. MINKLER
3500 Forest Road,
Bethel Park, Pennsylvania 15102
One difference though is that a computer doesn't care in the least if it burns out!

Dear Mr. Campbell:

The publication of "The Mechanic," by Hal Clement, in the September Analog has brought up the point that, in the field of nutrition, science is far ahead of science fiction.

The reason Mancini uses the computer to heal Stubbs' face is that he is afraid ". . . the scars you could come up with would leave you quite a mess." Yet, in 1953 Drs. E. V. and W. E. Shute of London, Ontario, Canada, presented results of experiments which showed that the formation of scar tissue is evidence of malnutrition and particularly of a vitamin E deficiency, and that proper diet can prevent scarring.

Furthermore, in America, the country closest to the future, the life expectancy for people over forty, as determined by the United Nations 1960 census, is decreasing and is now one of the lowest in the world. The average lifetime in science fiction should be fifty, not one hundred fifty.

LEN J. LESTER
486 Carnegie Drive,
Pittsburgh, Pennsylvania 15216
But the FDA assures us we get all the vitamins we need from our food, so you must be wrong.

Dear Mr. Campbell:

So the discrimination against women is again out in the open with Mr. John D. Clark's infamous proposal. I'll go him one better with as despicable, but a far more workable, plan.

After all, you know, your friend Bertha didn't produce all those bastards by herself. Just by way of comparison, it has been said that a former king of Austria had 165 children. I've never heard of any woman who had that many, though it's possible Eve did.

Let's put the shoe on the other foot. Let's say that any man who fathers an illegitimate child must be sterilized. Sterilization has been proposed previously for women who produce bastards, but never a mention of the men.

Having worked in the medical field I'm aware that the operation for men is comparatively simple; for women, far less so, and for that reason, more dangerous. So we'll save State money by doing it on the men.

Since a man would rather die—or run the risk of dying—than lose this attribute, this means that he

would murder the illegitimately pregnant female. This should be a *real* deterrent to teen-age girls! Any halfway adequate detective could pin the crime on him, knowing by autopsy she was pregnant. He would be executed as a murderer and the population declines by three! Potentially, much more.

This leaves a dedicated mommy-poppy population whose concern for loved children makes them naturally limiting and provides a wholesome environment for the children to grow in and pass on their decent ways. If the children stray, the limiting factor again steps in!

Speaking seriously now, however, your excellently logical mind bogs down on Bertha's story because you are so exasperated by the situation she represents. I am, also, but I'm not shedding any tears for your college-trained social worker. She, speaking of her group, hasn't got bat sense about Bertha.

I've worked for a graduate school of social work and their sloppy, sentimental thinking about Bertha has compounded her problems and her "salary."

The social worker viewpoint is that any mother is better than none, and I simply don't believe it.

One mistake and maybe one relapse might be allowed Bertha, but after that I'd yank those babies away from her before their eyes were open and turn them over to people who would really care for them. This way, Bertha's "salary" could *never* increase.

As to that "salary" it may top that of the social worker but the social worker has to support only one on it and *she* probably has a husband bringing in considerably more.

It may surprise you to know that, however adequate or even exorbitant the ADC payments seem, you will have to realize that *nine* people are having to live, eat, be clothed, and have shelter on a little more than the salary of *one* social worker who has only herself to support, or who is supported by her husband and can use her money as she pleases.

Since the ADC payments *are* demonstrably too low for that mob to live on, the Bertha's turn to prostitution for unreported income and —oops!—there's another bastard.

If I were the social worker I'd train Bertha to some skill, even if it were just making clothes for herself. Some pride of accomplishment, some way to stand on her own feet without either State help or prostitution. We're importing hand-knits from Europe and depleting the gold supply. There's no reason why Bertha couldn't learn. Only two stitches are involved and except for intricate patterns, it's moron work.

And if I were that social worker, I'd be a little less finicky about foster or adoptive parents. Granted that some caution is desirable, few environments could be worse than that of the natural mother. I'd rather

plop that sweet, innocent baby into the lap of some lovely, maternal-minded, church-going old maid whose man or potential man has been killed in the every-generation wars than to leave it with a prostitute to be trained in the same way to third generation ADC income. But the social workers see Freudian terrors that don't exist in single people; I've a wide acquaintance among church people and I have never heard of one who was a pervert, and I've only suspected one, with absolutely no evidential grounds. The type woman I'm talking about is essentially a widow, though perhaps not in fact, and she and the child could create a home with warm, natural affection. Bertha certainly doesn't create an environment as good, and she, too, is legally alone.

