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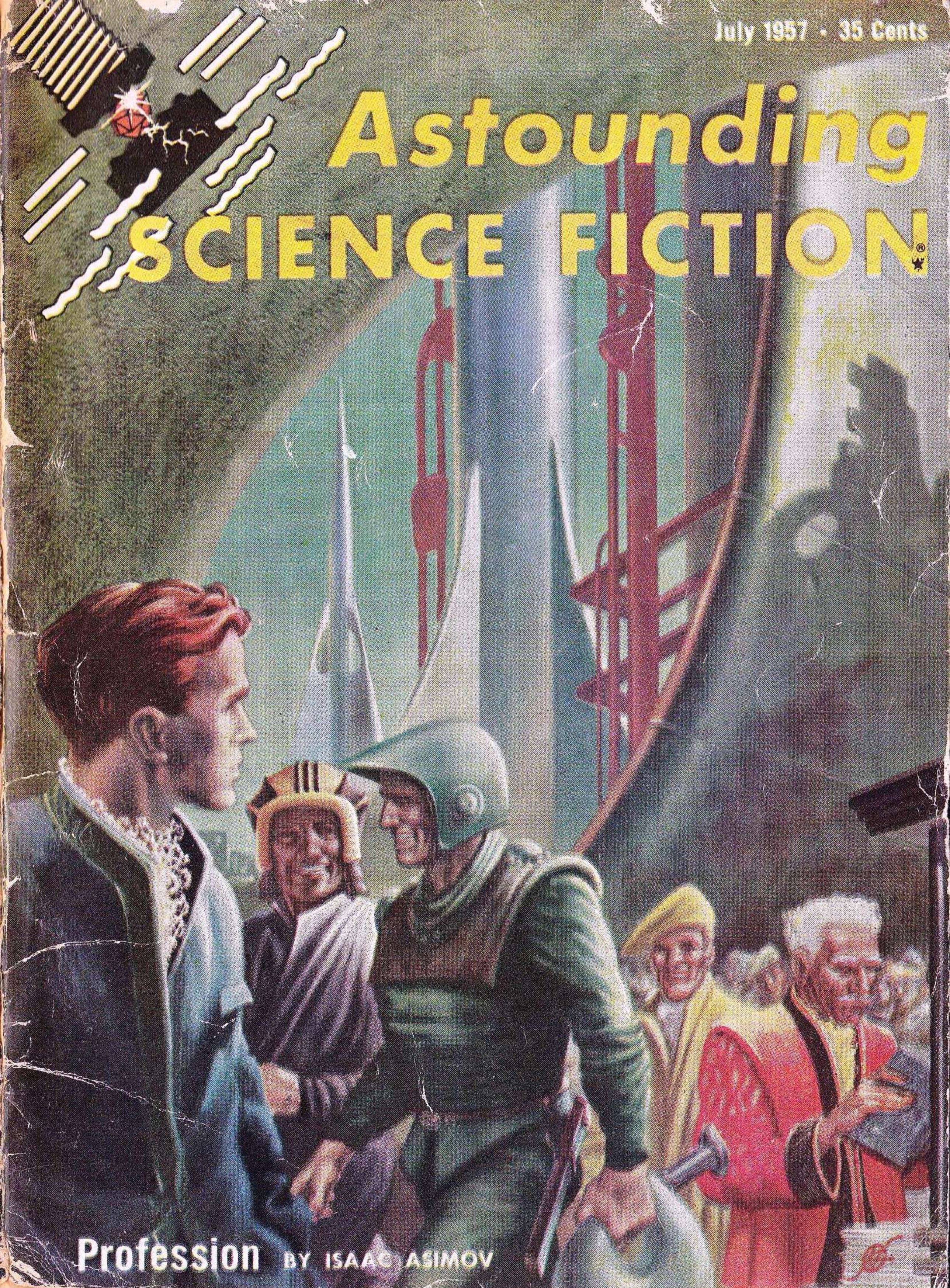

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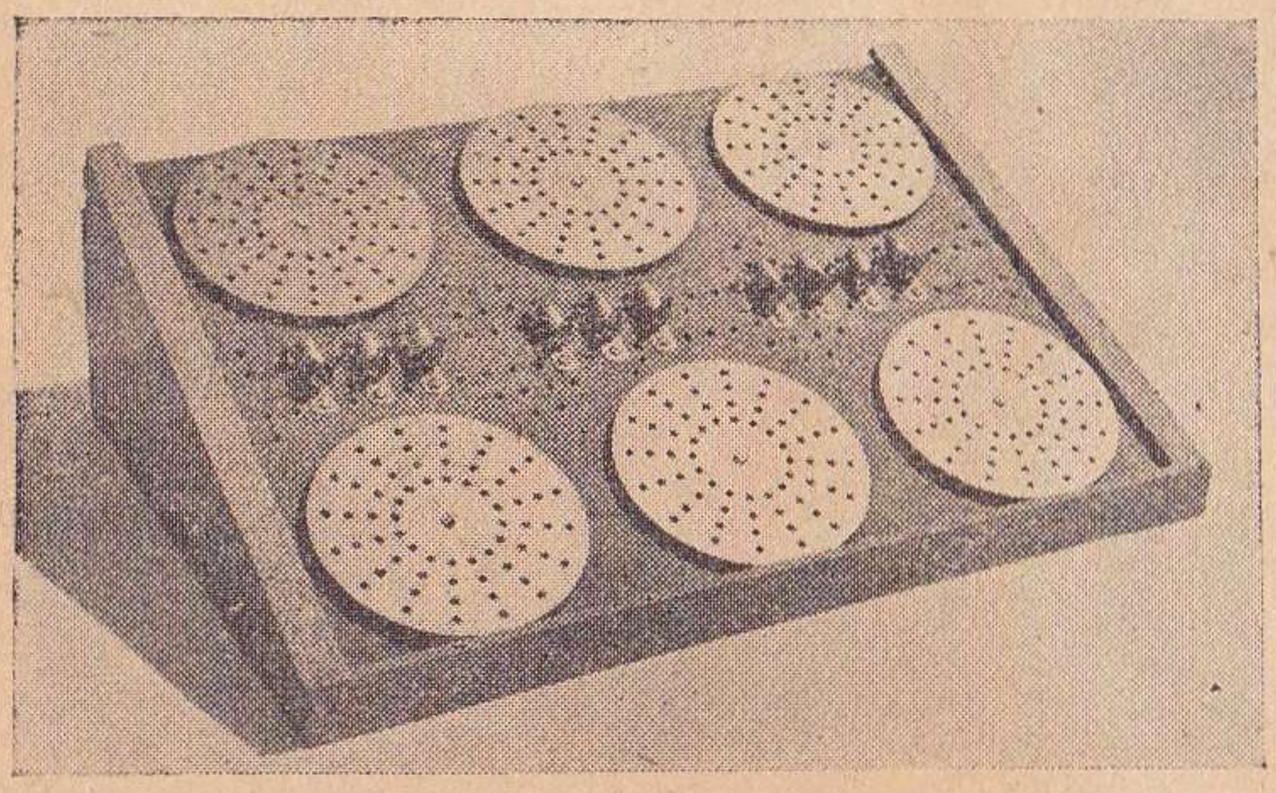

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Astounding SCIENCE FICTION

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SYMBOL: Nonmalleable component

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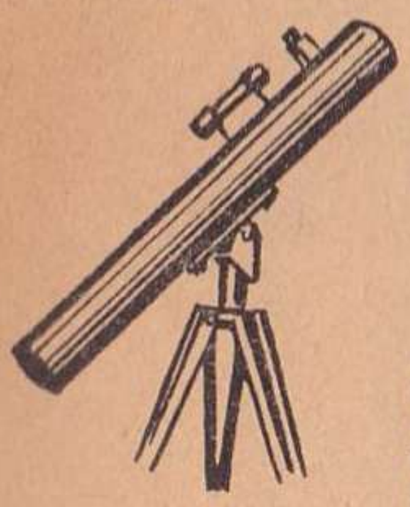

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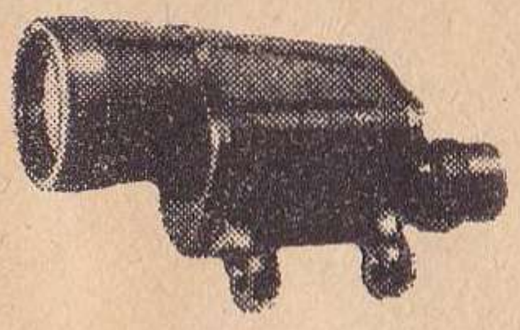

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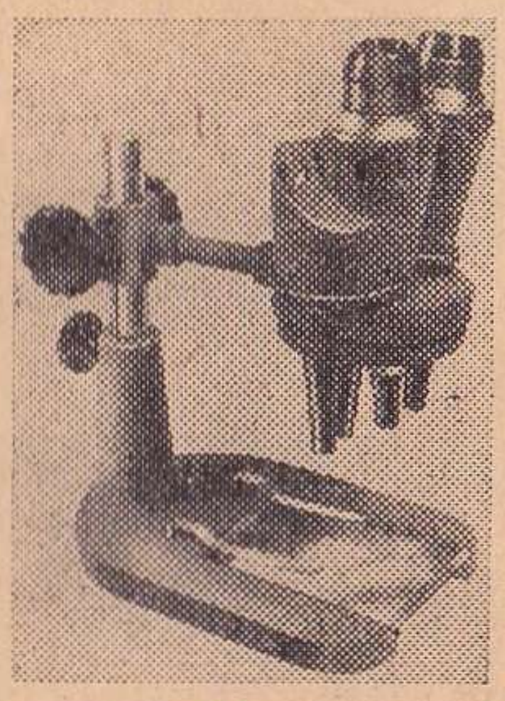

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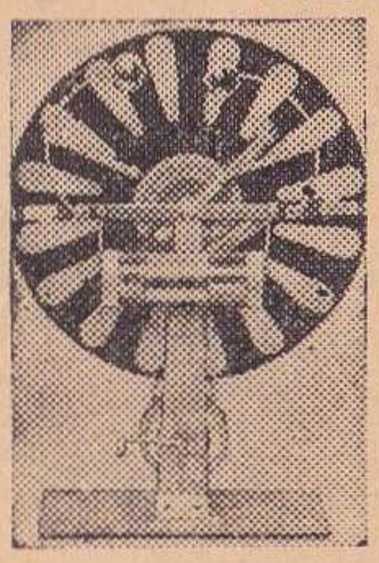

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EDITORIAL

INTELLIGENCE AMPLIFICATION

Dr. W. Ross Ashby has, for some time, been greatly interested in problems of the structure of thinking processes; his "Design for a Brain," published some while ago, had some magnificent analytical concepts relating to the problem. For the past year or so, he, together with a group of others including Claude Shannon, von Neumann, and many of the other top men of Information Theory and Games Theory, has been engaged in advanced studies of automation concepts.