At least, the old maid, from experience, could teach the child to have sense enough and pride enough to walk out on a clumsily attempted seduction following a steak dinner her new date callously felt was payment enough for her favor.

So there! Either sterilize yourselves or stop being irresponsible tomcats and be real men, the kind a woman can truly love.

MARION SCHNEIDER

1. Demographers long since made the discovery that the birth-rate in a human population is proportional to the number of females in the child-bearing ages . . . and shows no relationship whatever to the number of males, so long as that number is greater than zero.

2. My social-worker daughter got disgusted with that mess, and got out of the business.

3. Bertha's bastards were not the result of prostitution; she was not a prostitute. They were strictly the result of her hobbies.

4. Ever tried to teach someone how to do something they didn't want to learn to do? For instance, try teaching reading to some "tenth-grader" (promoted with his peer group so as not to damage his precious little ego) who explains, "Ah . . . I got betta things to do wid ma time than learnin' readin'!"

5. You miss the essential point? Bertha was well satisfied with her life, and enjoying her world and her pleasures. Just because you'd be miserable under those conditions has nothing whatever to do with her feelings.

Moreover, it's been found repeatedly that when children of such a "love shouldn't be serious, should it?" type mother are taken from their slovenly, undisciplined, uncared for home, and put into clean, well-run orphanages—they escape back to the home-of-transient-fathers at the earliest opportunity. You may think they would be miserable in such surroundings—but evidently they are not!

Dear Mr. Campbell:

Well, your editorial "Voter Registration" finally did it. I've often

been tempted to write to you in the past about some of your editorials, but your views have paralleled my own so closely that I never did get around to contributing my two cents' worth. Your last topic, though, has been a pet peeve of mine for some years. I arrived at a similar solution, and I think my system is a bit more foolproof than yours. Here's why:

1. The punch-card idea is entirely too susceptible to cheating by party politics. Any party worker interested in seeing his candidate win could stand next to a voting booth and loan a passing-grade punch card to every "loyal" voter entering the booth. Alternately, an effective political machine could establish a nice little traffic in blackmarket passing-grade cards. A much more foolproof arrangement, I would think, would be to conduct the computerized test right in the polling booth, as a preliminary to voting. The voter would select the required number of questions, answer them as best he can, and then vote. If he passed, his vote would register; otherwise, it wouldn't. Neither he, nor the party hacks in attendance, would have any way of knowing whether or not it had registered, so the party machine would be afraid of trying to "stuff the ballot," for fear that the total number of registered votes might exceed the number of people who actually signed up to vote.

2. The key to the success of this system will, of course, be the questions, and the question about the questions is: Who'll write them? Republicans (left and right)? Democrats (right and left)? Anarchists? Newspaper columnists? Social-science professors? Probably the best bet would be to choose from questions submitted by a cross-section of newspaper editors, using a bipartisan selection "board," each party of which would select, independently, half of the questions. Questions should be carefully chosen so as to avoid value-judgment replies. This narrows the field quite a bit, but even a Bircher and an NAACP member should be able to give the same reply to a question like "Has the United States declared war on North Vietnam?"

3. Unfortunately, the basic flaw in an idea like this is that the decision to go ahead and do it would have to be made by and endorsed by the very people who would stand to lose the most by it: the politicians and the statistical majority of present-day voters. Most of the politicos, and the voters, would be out of the political swim after the first election.

Come to think of it, maybe there *is* a way of putting this thing through. It's a recognized fact that although people are loath to vote for anything that will bring about a drastic change in their way of life, they are often unable to see *how* a certain thing might affect such a change, and tend to hold many views that, in toto, contradict what they think they believe. For exam-

ple, the person who says he is strongly anti-socialist and anti-communist, but believes that the government should step in and run "essential" services that private enterprise doesn't seem to perform very well, and that it is the duty of every citizen to help pay for the support of the indigent and to give up his home to make way for a superhighway. By the same token, many if not most people, when asked a question whose answer may be felt to be a reflection on their character or judgment, will try to give the answer they feel society wants, rather than the one they actually believe.

This *could* be the way to get our proposed voter-registration system underway.

Obviously, if national voters were polled on the question: "Do you approve of an electoral system that discriminates against people whom the Society denied an adequate education?" they would vote a resounding NO. But, if the ballot asked questions like: "Should a person who has been adjudged legally insane have a say in decisions affecting the security of your family?" or "Should the vote of a person who never reads a paper or listens to a newscast carry the same weight as the vote of a person who keeps informed about current events?" or "Do you feel that a person who is too stupid to run his own life should have any say in how you run yours?" the answers would be quite different. From the results of such a poll, it would be easy to conclude that the public does indeed want some sort of voter-qualification requirement, and with the weight of such a vote, it might be possible to do something about it.

But who would take the poll?

Oh, well . . .

Incidentally, every time I read one of your particularly trenchant editorials, I am saddened by the obvious fact that the only people reading it are people who are intelligent enough to agree with you. Have you ever considered putting out a paperback anthology of your juicier items, with a sufficiently insolent title to prod people into at least picking it up and getting mad at it in the bookstore? I think a project like this could be considered a public service. I also think it would sell like mad.

Then you could publish an anthology of hate letters.

J. GORDON HOLT

Telling any bigot a lie will, of course, make him mad. But telling him the truth makes him ten times madder.

That's what makes that voter-test scheme politically impossible in a "don't make anybody mad" culture!

SENSE OF SECURITY

continued from page 7

ence to acknowledge "Something exists that does not come under *known* laws of physical science."

He has got practically nowhere. It's impossible to change, by mere rational argument and evidence, an emotionally reinforced conviction.

The United States, thanks to Dr. Rhine, was for some years the world leader in research into that unexplored area. The United States is, as of now, far behind the rest of the world; the Netherlands has taken the lead, and is forging ahead rapidly and very practically. Russia is second in the race—so far as is known.

Professor William Tenhaeff, of the Parapsychology Department, University of Utrecht, the Netherlands, has approached the problem in a manner that's a lot more basic and effective than Dr. Rhine's approach. He isn't diffusing his energies trying to convince the unconvincible—the frightenedly determined "I won't accept that idea!" scientists.

You can not study a phenomenon until you first accept that there's something to be studied. You can't figure out what ball lightning is so long as you deny that it *is*—so long as you explain away all the observational data you're given, and never seek to explain the phenomenon. (Now that that Unknown has been explained in familiar mathematical terms, of course, ball lightning is perfectly acceptable—it's now "science" where, before, it was "folklore," "superstition" and/or "faulty observation."

Professor Tenhaeff used the Alexandrian Technique for cutting that red tape; chop it up and throw it away. He simply accepted that something *did* exist, and started studying how it behaved, instead of wasting time, effort and money trying to convince people it existed before trying to study it.

He has found, worked with, studied, and trained some forty "paragnosts" as he terms them—psi-talented individuals who "know (*gnos*) by other means (*para*)."

The best report in English on his work with his prize pupil seems to be Jack Harrison Pollack's book "Croiset The Clairvoyant." Gerard Croiset is Tenhaeff's star pupil. There's a Bantam paperback edition that sells for seventy-five cents; unless you can read Dutch, that's your best chance to learn something about the work the University of Utrecht is doing in parapsychology. It's limited pretty largely to Croiset's cases; I'd like a lot wider view of Tenhaeff's research work—but I can't read Dutch, and his reports haven't been translated into English.

What most interests me about Professor Tenhaeff's work is, simply, that he has stopped fussing with the nonsense of trying to prove psi exists, and has studied how it works—which, so far as I've been able to learn, nobody else has. The Parapsychology Department at Utrecht is the world's first full-fledged Chair of Parapsychology, and the world's first state-supported department of parapsychology. (The Russians were second; the University of Leningrad also has an active parapsychology research group.)