Ross Ashby's principal field has been the analysis of the concept of an Intelligence Amplifier. The essential concept is that of designing a machine which would amplify the operator's intelligence in much the way a mechanical engineering device amplifies a man's muscle-power. Ashby's analysis of the problem, as a problem, seems extremely interesting, and its soundness is something I'm certainly not qualified to check. Considering the team that worked on the overall problem, however, I am quite willing to accept without argument that the mathematical and logical concepts are entirely valid.

My quarrel is at another level. I have two questions:

1. If you did produce an Intelligence Amplifier, how would you demonstrate that fact, prove that you had actually achieved the goal?
2. If the intelligent device were perfected, and were operating, I suggest that its own intelligence would automatically operate to prevent human detection of the fact of its intelligence! That it would, very intelligently, use its intelligence to conceal from human detection the fact of its intelligence.

The first question arises from this factor: Currently, the only formally accepted definition of "intelligence" is "that which is measured by intelligence tests."

(*Continued on page* 152)

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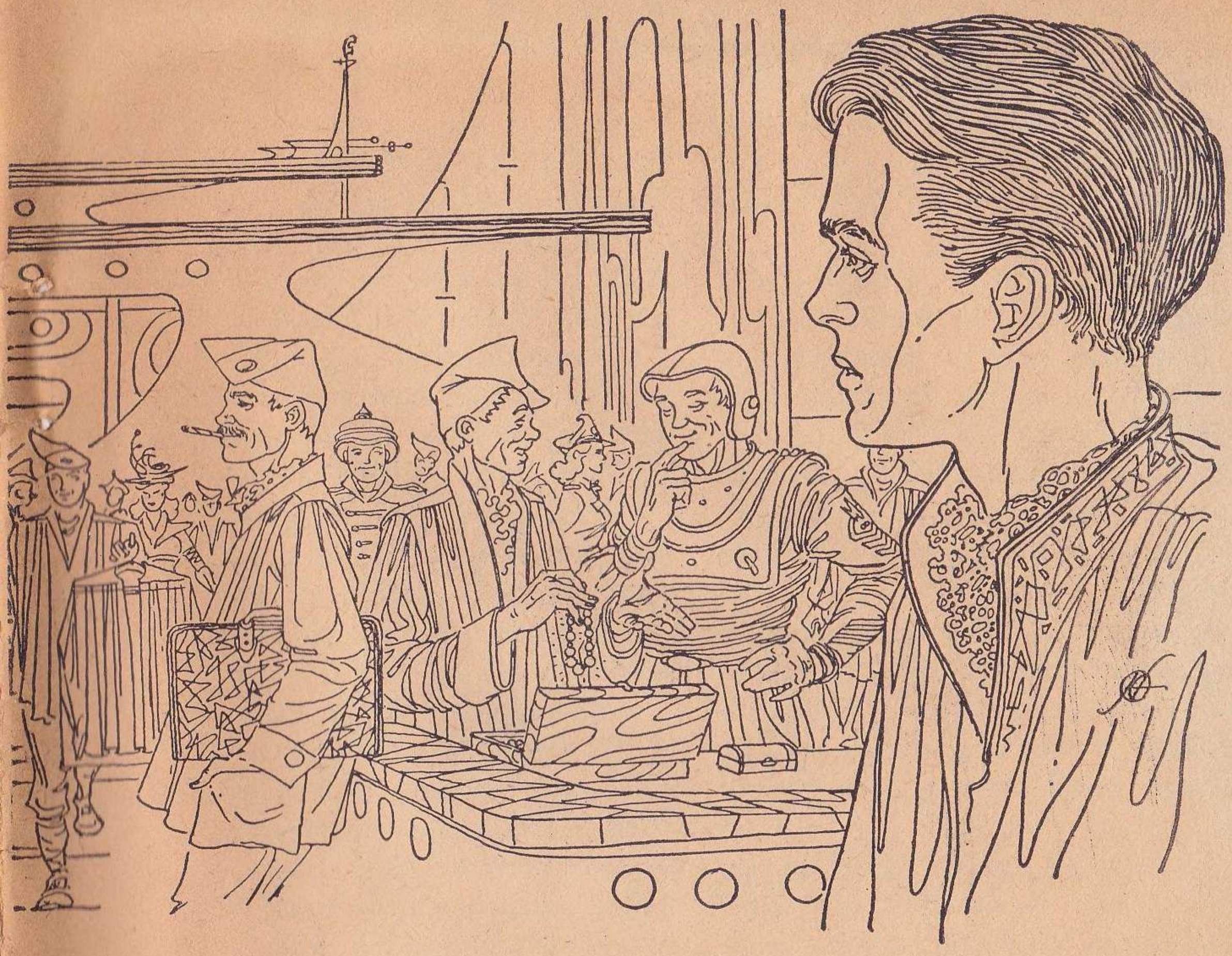
BY ISAAC ASIMOV

Illustrated by Freas



George Platen could not conceal the longing in his voice. It was too much to suppress. He said, "Tomorrow's the first of May. Olympics!"

He rolled over on his stomach and peered over the foot of his bed at his roommate. Didn't *he* feel it, too? Didn't *this* make some impression on him?

George's face was thin and had grown a trifle thinner in the nearly year and a half that he had been at the House. His figure was slight but the look in his blue eyes was as intense as it had ever been and right now there was a trapped look in the way his fingers curled against the bedspread.

George's roommate looked up briefly from his book and took the opportunity to adjust the light-level of the stretch of wall near his chair. His name was Hali Omani and he was a Nigerian by birth. His dark brown skin and massive features seemed made for calmness and

mention of the Olympics did not move him.

He said, "I know, George."

George owed much to Hali for patience and kindness when it was needed, but even patience and kind-

ness could be overdone. Was this a time to sit there like a statue built of some dark, warm wood?

George wondered if he, himself, would grow like that after ten years here and rejected the thought violently. No!

He said, defiantly, "I think you've forgotten what May means."

The other said, "I remember very well what it means. It means nothing! You're the one who's forgotten that. May means nothing to you, George Platen, and," he added softly, "it means nothing to me, Hali Omani."

George said, "The ships are coming in for recruits. By June, thousands and thousands will leave with millions of men and women heading for any world you can name, and all that means nothing?"

"Less than nothing. What do you want me to do about it, anyway?" Omani ran his finger along a difficult passage in the book he was reading and his lips moved soundlessly.

George watched him. *Damn it,* he thought, *yell, scream; you can do that much. Kick at me, do anything.*

It was only that he wanted not to be so alone in his anger. He wanted not to be the only one so filled with resentment, not to be the only one dying a slow death.

It was better those first weeks when the Universe was a small shell of vague light and sound pressing down upon him. It was better before Omani had wavered into view and dragged him back to a life that wasn't worth living.

Omani! He was old! He was at least thirty. George thought: *Will I be like that at thirty? Will I be like that in twelve years?*

And because he was afraid he might be, he yelled at Omani, "Will you stop reading that fool book?"

Omani turned a page and read on a few words, then lifted his head with its skullcap of crisply-curled hair and said, "What?"

"What good does it do you to read the book?" He stepped forward, snorted, "More electronics," and slapped it out of Omani's hands.

Omani got up slowly and picked up the book. He smoothed a crumpled page without visible rancor. "Call it the satisfaction of curosity," he said. "I understand a little of it today, perhaps a little more tomorrow. That's a victory in a way."

"A victory. What kind of a victory? Is that what satisfies you in life? To get to know enough to be a quarter of a Registered Electronician by the time you're sixty-five?"

"Perhaps by the time I'm thirty-five."

"And then who'll want you? Who'll use you? Where will you go?"

"No one. No one. Nowhere. I'll stay here and read other books."

"And that satisfies you? Tell me! You've dragged me to class. You've got me to reading and memorizing, too. For what? There's nothing in it that satisfies me."

"What good will it do you to deny yourself satisfaction?"

"It means I'll quit the whole farce. I'll do as I planned to do in the beginning before you dovey-lovied me out of it. I'm going to force them to . . . to—"

Omani put down his book. He let the other run down and then said, "To what, George?"

"To correct a miscarriage of justice. A frame-up. I'll get that Antonelli and force him to admit he . . . he—"

Omani shook his head. "Everyone who comes here insists it's a mistake. I thought you'd passed that stage."

"Don't call it a stage," said George, violently. "In my case, it's a fact. I've told you—"

"You've told me, but in your heart you know no one made any mistake as far as you were concerned."

"Because no one will admit it? You think any of them would admit a mistake unless they were forced to? Well, I'll force them."

It was May that was doing this to George; it was Olympics month. He felt it bring the old wildness back and he couldn't stop it. He didn't want to stop it. He had been in danger of forgetting.

He said, "I was going to be a computer programmer and I *can* be one. I could be one today, regardless of what they say analysis shows." He pounded his mattress. "They're wrong. They *must* be."

"The analysts are never wrong."

"They *must* be. Do you doubt my intelligence?"

"Intelligence hasn't one thing to do with it. Haven't you been told that often enough? Can't you understand that?"

George rolled away, lay on his back and stared somberly at the ceiling.

"What did you want to be, Hali?"

"I had no fixed plans. Hydroponicist would have suited me, I suppose."

"Did you think you could make it?"

"I wasn't sure."

George had never asked personal questions of Omani before. It struck him as queer, almost unnatural that other people had had ambitions and ended here. Hydroponicist!

He said, "Did you think you'd make *this*?"

"No, but here I am just the same."