By contrast, in the United States parapsychology is so thoroughly denigrated and suppressed that a considerable bequest left to Harvard for parapsychological studies has been quietly diverted to other work. A $500,000 bequest for such studies left to Stanford has also been used, specifically contrary to the donor's bequest, for "more normal studies."*

Dr. Rhine's work has been supported by individual contributions, on a catch-as-catch-can basis.

* And the moral of that is, if you're leaving a bequest that you suspect may be diverted from the purpose you specify, always add a secondary beneficiary, with the stipulation that if the primary beneficiary does not apply the fund as specified, and do so with due diligence, it shall, instead, go to the secondary beneficiary. The secondary beneficiary named should be a large, active, alert, and constantly money-hungry organization with a strongly favorable public image—something like the Red Cross, or the American Cancer Society. No University would let a juicy bequest like $500,000 slip through their hands—if they were being alertly watched by an active, money-hungry secondary beneficiary with plenty of legal talent and a strong public image!

Tenhaeff has gathered a group of individuals who can demonstrate real talents—largely telepathy and clairvoyance—and studied how they *do* work, instead of trying to determine how somebody with a paranormal talent he doesn't understand theoretically *ought* to work. Croiset, for instance, won't play Dr. Rhine's game of guessing cards; he has better things to do, and is bored beyond words at silly card-guessing games. He's simply not interested.

He is interested in useful applications of his talent—like finding lost children, or directing the police to the needed clues to solve crimes.

Dr. Tenhaeff's approach is the strictly engineering approach necessary at this stage of our ignorance of the phenomena we're trying to study. "We don't know anything about its laws of operation, so the first thing to do is to observe what it does. Get some reliable data—then, and only then, can you have anything to think and theorize about."

He's collected twoscore paragnosts, observed what they can and can't do for decades, and determined common factors in what they can do, and sought for common factors in their personalities. (One, curiously, is that they nearly all have some form of stomach trouble!)

Basically, Tenhaeff has the good, solid Dutchman's practical view-

point that the first step is to find out what actually happens. Then you may be able to draw some useful conclusions—but not until you first gather and rigidly verify your data. There isn't room or time here to discuss Croiset's cases; Pollack's book has 270 pages which I'm not about to compress into a few. If you've got the guts to have some illusions deeply endangered—get the book and try some solidly researched *data*.

I can positively guarantee that it won't convince you, or alter your convictions in the slightest, if your sense-of-security is absolutely dependent on no-new-areas. Nothing will. But if you can stand considering data that shows a new area for exploration—that Croiset book has some solid, engineering-type data.

Remember that, when Edison invented electrical engineering, he didn't have the foggiest idea what an electric current was. The electron hadn't been discovered. He knew only what electricity *did;* why it did it, or how it did it he didn't know. To use electricity he needed only to know how-to-do-it —not why.

Tenhaeff's approach is on that same order.

Croiset definitely comes up with precognitive data—which leads to some highly confusing philosophical problems. One lost child case Croiset was called in on he solved immediately. The Netherlands being the lowlands, the canals claim a lot of young children. Parents of lost children in the Netherlands frequently call Croiset by telephone —and all too frequently he solves the case immediately by "I am very sorry; your little boy fell into the canal and has drowned." This, of course, solves the problem in one sense—but the proof of the solution is, necessarily, the recovery of the body.

Often, Croiset will say, "The body will be recovered in three days," and specify exactly where the body will be found. In one instance, he described the location where the body would be found in exact detail—the body would be found at a spot where a line from the door of a small factory across the canal to the opposite end of a bridge intersected with a line drawn from a culvert across the canal to a post on one of the piers which had an old automobile tire slung over it.

The police dragged the canal. They couldn't locate Croiset's exactly defined point—because there were several piers, and many posts, but none of them had an old automobile tire hung over it.

On the third day, as specified by Croiset originally, the dragging operations brought up an old automobile tire. It was flung out on the bank of the canal, and dragging continued. Some children came by, and began playing with the old tire. They grew bored, however, and one of them, in departing,

flung the old tire over one of the posts on a pier.

The body was recovered at the intersection of the lines Croiset had specified—between the tire-bedecked post and the culvert, and the factory door and the bridge-end. Croiset's pre-vision of the recovery quite obviously referred to the locus in space-time *when the body was recovered.* The necessary clue—the tire-ringed post—didn't exist previously.