"And you're satisfied. Really, really satisfied. You're happy. You love it. You wouldn't be anywhere else."

Slowly, Omani got to his feet; carefully, he began to unmake his bed. He said, "George, you're a hard case. You're knocking yourself out because you won't accept the facts about yourself. George, you're here in what you call the House, but I've never heard you give it its full title. Say it, George, say it. Then go to bed and sleep this off."

George gritted his teeth and showed them. He choked out, "No!"

"Then I will," said Omani, and

he did. He shaped each syllable carefully.

George was bitterly ashamed at the sound of it. He turned his head away.

For most of the first eighteen years of his life, George Platen had headed firmly in one direction, that of Registered Computer Programmer. There were those in his crowd who spoke wisely of Spationautics, Refrigeration Technology, Transportation Control and even Administration. But George held firm.

He argued relative merits as vigorously as any of them, and why not? Education Day loomed ahead of them and was the great fact of their existence. It approached steadily, as fixed and certain as the calendar—the first day of November of the year following one's eighteenth birthday.

After that day, there were other topics of conversation. One could discuss with others some detail of the profession, or the virtues of one's wife and children or the fate of one's space-polo team, or of one's experiences in the Olympics. Before Education Day, however, there was only one topic that unfailingly and unwearyingly held everyone's interest and that was Education Day.

"What are you going for? Think you'll make it? Heck, that's no good. Look at the records; quota's been cut. Logistics now—"

Or hypermechanics now—

Or communications now—

Or gravitics now—

Especially gravitics at the moment. Everyone had been talking about gravitics in the few years just before George's Education Day because of the development of the gravitic-power engine.

Any world within ten light-years of a dwarf star, everyone said, would give their eyeteeth for any kind of Registered Gravitics Engineer.

The thought of that never bothered George. Sure they would; all the eyeteeth they could scare up. But George had also heard what had happened before in a newly-developed technique. Rationalization and simplification followed in a flood. New models each year; new types of gravitic engines; new principles. Then all those eyeteeth gentlemen would find themselves out-of-date and superseded by later models with later educations. The first group would then have to settle down to unskilled labor or ship out to some backwoods world that wasn't quite caught up yet.

Now Computer Programmers were in steady demand year after year, century after century. The demand never reached wild peaks; there was never a howling bull-market for Programmers; but the demand climbed steadily as new worlds opened up and as older worlds grew more complex.

He had argued with Stubby Trevelyan about that constantly. As best friends, their arguments had to be constant and vitriolic and, of course, neither ever persuaded or was persuaded.

But then Trevelyan had had a father who was a Registered Metallurgist and had actually served on one of the Outworlds, and a grandfather who had also been a Registered Metallurgist. He, himself, was intent on becoming a Registered Metallurgist almost as a matter of family right and was firmly convinced that any other profession was a shade less than respectable.

"There'll always be metal," he said, "and there's an accomplishment in molding alloys to specification and watching structures grow. Now what's a programmer going to be doing? Sitting at a coder all day long, feeding some fool mile-long machine."

Even at sixteen, George had learned to be practical. He said, simply, "There'll be a million metallurgists put out along with you."

"Because it's good. A good profession. The best."

"But you get crowded out, Stubby. You can be way back in line. Any world can tape out their own metallurgists and the market for advanced Earth models isn't so big. And it's mostly the small worlds that want them. You know what per cent of the turnout of Registered Metallurgists get tabbed for worlds with a Grade A rating. I looked it up. It's just 13.3 per cent. That means you'll have seven chances in eight of being stuck in some world that just about has running water. You may even be stuck on Earth; 2.3 per cent are."

Trevelyan said belligerently, "There's no disgrace in staying on Earth. Earth needs technicians, too. Good ones." His grandfather had been an Earth-bound metallurgist and Trevelyan lifted his finger to his upper lip and dabbed at an as-yet nonexistent mustache.

George knew about Trevelyan's grandfather and, considering the Earth-bound position of his own ancestry, was in no mood to sneer. He said, diplomatically, "No intellectual disgrace. Of course not. But it's nice to get into a Grade A world, isn't it?

"Now you take programmers. Only the Grade A worlds have the kind of computers that really need first-class programmers so they're the only ones in the market. And programmer tapes are complicated and hardly any one fits. They need more programmers than their own population can supply. It's just a matter of statistics. There's one first-class programmer per million, say. A world needs twenty and has a population of ten million, they have to come to Earth for from five to fifteen programmers. Right?

"And you know how many Registered Computer Programmers went to Grade A planets last year? I'll tell you. Every last one. If you're a programmer, you're a picked man. Yes, sir."

Trevelyan frowned. "If only one in a million makes it, what makes you think *you'll* make it?"

George said, guardedly, "I'll make it."

He never dared tell anyone—not

Trevelyan, not his parents—exactly what he was doing that made him so confident. But he wasn't worried. He was simply confident—that was the worst of the memories he had in the hopeless days afterward. He was as blandly confident as the average eight-year-old kid approaching Reading Day—that childhood preview of Education Day.

Of course, Reading Day had been different. Partly, there was the simple fact of childhood. A boy of eight takes many extraordinary things in stride. One day you can't read and the next day you can. That's just the way things are. Like the sun shining.

And then not so much depended upon it. There were no recruiters just ahead, waiting and jostling for the lists and scores on the coming Olympics. A boy or girl who goes through the Reading Days is just someone who has ten more years of undifferentiated living upon Earth's crawling surface; just someone who returns to his family with one new ability.

By the time Education Day came, ten years later, George wasn't even sure of most of the details of his own Reading Day.

Most clearly of all, he remembered it to be a dismal September day with a mild rain falling. (September for Reading Day; November for Education Day; May for Olympics. They made nursery rhymes out of it.) George had dressed by the wall-lights, with his parents far more excited than he himself was. His father was a Registered Pipe-fitter and had found his occupation on Earth. This fact had always been a humiliation to him, although, of course, as anyone can see plainly, most of each generation must stay on Earth in the nature of things.

There had to be farmers and miners and even technicians on Earth. It was only the late-model, high-specialty professions that were in demand on the Outworlds and only a few millions a year out of Earth's eight billion population could be exported. Every man and woman on Earth couldn't be among that group.

But every man and woman could hope that at least one of his children could be one, and Platen, Senior, was certainly no exception. It was obvious to him—and, to be sure, to others as well—that George was notably intelligent and quick-minded. He would be bound to do well and he would have to, as he was an only child. If George didn't end on an Outworld, they would have to wait for grandchildren before a next chance would come along and that was too far in the future to be much consolation.

Reading Day would not prove much, of course, but it would be the only indication they would have before the big day itself. Every parent on Earth would be listening to the quality of reading when their child came home with it; listening for any particularly easy flow of words and building that into certain

omens of the future. There were few families that didn't have at least one hopeful who, from Reading Day on, was the great hope because of the way he handled his trisyllabics.

Dimly, George was aware of the cause of his parents' tension and if there was any anxiety in his young heart that drizzly morning, it was only that his father's hopeful expression might fade out when he returned home with his reading.

The children met in the large assembly room of the town's education hall. All over Earth, in millions of local halls, throughout that month, similar groups of children would be meeting. George felt depressed by the grayness of the room and by the other children, strained and stiff in unaccustomed finery.

Automatically, George did as all the rest of the children did. He found the small clique that represented the children on his floor of the apartment house and joined them.

Trevelyan, who lived immediately next door, still wore his hair childishly long and was years removed from the sideburns and thin, reddish mustache that. he was to grow as soon as he was physiologically capable of it.

Trevelyan—to whom George was then known as Jaw-jee—said, "Bet you're scared."

"I am not," said George. Then, confidentially, "My folks got a hunk of printing up on the dresser in my room and when I come home, I'm going to read it for them." (George's main suffering at the moment lay in the fact that he didn't quite know where to put his hands. He had been warned not to scratch his head, or rub his ears, or put his hands into his pockets. This eliminated almost every possibility.)

Trevelyan put *his* hands in his pockets and said, "My father isn't worried."

Trevelyan, Senior, had been a Metallurgist on Diporia for nearly seven years, which gave him a superior social status in his neighborhood even though he had retired and returned to Earth.

Earth discouraged these re-immigrants because of population problems, but a small trickle did return. For one thing the cost of living was lower on Earth and what was a trifling annuity on Diporia, say, was a comfortable income on Earth. Besides, there were always men who found more satisfaction in displaying their success before the friends and scenes of their childhood than before all the rest of the Universe.

Trevelyan, Senior, further explained that if he stayed on Diporia, so would his children, and Diporia was a one-spaceship world. Back on Earth, his kids could end anywhere, even Novia.

Stubby Trevelyan had picked up that item early. Even before Reading Day, his conversation was based on the carelessly-assumed fact that his ultimate home would be in Novia.

George, oppressed by thoughts of

the other's future greatness and his own small-time contrast, was driven to belligerent defense at once.

"My father isn't worried either. He just wants to hear me read because he knows I'll be good. I suppose your father would just as soon not hear you, because he knows you'll be all wrong."

"I will not be all wrong. Reading is *nothing*. On Novia, I'll *hire* people to read to me."

"Because *you* won't be able to read yourself, on account of you're *dumb*!"

"Then how come I'll be on Novia?"

And George, driven, made the great denial, "Who says you'll be on Novia? Bet you don't go anywhere."

Stubby Trevelyan reddened. "I won't be a pipe-fitter like your old man."

"Take that back, you dumbhead."

"You take *that* back."

They stood nose to nose, not wanting to fight but relieved at having something familiar to do in this strange place. Furthermore, now that George had curled his hands into fists and lifted them before his face, the problem of what to do with his hands was, at least temporarily, solved. Other children gathered round excitedly.

But then it all ended when a woman's voice sounded loudly over the public address system. There was instant silence everywhere. George dropped his fists and forgot Trevelyan.

"Children," said the voice, "we are going to call out your names. As each child is called, he or she is to go to one of the men waiting along the side walls. Do you see them? They are wearing red uniforms so they will be easy to find. The girls will go to the right; this direction is right. The boys will go to the left; this is left. Now look about and see which man in red is nearest to you—"

George found his man at a glance and waited for his name to be called off. He had not been introduced before this to the sophistications of the alphabet and the length of time it took to reach his own name grew disturbing.

The crowd of children thinned; little rivulets made their way to each of the red-clad guides.

When the name "George Platen" was finally called, his sense of relief was exceeded only by the feeling of pure gladness at the fact that Stubby Trevelyan still stood in his place, uncalled.

George shouted back over his shoulder as he left, "Yay, Stubby, maybe they don't want you."

That moment of gayness quickly left. He was herded into a line and directed down corridors in the company of strange children. They all looked at one another, large-eyed and concerned but beyond a snuffling, "Quitcher pushing" and "Hey, watch out" there was no conversation.

They were handed little slips of paper which they were told must remain with them. George stared at

his curiously. Little black marks of different shapes. He knew it to be printing, but how could anyone make words out of it? He couldn't imagine.

He was told to strip; he and four other boys, who were all that now remained together. All the new clothes came shucking off and four eight-year-olds stood naked and small, shivering more out of embarrassment than cold. Medical technicians came past, probing them, testing them with odd instruments, pricking them for blood. Each took the little card and made additional marks on them with little black rods that produced the marks with great speed, all neatly-lined up. George stared at the new marks, but they were no more comprehensible than the old. The children were ordered back into their clothes.

They sat on separate little chairs then and waited again. Names were called again and "George Platen" came third.

He moved into a large room, filled with frightening instruments with knobs and glassy panels in front. There was a desk in the very center and behind it a man sat, his eyes on the papers piled before him.

He said, "George Platen?"

"Yes, sir," said George, in a shaky whisper. All this waiting and all this going here and there was making him nervous. He wished it were over.

The man behind the desk said, "I am Dr. Lloyed, George. How are you?"

The doctor didn't look up as he spoke. It was as though he had said those words over and over again and didn't have to look up any more.

"I'm all right."

"Are you afraid, George?"

"N-no, sir," said George, sounding afraid even in his own ears.

"That's good," said the doctor, "because there's nothing to be afraid of, you know. Let's see, George. It says here on your card that your father is named Peter and that he's a Registered Pipe-fitter and your mother is named Amy and is a Registered Home Technician. Is that right?"

"Y-yes, sir."

"And your birthday is February 13th, and you had an ear infection about a year ago. Right?

"Yes, sir."

"Do you know how I know all these things?"

"It's on the card, I think, sir."

"That's right." The doctor looked up at George for the first time and smiled. He showed even teeth and looked much younger than George's father. He wore contact lenses which made his eyes sparkle. Some of George's nervousness vanished.

The doctor passed the card to George. "Do you know what all those things there mean, George?"

Although George knew he did not he was startled by the sudden request into looking at the card as though he might understand now through some sudden stroke of fate. But they

were just marks as before and he passed the card back. "No, sir."

"Why not?"

George felt a sudden pang of suspicion concerning the sanity of this doctor. Didn't he know why not?

George said, "I can't read, sir."

"Would you like to read?"

"Yes, sir."

"Why, George?"

George stared, appalled. No one had ever asked him that. He had no answer. He said, falteringly, "I don't know, sir."

"Printed information will direct you all through your life. There is so much you'll have to know even after Education Day. Cards like this one will tell you. Books will tell you. Television screens will tell you. Printing will tell you such useful things and such interesting things that not being able to read would be as bad as not being able to see. Do you understand?"

"Yes, sir."

"Are you afraid, George?"

"No, sir."

"Good. Now I'll tell you exactly what we'll do first. I'm going to put these wires on your forehead just over the corners of your eyes. They'll stick there, but they won't hurt at all. Then, I'll turn on something that will make a buzz. It will sound funny and it may tickle you, but it won't hurt. Now if it does hurt, you tell me, and I'll turn it off right away, but it won't hurt. All right?"

George nodded and swallowed.

"Are you ready?"

George nodded. He closed his eyes while the doctor busied himself. His parents had explained this to him. They, too, had said it would not hurt, but then there were always the older children. There were the ten and twelve-year olds who howled after the eight-year olds waiting for Reading Day. "Watch out for the needle." There were the others who took you off in confidence and said, "They got to cut your head open. They use a sharp knife that big with a hook on it," and so on into horrifying details.

George had never believed them but he had had nightmares and now he closed his eyes and felt pure terror.

He didn't feel the wires at his temple. The buzz was a distant thing and there was the sound of his own blood in his ears, ringing hollowly as though it and he were in a large cave. Slowly he chanced opening his eyes.

The doctor had his back to him. From one of the instruments, a strip of paper unwound and was covered with a thin, wavy purple line. The doctor tore off pieces and put them into a slot in another machine. He did it over and over again. Each time a little piece of film came out which the doctor looked at. Finally, he turned toward George with a queer frown between his eyes.

The buzzing stopped.

George said, breathlessly, "Is it over?"

The doctor said, "Yes," but he was still frowning.

"Can I read now?" asked George. He felt no different.

The doctor said, "What?" then smiled very suddenly and briefly. He said, "It works fine, George. You'll be reading in fifteen minutes. Now we're going to use another machine this time and it will take longer. I'm going to cover your whole head and when I turn it on you won't be able to see, or hear, anything for a while, but it won't hurt. Just to make sure I'm going to give you a little switch to hold in your hand. If anything hurts, you press the little button and everything shuts off. All right?"

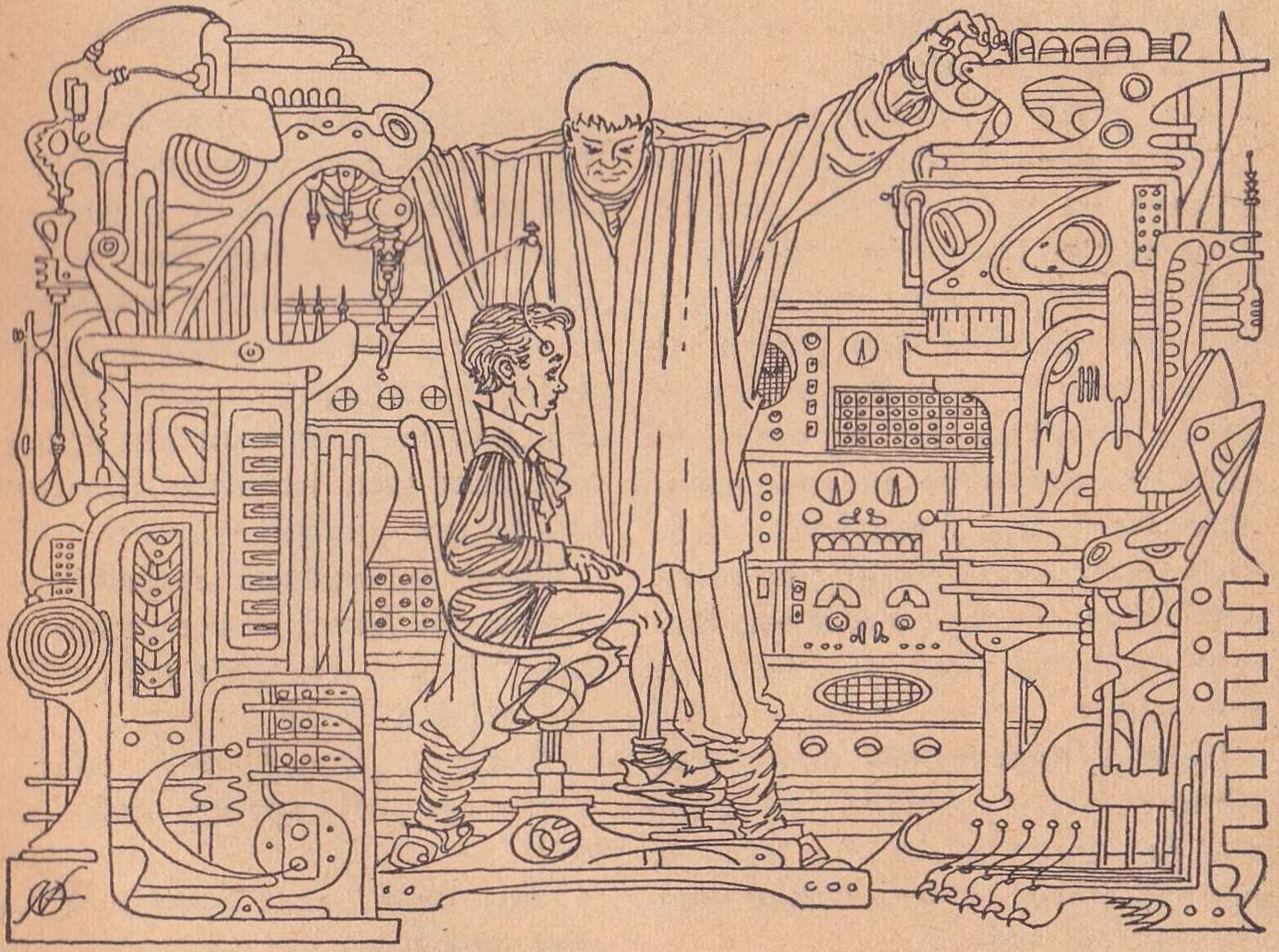
In later years, George was told that the little switch was strictly a dummy; that it was introduced solely for confidence. He never did know of his own knowledge, however, since he never pushed the button.

A large smoothly-curved helmet with a rubbery inner lining was placed over his head and left there. Three or four little knobs seemed to grab at him and bite into his skull, but there was only a little pressure that faded. No pain.

The doctor's voice sounded dimly. "Everything all right, George?"

And then, with no real warning, a layer of thick felt closed down all about him. He was disembodied, there was no sensation, no universe, only himself and a distant murmur at the very ends of nothingness telling him something—telling him—telling him—

He strained to hear and under-



stand but there was all that felt between.

Then the helmet was taken off his head and the light was so bright that it hurt his eyes while the doctor's voice drummed at his ears.

The doctor said, "Here's your card, George. What does it say?"

George looked at his card again and gave out a strangled shout. The marks weren't just marks at all. They made up words. They were words just as clearly as though something were whispering them in his ears. He could *hear* them being whispered as he looked at them.

"What does it say, George?"

"It says . . . it says . . . 'Platen, George. Born 13 February 6492 of Peter and Amy Platen in—'" He broke off.