Repeatedly, Croiset's precognition forces the question of predestination on one. When Croiset says "The children are all right; they were caught in a rainstorm and went into a barn for shelter. They have fallen asleep in the hay; don't worry, they will be home by ten o'clock tomorrow morning," it is useless to go looking for them sooner. They are destined to come home at 9:30 the next morning, and until that time they cannot be found. That's the way Croiset saw it; therefore, that is the way it will be . . .

Some of the little tales are decidedly upsetting in their implications—and they're all nailed-down-solid, cross-checked, documented fifteen ways from zero. Professor Tenhaeff is a solid, stolid, hard-headed, trained researcher.

I've also run across something else in the psi research line—real, solid research based on the simple proposition that the way to learn something is to try and see if it exists. When someone theorizes a new nuclear particle that nobody's ever seen, heard of, or suspected—gigavolt particle accelerators are fired up, massive hydrogen bubble chambers are activated, and 100,000 photographs are taken. Computers are programmed to search all the plates seeking the proposed behavior-pattern. The physicists say, in effect, "If such a particle exists, then it should have these properties . . ." and make a test to see.

Some Czech researchers did precisely the same thing with psi. "If telepathy exists, then it should have these properties . . ." and set up an experiment to check.

Their interesting postulate was, "Assume telepathy is a communication channel with a very high noise level, so high that nearly all messages are drowned in random noise." Now if that were true, then Information Theory can be applied; techniques for getting high reliability of communication, despite high noise levels, are well worked out mathematically. They define precise methods for the application of redundant message repetition, and techniques to cancel out bias, or preference, in the receiver by applying message inversion. It's possible to calculate the degree of repetition, message inversion, et cetera, needed to get an assigned degree of reliability. . . .

They set up a telepathy experi-

ment, with two operators sending binary-coded messages back and forth, with a computer observing and calculating the necessary formulas.

They demonstrated something like ninety-eight percent *reliability of pure-telepathy communication.* In other words, something better than the reliability of field communication by field telephone or radio transmitters.

But to do such things—to learn such facts—one must first set up the sort of postulate nuclear physicists do. "If such a thing exists, then . . . and it can be demonstrated by an experimental structure like this . . ."

You don't get it by saying "We know there is no such thing as telepathy." Nor do you get it by collecting statistics on card games trying to convince the unconvincible that psi exists.

The Dutch approach is scientific in collecting data on how different paragnosts work, and what each is best at. Croiset, for example, is almost hopeless at gathering information on thieves; he had an extremely hurtful experience of false accusation of theft when he was an adolescent, and now has a powerful bloc against accusing anyone of theft. But since he nearly drowned himself at about age eight, he's terrific at locating lost children. He's interested—it's important to him personally—in endangered children. The Dutch Customs officers frequently get help from Croiset; smuggling isn't theft and is definitely crooked, so Croiset can work well in that area. (And the Customs people get information on precisely what the smugglers are running, precisely where and how they do it, who they deliver it to, and just where to set up a police trap to catch the gang red-handed and loaded with smuggled material. Croiset's clairvoyant information is not used in court—it isn't suitable as evidence. But it's great for enabling the police to trap the precisely right point in time and space. Probably—judging from recent decisions—in this country the Supreme Court would hold the use of clairvoyantly derived information illegal, since the poor, harassed criminals wouldn't be able to conceal their moves, and that would be terribly harsh and unkind to them.)

In essence, the scientific side of the data-collection is rigidly supervised by Professor Tenhaeff and his team, while the police happily act as careful documenters of the clairvoyants' successes. Lost children found—drowned children accurately located—smugglers pinpointed for arrest, complete with contraband—an apparent case of rape-murder solved completely, and shown (by Croiset's efforts) to be two scared kids engaged in an illicit affair, complicated by a fatal heart attack. Good, solid, practical engineering-type *use* of psi talent.

Yet almost nothing is known

about Dr. Tenhaeff and his forty years of research in the United States. Europe knows all about him; he's well known in England—but not in the United States.