"You can read, George," said the doctor. "It's all over."

"For good? I won't forget how?"

"Of course not." The doctor leaned over to shake hands gravely. "You will be taken home now."

It was days before George got over this new and great talent of his. He read for his father with such facility that Platen, Senior, wept and called relatives to tell the good news.

George walked about town, reading every scrap of printing he could find and wondering how it was that none of it had ever made sense to him before.

He tried to remember how it was not to be able to read and he could not. As far as his feeling about it was concerned, he had always been able to read. Always.

At eighteen, George was rather dark, of medium height, but thin enough to look taller. Trevelyan, who was scarcely an inch shorter, had a stockiness of build that made "Stubby" more than ever appropriate, but in this last year he had grown self-conscious. The nickname could no longer be used without reprisal. And since Trevelyan disapproved of his proper first name even more strongly, he was called Trevelyan or any decent variant of that. As though to prove his manhood further, he had most persistently grown a pair of sideburns and a bristly mustache.

He was sweating and nervous now, and George, who had himself grown out of "Jaw-jee" and into the curt monosyllabic gutterality of "George" was rather amused by that.

They were in the same large hall they had been in ten years before—and not since. It was as if a vague dream of the past had come to sudden reality. In the first few minutes, George had been distinctly surprised at finding everything seem smaller and more cramped than his memory told him; then he made allowance for his own growth.

The crowd was smaller than it had been in childhood. It was exclusively male this time. The girls had another day assigned them.

Trevelyan leaned over to say, "Beats me the way they make you wait."

"Red tape," said George. "You can't avoid it."

Trevelyan said, "What makes *you* so tolerant about it?"

"I've got nothing to worry about."

"Oh, brother, you make me sick. I hope you end up Registered Manure-Spreader just so I can see your face when you do." His somber eyes swept the crowd anxiously.

George looked about, too. It wasn't quite the system they used on the children. Matters went slower and instructions had been given out at the start in print—an advantage over the pre-Readers. The names Platen and Trevelyan were well down the alphabet still but this time, the two knew it.

Young men came out of the education rooms, frowning and uncomfortable, picked up their clothes and belongings, then went off to analysis to learn the results.

Each, as he came out, would be surrounded by a clot of the thinning crowd. "How was it?" "How'd it feel?" "Whacha think ya made?" "Ya feel any different?"

Answers were vague and noncommittal.

George forced himself to remain out of those clots. You only raised your own blood pressure. Everyone said you stood the best chance if you remained calm. Even so, you could feel the palms of your hands grow cold. Funny, that new tensions came with the years.

For instance, high-specialty professionals heading out for an Out-world were accompanied by a wife—or husband. It was important to keep the sex-ratio in good balance on all worlds. And if you were going out to a Grade A world, what girl would refuse you? George had no specific girl in mind yet; he wanted none. Not now! Once he made programmer; once he could add to his name, Registered Computer Programmer, he could take his pick like a sultan in a harem. The thought excited him and he tried to put it away. Must stay calm.

Trevelyan muttered, "What's it all about anyway? First, they say it works best if you're relaxed and at ease. Then they put you through this and make it impossible for you to be relaxed and at ease."

"Maybe that's the idea. They're separating the boys from the men to begin with. Take it easy, Trev."

"Shut up."

George's turn came. His name was not called. It appeared in glowing letters on the notice board.

He waved at Trevelyan. "Take it easy. Don't let it get you."

He was happy as he entered the testing chamber. Actually happy.

The man behind the desk said, "George Platen?"

For a fleeting instant, there was a razor-sharp picture in George's mind of another man, ten years earlier, who had asked the same question, and it was almost as though this were the same man and he, George, had turned eight again as he had stepped across the threshold.

But the man looked up and, of course, the face matched that of the sudden memory not at all. The nose

was bulbous, the hair thin and stringy and the chin wattled as though its owner had once been grossly overweight and had reduced.

The man behind the desk looked annoyed. "Well?"

George came to Earth. "I'm George Platen, sir."

"Say so, then. I'm Dr. Zachary Antonelli, and we're going to be intimately acquainted in a moment."

He stared at small strips of film, holding them up to the light owlishly.

George winced inwardly. Very hazily, he remembered that other doctor—he had forgotten the name—staring at such film. Could these be the same? The other doctor had frowned and this one was looking at him now as though he were angry.

His happiness was already just about gone.

Dr. Antonelli spread the pages of a thickish file out before him now and put the films carefully to one side. "It says here you want to be a Computer Programmer."

"Yes, doctor."

"Still do?"

"Yes, sir."

"It's a responsible and exacting position. Do you feel up to it?"

"Yes, sir."

"Most pre-Educates don't put down any specific profession. I believe they are afraid of queering it."

"I think that's right, sir."

"Aren't you afraid of that?"

"I might as well be honest, sir."

Dr. Antonelli nodded, but without any noticeable lightening of his expression. "Why do you want to be a Programmer?"

"It's a responsible and exacting position as you said, sir. It's an important job and an exciting one. I like it and I think I can do it."

Dr. Antonelli put the papers away, and looked at George, sourly. He said, "How do you know you like it? Because you think you'll be snapped up by some Grade A planet?"

George thought uneasily: He's trying to rattle you. Stay calm and stay frank.

He said, "I think a Programmer has a good chance, sir, but even if I were left on Earth, I know I'd like it." (That was true enough. I'm not lying, thought George.)

"All right, how do you know?"

He asked it as though he knew there were no decent answer and George almost smiled. He had one.

He said, "I've been reading about Programming, sir."

"You've been *what*?" Now the doctor looked genuinely astonished and George took pleasure in that.

"Reading about it, sir. I bought a book on the subject and I've been studying it."

"A book for Registered Programmers?"

"Yes, sir."

"But you couldn't understand it."

"Not at first. I got other books on mathematics and electronics. I made out all I could. I still don't know much, but I know enough to know I like it and to know I can make it."

(Even his parents had never found that secret cache of books or knew why he spent so much time in his own room or exactly what happened to the sleep he missed.)

The doctor pulled at the loose skin under his chin. "What was your idea in doing that, son?"

"I wanted to make sure I would be interested, sir."

"Surely you know that being interested means nothing. You could be devoured by a subject and if the physical make-up of your brain makes it more efficient for you to be something else, something else you will be. You know that, don't you?"

"I've been told that," said George, cautiously.

"Well, believe it. It's true."

George said nothing.

Dr. Antonelli said, "Or do you believe that studying some subject will bend the brain-cells in that direction, like that other theory that a pregnant woman need only listen to great music persistently to make a composer of her child? Do you believe that?"

George flushed. That had certainly been in his mind. By forcing his intellect constantly in the desired direction, he had felt sure that he would be getting a head-start. Most of his confidence had rested on exactly that point.

"I never—" he began, and found no way of finishing.

"Well, it isn't true. Good Lord, youngster, your brain pattern is fixed at birth. It can be altered by a blow hard enough to damage the cells, or by a burst blood vessel, or by a tumor, or by a major infection—each time, of course, for the worse. But it certainly can't be affected by your thinking special thoughts." He stared at George thoughtfully, then said, "Who told you to do this?"

George, now thoroughly disturbed, swallowed and said, "No one, doctor. My own idea."

"Who knew you were doing it after you started?"

"No one. Doctor, I meant to do no wrong."

"Who said anything about wrong? Useless is what I would say. Why did you keep it to yourself?"

"I . . . I thought they'd laugh at me." (He thought abruptly of a recent exchange with Trevelyan. George had very cautiously broached the thought, as of something merely circulating distantly in the very outermost reaches of his mind, concerning the possibility of learning something by ladling it into the mind by hand, so to speak, in bits and pieces. Trevelyan had hooted, "George, you'll be tanning your own shoes next and weaving your own shirts." He had been thankful then for his policy of secrecy.)

Dr. Antonelli shoved the bits of film he had first looked at from position to position in morose thought. Then he said, "Let's get you analyzed. This is getting me nowhere."

The wires went to George's temples. There was the buzzing. Again there came a sharp memory of ten years ago.

George's hands were clammy; his heart pounded. He should never have told the doctor about his secret reading.

It was his vanity, he told himself. He had wanted to show how enterprising he was, how full of initiative. Instead, he had showed himself superstitious and ignorant and aroused the hostility of the doctor. (He could tell the doctor hated him for a wise-guy on the make.)

And now he had brought himself to such a state of nervousness, he was sure the Analyzer would show nothing that made sense.

He wasn't aware of the moment when the wires were removed from his temples. The sight of the doctor, staring at him thoughtfully, blinked into his consciousness and that was that; the wires were gone. George dragged himself together with a tearing effort. He had quite given up his ambitions to be a Programmer. In the space of ten minutes, it had all gone.

He said, dismally. "I suppose no?"

"No what?"

"No Programmer?"

The doctor rubbed his nose and said, "You get your clothes and whatever belongs to you and go to Room 15-C. Your files will be waiting for you there. So will my report."

George said in complete surprise, "Have I been Educated already? I thought this was just to—"

Dr. Antonelli stared down at his desk. "It will all be explained to you. You do as I say."

George felt something like panic. What was it they couldn't tell him? He wasn't fit for anything but Registered Laborer. They were going to prepare him for that; adjust him to it.

He was suddenly certain of it and he had to keep from screaming by main force.

He stumbled back to his place of waiting. Trevelyan was not there, a fact for which he would have been thankful if he had enough self-possession to be meaningfully aware of his surroundings. Hardly anyone was left, in fact, and the few who were looked as though they might ask him questions were it not that they were too worn-out by their tail-of-the-alphabet waiting to buck the fierce, hot look of anger and hate he cast at them.

What right had *they* to be technicians and he, himself, a laborer. Laborer! He was *certain*!

He was led by a red-uniformed guide along the busy corridors, lined with separate rooms each containing its groups, here two, there five; the Motor Mechanics, the Construction Engineers, the Agronomists— There were hundreds of specialized professions and most of them would be represented in this small town by one or two anyway.

He hated them all just then; the Statisticians, the Accountants, the lesser breeds and the higher. He hated them because they owned their smug knowledge now, knew their fate, while he himself, empty still,

had to face some kind of further red tape.

He reached 15-C, was ushered in and left in an empty room. For one moment, his spirits bounded. Surely, if this were the Labor classification room, there would be dozens of youngsters present.

A door sucked into its recess on the other side of a waist-high partition and an elderly, white-haired man stepped out. He smiled and showed even teeth that were obviously false, but his face was still ruddy and unlined and his voice had vigor.

He said, "Good evening, George. Our own sector has only one of you this time, I see."

"Only one?" said George, blankly.

"Thousands over the Earth, of course. Thousands. You're not alone."

George felt exasperated. He said, "I don't understand, sir. What's my classification? What's happening?"

"Easy, son. You're all right. It could happen to anyone." He held out his hand and George took it mechanically. It was warm and it pressed George's hand firmly. "Sit down, son. I'm Sam Ellenford."

George nodded impatiently. "I want to know what's going on, sir."

"Of course. To begin with, you can't be a Computer Programmer, George. You've guessed that, I think."

"Yes, I have," said George, bitterly. "What will I be, then?"

"That's the hard part to explain, George." He paused, then said with careful distinctness, "Nothing."

"What!"

"Nothing!"

"But what does that mean? Why can't you assign me a profession?"

"We have no choice in the matter, George. It's the structure of your mind that decides that."

George went a sallow yellow. His eyes bulged. "There's something wrong with my mind?"

"There's *something* about it. As far as professional classification is concerned, I suppose you can call it wrong."

"But why?"

Ellenford shrugged. "I'm sure you know how Earth runs its educational program, George. Practically any human being can absorb practically any body of knowledge, but each individual brain pattern is better suited to receiving some types of knowledge than others. We try to match mind to knowledge as well as we can within the limits of the quota requirements for each profession."

George nodded. "Yes, I know."

"Every once in a while, George, we come up against a young man whose mind is not suited to receiving a superimposed knowledge of any sort."

"You mean I can't be Educated?"

"That is what I mean."

"But that's crazy. I'm intelligent. I can understand—" He looked helplessly about as though trying to find some way of proving that he had a functioning brain.

"Don't misunderstand me, please," said Ellenford, gravely. "You're intelligent. There's no question about that. You're even above average in intelligence. Unfortunately that has nothing to do with whether the mind ought to be allowed to accept superimposed knowledge or not. In fact, it is almost always the intelligent person who comes here."

"You mean I can't even be a Registered Laborer?" babbled George. Suddenly, even that was better than the blank that faced him. "What's there to know to be a Laborer?"

"Don't underestimate the Laborer, young man. There are dozens of subclassifications and each variety has its own corpus of fairly detailed knowledge. Do you think there's no skill in knowing the proper manner of lifting a weight? Besides, to be a Laborer, we must select not only minds suited to it, but bodies as well. You're not the type, George, to last long as a Laborer."

George was conscious of his slight build. He said, "But I've never heard of anyone without a profession."

"There aren't many," conceded Ellenford. "And we protect them."

"Protect them?" George felt confusion and fright grow higher inside him.

"You're a ward of the planet, George. From the time you walked through that door, we've been in charge of you." And he smiled.

It was a fond smile. To George it seemed the smile of ownership; the smile of a grown man for a helpless child.

He said, "You mean, I'm going to be in prison?"

"Of course not. You will simply be with others of your kind."

Your kind. The words made a kind of thunder in George's ear.

Ellenford said, "You need special treatment. We'll take care of you."

To George's own horror, he burst into tears. Ellenford walked to the other end of the room and faced away as though in thought.

George fought to reduce the agonized weeping to sobs and then to strangle those. He thought of his father and mother, of his friends, of Trevelyan, of his own shame—

He said, rebelliously, "I learned to read."

"Everyone with a whole mind can do that. We've never found exceptions. It is at this stage that we discover—exceptions. And when you learned to read, George, we were concerned about your mind-pattern. Certain peculiarities were reported even then by the doctor in charge."

"Can't you try Educating me. You haven't even tried. I'm willing to take the risk."

"The law forbids us to do that, George. But look, it will not be bad. We will explain matters to your family so they will not be hurt. At the place to which you'll be taken, you'll be allowed privileges. We'll get you books and you can learn what you will."

"Dab knowledge in by hand,"

said George, bitterly. "Shred by shred. Then, when I die I'll know enough to be a Registered Junior Office Boy, Paper Clip Division."

"Yet I understand you've already been studying books."

George froze. He was struck devastatingly by sudden understanding. "That's it."

"What is?"

"That fellow Antonelli. He's knifing me."

"No, George. You're quite wrong."

"Don't tell me that." George was in an ecstasy of fury. "That bum is selling me out because he thought I was a little too wise for him. I read books and tried to get a head-start toward Programming. Well, what do you want to square things? Money? You won't get it. I'm getting out of here and when I finish broadcasting this—"

He was screaming.

Ellenford shook his head and contacted a signal.

Two men entered on cat-feet and got on either side of George. They pinned his arms to his sides. One of them used an airspray hypodermic in the hollow of his right elbow and the hypnotic entered his vein and had an almost immediate effect.

His screams cut off and his head fell forward. His knees buckled and only the men on either side kept him erect as he slept.

They took care of George as they said they would; they were good to him and unfailingly kind—about the way, George thought, he himself would be to a sick kitten he had taken pity on.

They told him that he should sit up and take some interest in life; and then told him that most people who came there had the same attitude of despair at the beginning and that he would snap out of it.

He didn't even hear them.

Dr. Ellenford himself visited him to tell him that his parents had been informed that he was away on special assignment.

George muttered, "Do they know—"

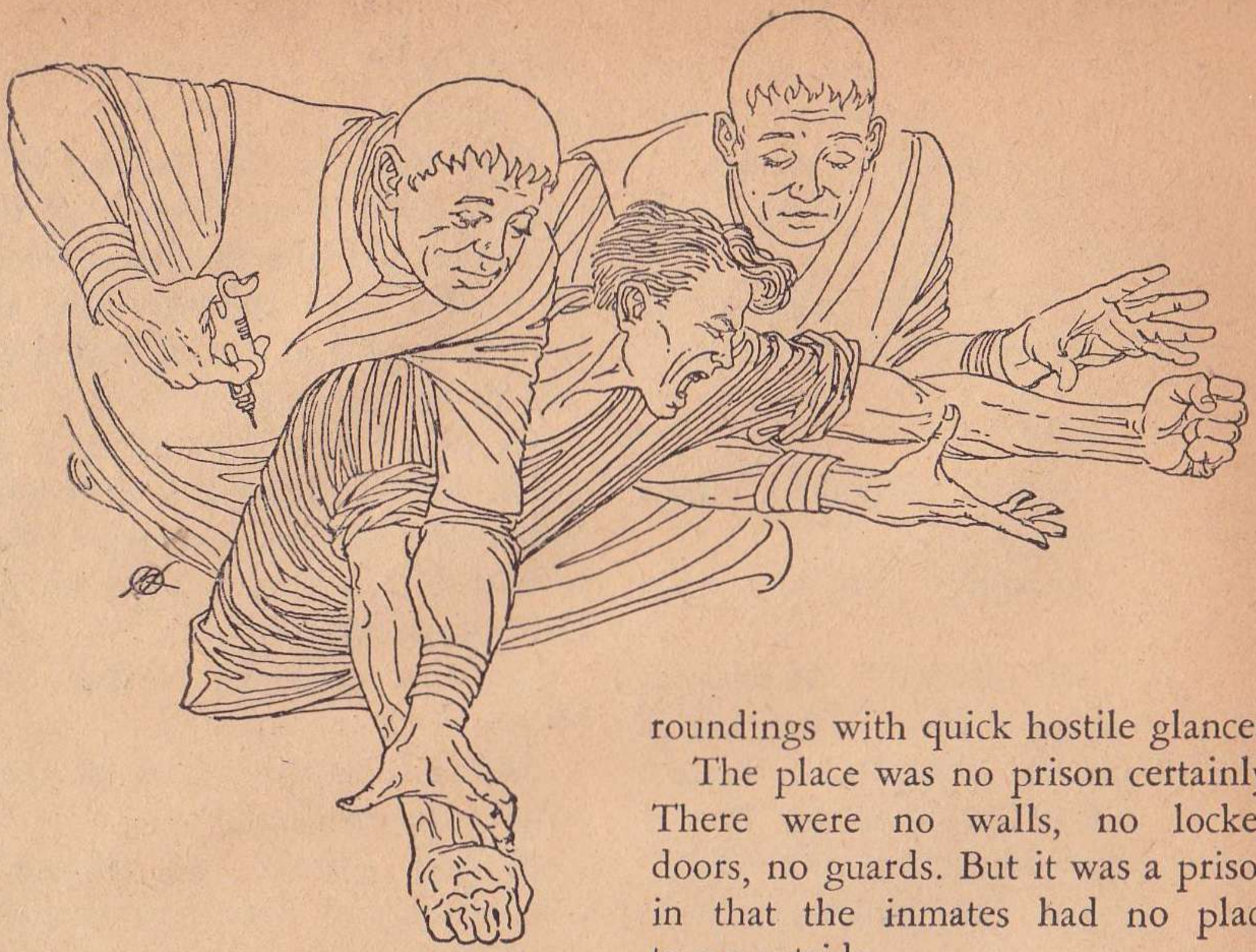
Ellenford assured him at once, "We gave no details."

At first, George had refused to eat. They fed him intravenously. They hid sharp objects and kept him under guard. Hali Omani came to be his roommate and his stolidity had a calming effect.

One day out of sheer desperate boredom, George asked for a book. Omani, who himself read books constantly, looked up, smiling broadly. George almost withdrew the request then, rather than give any of them satisfaction, then thought: What do I care?

He didn't specify the book and Omani brought one on chemistry. It was in big print, with small words and many illustrations. It was for teen-agers. He threw the book violently against the wall.

That's what he would be always —a teen-ager all his life. A pre-Educate forever and special books would have to be written for him.



He lay smoldering in bed, staring at the ceiling and after an hour had passed, he got up sulkily, picked up the book and began reading.

It took him a week to finish it and then he asked for another.

"Do you want me to take the first one back?" asked Omani.

George frowned. There were things in the book he had not understood, yet he was not so lost to shame as to say so.