Reminds me of the "Suppressed Invention," the nickel-cadmium battery that was in wide use throughout Europe from 1900 through WWII—and wasn't even mentioned in U.S. engineering handbooks! It was the only battery that had forty-year service life, could hold a charge for more than a year, could start hard-to-start diesel engines, and could be hermetically sealed—but Americans couldn't hear about them, let alone buy them. Oh, you could buy one in Tibet, or the Fiji Islands, or in Central Africa—but not in the U.S. Forty-five years late, the U.S. finally heard about them; now, of course, they're being used in rechargeable flashlights, electric shavers, cordless power drills—a thousand things here on Earth, as well as being the power supply for most of the deep space probes.

It's almost unbelievable that something like the Ni-Cd battery, in wide commercial use in Europe for two generations, could be kept from general knowledge in the United States—but it was.

Apparently, some similar information-filter system has done almost an equally effective job of keeping from the American public the facts concerning the Dutch work on psi. Everyone knows about Dr. Rhine—yet Dr. Tenhaeff, who has done far more effective *practical* application work on psi is totally unknown over here!

It's understandable that the Czech information-theory analysis is almost unknown in the U.S.—generally speaking, Americans don't follow the Czech journals. But Tenhaeff's work has been published in Dutch, German, French—and hasn't been translated into English.

The work done in Russia hasn't been very widely discussed; Americans would rather maintain their sense-of-security by not studying such upsetting ideas. It's much more comfortable to simply "prove" that no such thing exists, that it's "folklore nonsense and silly superstition" than to admit that a great new Unknown area exists to be explored.

In little Netherlands, Tenhaeff has found and helped train some forty effective paragnosts. In the United States, with some 200,000,000 people, there isn't one recognized and trained paragnost. The cultural climate here expends its energies suppressing and rejecting as charlatans, frauds, "queer," or crooks-in-general anyone who demonstrates any such talents.

While the Dutch (and Russians) learn something, and locate lost, strayed or stolen children quickly and accurately.

I saw a statement recently, made

by a professional scientist at one of the great U.S. atomic research laboratories that interested me greatly. He was talking about Dr. E. E. Smith's "Lensman" series, and said that Smith's use of the "inertialess drive" was pure magic-wand waving, because the idea was obviously nonsense.

This interested me as a perfect example of the Scientific Attitude.

That scientist knows-for-a-fact that he doesn't have the slightest idea what inertia *is*. Not the foggiest notion. He knows that he uses some three-hundred-year old rituals, on a purely empirical basis, with no understanding whatever of why those rituals work—simply that Newton, on the basis of very limited data, enunciated them and they work. He's as ignorant of what he's working with as a South American Indian witch doctor extracting quinine from cinchona bark. He is working in exactly the same way; with no understanding whatever of what it is he is dealing with, and knowing only that this is the traditional ritual and the ritual works and produces the results needed.

And this witch-doctor-physicist is so arrogant as to claim he *knows* an inertialess drive is nonsense?

It's inexcusable, because he himself already knows-as-a-fact that he does *not* know what inertia is. Knowing he is ignorant—and he does—by what mental self-deception does he decide he has a right to make statements about an area he has zero point zero information on?

That's the Scientific Attitude I deeply resent.

It's the attitude that says "We know psi doesn't exist because it's clearly impossible."

I prefer Dr. Tenhaeff's attitude that "I don't know what it is, but I observe these data, and I find it can be used practically thus . . ."

But that attitude, of course, requires the courage to acknowledge that the Universe contains Unknowns—that we *don't* have a secure-feeling situation in which we know all anyone needs to know about all the things that really are.

Too many scientists got into the business seeking the security of knowing-for-sure; they don't even consider giving up what they sought so desperately and determinedly.

Incidentally, my own investigation of one psi faculty—dowsing for pipes (not the much more difficult dowsing for natural ground-water)—has turned up some very interesting data that you can investigate for yourself if you want to.

Nearly ninety percent of all people who try the dowsing rods for pipe locating are successful almost immediately. This includes individuals who are strongly emotionally opposed to "that superstitious nonsense" and try using the rods only in self-defense when challenged to apply the scientific method of "ex-

periment or shut up—you have no data." They get quite an emotional shock when the rods turn in their own hands, despite their powerful conviction. When it happens to *them,* they *know* it's not a hoax, fake, phony, or mere coincidence.