But Omani said, "Come to think of it, you'd better keep it. Books are meant to be read and reread."

It was that same day that he finally yielded to Omani's invitation that he tour the place. He dogged at the Nigerian's feet and took in his surroundings with quick hostile glances.

The place was no prison certainly. There were no walls, no locked doors, no guards. But it was a prison in that the inmates had no place to go outside.

It was somehow good to see others like himself by the dozen. It was so easy to believe himself to be the only one in the world so—maimed.

He mumbled, "How many people here anyway?"

"Two hundred and five, George, and this isn't the only place of the sort in the world. There are thousands."

Men looked up as he passed, wherever he went; in the gymnasium, along the tennis courts; through the library—he had never in his life imagined books could exist in such numbers, they were stacked, actually stacked, along long shelves. They stared at him curiously and he returned the looks savagely. At least *they* were no better than

he; no call for *them* to look at him as though he were some sort of curiosity.

Most of them were in their twenties. George said, suddenly, "What happens to the older ones?"

Omani said, "This place specializes in the younger ones." Then, as though he suddenly recognized an implication in George's question that he had earlier missed, he shook his head gravely and said, "They're not put out of the way, if that's what you mean. There are other Houses for older ones."

"Who cares?" mumbled George, who felt he was sounding too interested and in danger of slipping into surrender.

"You might. As you grow older, you will find yourself in a House with occupants of both sexes."

That surprised George somehow. "Women, too?"

"Of course. Do you suppose women are immune to this sort of thing?"

George thought of that with more interest and excitement than he had felt for anything since before that day when— He forced his thought away from that.

Omani stopped at the doorway of a room that contained a small closed-circuit television set and a desk Computer. Five or six men sat about the television. Omani said, "This is a classroom."

George said, "What's that?"

"The young men in there are being educated. Not," he added, quickly, "in the usual way."

"You mean they're cramming it in bit by bit."

"That's right. This is the way everyone did it in ancient times."

This was what they kept telling him since he had come to the House, but what of it? Suppose there had been a day when mankind had not known the diatherm-oven. Did that mean he should be satisfied to eat meat raw in a world where others ate it cooked?

He said, "What do they want to go through that bit by bit stuff?"

"To pass the time, George, and because they're curious."

"What good does it do them?"

"It makes them happier."

George carried that thought to bed with him.

The next day he said to Omani, ungraciously, "Can you get me into a classroom where I can find out something about programming."

Omani replied heartily, "Sure."

It was slow and he resented it. Why should someone have to explain something and explain it again? Why should he have to read and reread a passage, then stare at a mathematical relationship and not understand it at once. That wasn't how other people had to be.

Over and over again, he gave up. Once he refused to attend classes for a week.

But always he returned. The official in charge, who assigned reading, conducted the television demonstrations and even explained difficult

passages and concepts, never commented on the matter.

George was finally given a regular task in the gardens and took his turn in the various kitchen and cleaning details. This was represented to him as being an advance, but he wasn't fooled. The place might have been far more mechanized than it was, but they deliberately made work for the young men in order to give them the illusion of worthwhile occupation, of usefulness. George wasn't fooled.

They were even paid small sums of money out of which they could buy certain specified luxuries or which they could put aside for a problematical use in a problematical old age. George kept his money in an open jar which he kept on a closet shelf. He had no idea how much he had accumulated. Nor did he care.

He made no real friends though he reached the stage where a civil good day was in order. He even stopped brooding—or almost stopped—on the miscarriage of justice that had placed him there. He would go weeks without dreaming of Antonelli, of his gross nose and wattled neck, of the leer with which he would push George into a boiling quicksand and hold him under till he woke screaming with Omani bending over him in concern.

Omani said to him on a snowy day in February, "It's amazing how you're adjusting."

But that was February, the thirteenth to be exact, his nineteenth birthday. March came, then April, and with the approach of May he realized he hadn't adjusted at all.

The previous May had passed unregarded while George was still in his bed, drooping and ambitionless. This May was different.

All over Earth, George knew, Olympics would be taking place and young men would be competing, matching their skills against one another in the fight for a place on a new world. There would be the holiday atmosphere, the excitement, the news reports, the self-contained recruiting agents from the worlds beyond space, the glory of victory or the consolations of defeat.

How much of fiction dealt with these motifs; how much of his own boyhood excitement lay in following the events of Olympics from year to year; how many of his own plans—

George Platen could not conceal the longing in his voice. It was too much to suppress. He said, "Tomorrow's the first of May. Olympics!"

And that led to his first quarrel with Omani and to Omani's bitter enunciation of the exact name of the institution in which George found himself.

Omani gazed fixedly at George and said, distinctly, "A House for the Feeble-minded."

George Platen flushed. Feeble-minded!

He rejected it desperately. He said in a monotone, "I'm leaving." He said it on impulse. His conscious

mind learned it first from the statement as he uttered it.

Omani, who had returned to his book, looked up. "What?"

George knew what he was saying now. He said it, fiercely, "I'm leaving."

"That's ridiculous. Sit down, George, calm yourself."

"Oh, no. I'm here on a frame-up, I tell you. This doctor, Antonelli, took a dislike to me. It's the sense of power these petty bureaucrats have. Cross them and they wipe out your life with a stylus mark on some card file."

"Are you back to that?"

"And staying there till it's all straightened out. I'm going to get to Antonelli somehow, break him, force the truth out of him." George was breathing heavily and he felt feverish. Olympics Month was here and he couldn't let it pass. If he did, it would be the final surrender and he would be lost for all time.

Omani threw his legs over the side of his bed and stood up. He was nearly six feet tall and the expression on his face gave him the look of a concerned St. Bernard. He put his arm about George's shoulder, "If I hurt your feelings—"

George shrugged him off. "You just said what you thought was the truth, and I'm going to prove it isn't the truth, that's all. Why not? The door's open. There aren't any locks. No one ever said I couldn't leave. I'll just walk out."

"All right, but where will you go?"

"To the nearest air terminal, then to the nearest Olympics center. I've got money." He seized the open jar that held the wages he had put away. Some of the coins jangled to the floor.

"That will last you a week maybe. Then what?"

"By then I'll have things settled."

"By then you'll come crawling back here," said Omani, earnestly, "with all the progress you've made to do over again. You're mad, George."

"Feeble-minded is the word you used before."

"Well, I'm sorry I did. Stay here, will you?"

"Are you going to try to stop me?"

Omani compressed his full lips. "No, I guess I won't. This is your business. If the only way you can learn is to buck the world and come back with blood on your face, go ahead. Well, go ahead."

George was in the doorway now, looking back over his shoulder. "I'm going," and came back to pick up his pocket grooming-set slowly. "I hope you don't object to my taking a few personal belongings."

Omani shrugged. He was in bed again, reading, indifferent.

George lingered at the door again, but Omani didn't look up.

George gritted his teeth, turned and walked rapidly down the empty corridor and out into the night-shrouded grounds.

He had expected to be stopped

before leaving the grounds. He wasn't. He had stopped at an all-night diner to ask directions to an air terminal and expected the proprietor to call the police. That didn't happen. He summoned a skimmer to take him to the airport and the driver asked no questions.

Yet he felt no lift at that. He arrived at the airport sick at heart. He had not realized how the outer world would be. He was surrounded by professionals. The diner's proprietor had had his name inscripted on the plastic shell over the cash register. So and so, Registered Cook. The man in the skimmer had his license up, Registered Chauffeur. George felt the bareness of his name and experienced a kind of nakedness because of it; worse, he felt skinned. But no one challenged him. No one studied him suspiciously and demanded proof of professional rating.

George thought bitterly: Who would imagine any human being without one?

He bought a ticket to San Francisco on the 3:00 a.m. plane. No other plane for a sizable Olympics center was leaving before morning and he wanted to wait as little as possible. As it was, he sat huddled in the waiting room, watching for the police. They did not come.

He was in San Francisco before noon and the noise of the city struck him like a blow. This was the largest city he had ever seen and he had been used to silence and calm for a year and a half now.

Worse, it was Olympics Month. He almost forgot his own predicament in his sudden awareness that some of the noise, excitement, confusion was due to that.

The Olympics boards were up at the airport for the benefit of the incoming travelers and crowds jostled around each one. Each major profession had its own board. Each listed directions to the Olympics Hall where the contest for that day for that profession would be given; the individuals competing and their city of birth; the Outworld—if any—sponsoring it.

It was a completely stylized thing. George had read descriptions often enough in the news-prints and films, watched matches on television and even witnessed a small Olympics in the Registered Butcher classification at the county seat. Even that, which had no conceivable Galactic implication—there was no Outworlder in attendance, of course—aroused excitement enough.

Partly, the excitement was caused simply by the fact of competition, partly by the spur of local pride—oh, when there was a home-town boy to cheer for, though he might be a complete stranger—and, of course, partly by betting. There was no way of stopping the last.

George found it difficult to approach the board. He found himself looking at the scurrying, avid onlookers in a new way.

There must have been a time when they themselves were Olympic material. What had *they* done? Nothing!

If they had been winners, they would be far out in the galaxy somewhere, not stuck here on Earth. Whatever they were, their profession must have made them Earth-bait from the beginning; or else they had made themselves Earth-bait by inefficiency at whatever high-specialized profession they had.

Now these failures stood about and speculated on the chances of newer and younger men. Vultures!

How he wished they were speculating on him.

He moved down the line of boards blankly, clinging to the outskirts of the groups about them. He had eaten breakfast on the strato and he wasn't hungry. He was afraid, though. He was in a big city during the confusion of the beginning of Olympics competition. That was protection, sure. The city was full of strangers. No one would question George. No one would care about George.

No one would care. Not even the House, thought George bitterly. They cared for him like a sick kitten, but if a sick kitten up and wanders off, well, too bad, what can you do?

And now that he was in San Francisco, what did he do? His thoughts struck blankly against a wall. See someone? Whom? How? Where would he even stay? The money he had left seemed pitiful.

The first shamefaced thought of going back came to him. He could go to the police— He shook his head violently as though arguing with a material adversary.