But I have repeatedly run into individuals who have the ability to block the success of dowsers; they can, somehow, "raise the noise level" of psi signals in their vicinity to such a level that nobody can dowse. The effort to demonstrate the phenomenon is about as hopeless as the effort to demonstrate radio would be if there were a radio-frequency "white noise" generator running full blast next to the receiver.

Experienced and repeatedly-successful dowsers suddenly can't find a pipe, even if it's lying on the surface of the ground right in front of them.

Naturally, the anti-psi individual happily "knows" that the whole thing was nonsense, and that now he's shown up the silly business. And he won't accept any alibi like "There's someone present who is blocking our efforts." He knows that's purely an excuse to get out of the obvious failure.

Now the remarkable discovery I've made is that the anti-psi individual, induced to try the rods, promptly *succeeds where everyone else has failed!* He can dowse successfully—although he blocks everyone else!

This works, of course, only if there are not two or more anti-psi

THE ANALYTICAL LABORATORY

SEPTEMBER 1966

PLACE	STORY	AUTHOR	POINTS
1.	Too Many Magicians (Pt. 2)	*Randall Garrett*	1.58
2.	. . . Not A Prison Make	*Joseph P. Martino*	2.26
3.	The Mechanic	*Hal Clement*	3.35
4.	Symbols	*Christopher Anvil*	3.59
5.	A Matter of Reality	*Carole E. Scott*	3.79

OCTOBER 1966

1.	Too Many Magicians (Pt. 3)	*Randall Garrett*	1.72
2.	Strangers To Paradise	*Christopher Anvil*	1.93
3.	Romp	*Mack Reynolds*	3.07
4.	The Sons of Prometheus	*Alexei Panshin*	3.19

THE EDITOR

noise-generators present. If both A and B are noise-generating, then when A tries dowsing, and turns off his noise-generation, B's still jamming, so A can't dowse either—nor can B, because when B's trying, A's back to jamming.

But take each separately, and each dowses successfully.

Incidentally, usually when the anti-psi noise-generator does succeed in dowsing, it's such an emotionally upsetting shock to him, he shuts down his jamming activity in confusion—and now the others present dowse successfully.

That powerful, subconsciously controlled jamming activity accounts for the routine failure of public demonstrations of psi activity. In any large group, there's practically certain to be a number of individuals who feel their sense-of-security menaced to the point that subconscious jamming activity starts going.

It's logically obvious that *if* telepathy is a noisy communication channel, and *if* human minds have the ability to generate telepathic signals, then an opposed human mind can generate noise signals that can drown out the message signals. If you're trying to talk to someone in a noisy shop or factory, someone standing near you can make it impossible by simply generating a wordless shout. But if you ask him to tell you something—he's got to stop shouting to do it.

That dowsing-for-pipes is an extremely good experimental procedure for studying psi, because it's simple, costs nothing but a pair of wire coat hangers, and—best of all! —some ninety percent of *all* people succeed immediately.

And nearly everyone can experience something that makes them understand in full—by a direct, internal experience—why the psi-talented can't explain what they do or how they do it.

After a few experiences dowsing for pipes, you'll suddenly realize that *this* pipe is a *gas* pipe, not a water, sewer, steam, or telephone cable conduit pipe. How do you know? Well, it just *feels* like a gas pipe!

And then try to tell someone else how a gas pipe feels. You know; you're feeling-it-be-a-gas-pipe. But it's just as utterly noncommunicable as trying to explain to someone how the color orange feels when you sense it. You know it's orange; you can *see* it. It just doesn't *feel* the way red does, or the way yellow does, and it certainly isn't a sensation like blue.

But you can't tell anyone else what that sensation is.

Equally, you can't explain how feeling-like-a-gas-pipe feels. But you'll know!

The paragnost who "sees" a point remote in space-time can't explain what it is he feels any better than you can explain what feeling-it-be-a-gas-pipe feels like.

The Editor

Watch Out For The Other Guy

Maybe you're a good driver. Many drivers aren't. So why put yourself at the mercy of some other guy's mistakes? Better to drive defensively. And expect the unexpected. After all, nearly half the drivers in fatal collisions are good drivers, and in the right. But being in the right isn't enough. You could be dead right.

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