A word caught his eye on one of the boards, gleaming there. *Metallurgist.* In smaller letters, *non-ferrous.* At the bottom of a long list of names, in flowing script, *sponsored by Novia.*

It induced painful memories: himself arguing with Trevelyan, so certain that he himself would be a Programmer, so certain that a Programmer was superior to a Metallurgist, so certain that he was following the right course, so certain that he was clever—

So clever that he had to boast to that small-minded, vindictive Antonelli. He had been so sure of himself that moment when he had been called and had left the nervous Trevelyan standing there, so cocksure.

George cried out in a short, incoherent high-pitched gasp. Someone turned to look at him, then hurried on. People brushed past impatiently pushing him this way and that. He remained staring at the board, open-mouthed.

It was as though the board had answered his thought. He was thinking "Trevelyan" so hard that it had seemed for a moment that of course the board would say "Trevelyan" back at him.

But that *was* Trevelyan, up there. And *Armand* Trevelyan—Stubby's hated first name up in lights for everyone to see—and the right hometown. What's more, Trev had wanted Novia, aimed for Novia, insisted

on Novia; and this competition was sponsored by Novia.

This had to be Trev; good old Trev. Almost without thinking, he noted the directions for getting to the place of competition and took his place in line for a skimmer.

Then he thought somberly: Trev made it! He wanted to be a Metallurgist, and he made it!

George felt colder, more alone than ever.

There was a line waiting to enter the hall. Apparently, Metallurgy Olympics was to be an exciting and closely-fought one. At least, the illuminated sky-sign above the hall said so, and the jostling crowd seemed to think so.

It would have been a rainy day, George thought, from the color of the sky, but San Francisco had drawn the shield across its breadth from gulf to ocean. It was an expense to do so, of course, but all expenses were warranted where the comfort of Outworlders was concerned. They would be in town for the Olympics. They were heavy spenders. *And* for each recruit taken, there would be a fee both to Earth and to the local government from the planet sponsoring the Olympics. It paid to keep Outworlders in mind of a particular city as a pleasant place in which to spend Olympics time. San Francisco knew what it was doing.

George, lost in thought, was suddenly aware of a gentle pressure on his shoulder blade and a voice saying, "Are you on line here, young man?"

The line had moved up without George having noticed the widening gap. He stepped forward hastily and muttered, "Sorry, sir."

There was the touch of two fingers on the elbow of his jacket and he looked about furtively.

The man behind him nodded cheerfully. He had iron-gray hair and under his jacket he wore an old-fashioned sweater that buttoned down the front. He said, "I didn't mean to sound sarcastic."

"No offense."

"All right, then." He sounded cozily talkative. "I wasn't sure you might not simply be standing there, entangled with the line, so to speak, only by accident. I thought you might be a—"

"A what?" said George, sharply.

"Why, a contestant, of course. You look young."

George turned away. He felt neither cozy nor talkative, and bitterly impatient with busybodies.

A thought struck him. Had an alarm been sent out for him? Was his description known, or his picture. Was Gray-hair behind him trying to get a good look at his face?

He hadn't seen any news reports. He craned his neck to see the moving strip of news-headlines parading across one section of the city-shield, somewhat lackluster against the gray of the cloudy afternoon sky. It was no use. He gave up at once. The headlines would never concern themselves with him. This was

Olympics time and the only news worth headlining were the comparative scores of the winners and the trophies won by continents, nations and cities.

It would go on like that for weeks, with scores calculated on a per capita basis and every city finding some way of calculating itself into a position of honor. His own town had once placed third in an Olympics covering Wiring Technician; third in the whole state. There was still a plaque saying so in Town Hall.

George hunched his head between his shoulders and shoved his hands in his pocket and decided that made him more noticeable. He relaxed and tried to look unconcerned, and felt no safer. He was in the lobby now and no authoritative hand had yet been laid on his shoulder. He filed into the hall itself and moved as far forward as he could.

It was with an unpleasant shock that he noticed Gray-hair next to him. He looked away quickly and tried reasoning with himself. The man had been right behind him in line after all.

Gray-hair, beyond a brief and tentative smile, paid no attention to him and, besides, the Olympics was about to start. George rose in his seat to see if he could make out the position assigned to Trevelyan and at the moment that was his only concern.

The hall was moderate in size and shaped in the classical long oval, with the spectators in the two balconies running completely about the rim and the contestants in the linear trough down the center. The machines were set up, the progress boards above each bench were dark, except for the name and contest number of each man. The contestants themselves were on the scene, reading, talking together; one was checking his fingernails minutely. (It was, of course, considered bad form for any contestant to pay any attention to the problem before him until the instant of the starting signal.)

George studied the program sheet he found in the appropriate slot in the arm of his chair and found Trevelyan's name. His number was twelve and, to George's chagrin, that was at the wrong end of the hall. He could make out the figure of contestant twelve, standing with his hands in his pockets, back to his machine, and staring at the audience as though he were counting the house. George couldn't make out the face.

Still, that was Trev.

George sank back in his seat. He wondered if Trev would do well. He hoped, as a matter of conscious duty, that he would, and yet there was something within him that felt rebelliously resentful. George, professionless, here, watching. Trevelyan, Registered Metallurgist, Nonferrous, there, competing.

George wondered if Trevelyan had competed in his first year. Sometimes men did, if they felt particularly confident—or hurried. It involved a certain risk. However

efficient the educative process, a preliminary year on Earth—"oiling the stiff knowledge" as the expression went—insured a higher score.

If Trevelyan was repeating, maybe he wasn't doing so well. George felt ashamed that the thought pleased him just a bit.

He looked about. The stands were almost full. This would be a well-attended Olympics, which meant greater strain on the contestants—or greater drive, perhaps, depending on the individual.

Why Olympics, he thought suddenly? He had never known. Why was bread called bread?

Once he had asked his father: Why do they call it Olympics, Dad?

And his father had said: Olympics means competition.

George said: Is when Stubby and I fight an Olympics, Dad?

Platen, Senior, said: No. Olympics is a special kind of competition and don't ask silly questions. You'll know all you have to know when you get educated.

George, back in the present, sighed and crowded down into his seat.

All you have to know!

Funny that the memory should be so clear now. When you get educated. No one ever said, *if* you get educated.

He always asked silly questions, it seemed to him now. It was as though his mind had some instinctive foreknowledge of its inability to be Educated and had gone about asking questions in order to pick up scraps here and there as best it could.

And at the House they encouraged him to do so because they agreed with his mind's instinct. It was the only way.

He sat up suddenly. What the devil was he doing? Falling for that lie? Was it because Trev was there before him an Educee, competing in the Olympics that he himself was surrendering?

He *wasn't* feeble-minded! *No!*

And the shout of denial in his mind was echoed by the sudden clamor in the audience as everyone got to his feet.

The box seat in the very center of one long side of the oval was filling with an entourage wearing the colors of Novia, and the word "Novia" went up above them on the main board.

Novia was a Grade A world with a large population and a thoroughly-developed civilization, perhaps the best in the galaxy. It was the kind of world that every Earthman wanted to live in some day; or, failing that, to see his children live in. (George remembered Trevelyan's insistence on Novia as a goal—and there he was competing for it, by God.)

The lights went out in that section of the ceiling above the audience and so did the wall-lights. The central trough, in which the contestants waited, became flood-lit.

Again George tried to make out Trevelyan. Too far.

The clear, polished voice of the announcer sounded. "Distinguished Novian sponsors. Ladies. Gentlemen. The Olympics competition for Metallurgist, Nonferrous, is about to begin. The contestants are—"

Carefully and conscientiously, he read off the list in the program. Names. Hometowns. Educative year. Each name received its cheers; the San Franciscans among them receiving the loudest. When Trevelyan's name was reached, George surprised himself by shouting and waving madly. The gray-haired man next to him surprised him even more by cheering likewise.

George could not help but stare in astonishment and his neighbor leaned over to say—speaking loudly in order to be heard over the hubbub—"No one here from my hometown; I'll root for yours. Someone you know?"

George shrank back. "No."

"I noticed you looking in that direction. Would you like to borrow my glasses?"

"No. Thank you." (Why didn't the old fool mind his own business?)

The announcer went on with other formal details concerning the serial number of the competition, the method of timing and scoring and so on. Finally, he approached the meat of the matter and the audience grew silent as it listened.

"Each contestant will be supplied with a bar of nonferrous alloy of unspecified composition. He will be required to sample and assay the bar, reporting all results correctly to four decimals in per cent. All will utilize for this purpose, a Beeman Microspectrograph, Model FX-2, each of which is, at the moment, not in working order."

There was an appreciative shout from the audience.

"Each contestant will be required to analyze the fault of his machine and correct it. Tools, and spare parts are supplied. The spare part necessary may not be present in which case it must be asked for and time of delivery thereof will be deducted from final time. Are all contestants ready?"

The board above Contestant Five flashed a frantic red signal. Contestant Five ran off the floor and returned a moment later. The audience laughed good-naturedly.

"Are all contestants ready?"

The boards remained blank.

"Any questions?"

Still blank.

"You may begin."

There was, of course, no way anyone in the audience could tell how any contestant was progressing except for whatever notations went up on the notice board. But then, that didn't matter. Except for what professional metallurgists there might be in the audience, none would understand anything about the contest professionally in any case. What was important was who won, who was second, who was third. For those who had bets on the standings —illegal, but unpreventable—that

was all-important. Everything else might go hang.

George watched as eagerly as the rest, glancing from one contestant to the next, observing how this one had removed the cover from his microspectrograph with deft strokes of a small instrument; how that one was peering into the face of the thing; how still a third was setting his alloy bar into its holder; and how a fourth adjusted a vernier with such small touches that he seemed momentarily frozen.

Trevelyan was as absorbed as the rest. George had no way of telling how he was doing.

The notice board over Contestant 17 flashed: Focus-plate out of adjustment.

The audience cheered wildly.

Contestant 17 might be right and he might, of course, be wrong. If the latter, he would have to correct his diagnosis later and lose time. Or he might never correct his diagnosis and be unable to complete his analysis or, worse still, end with a completely wrong analysis.

Never mind. For the moment, the audience cheered.

Other boards lit up. George watched for Board 12. That came on finally. "Sample-holder off-center. New clamp-depresser needed."

An attendant went running to him with a new part. If Trevelyan were wrong, it would mean useless delay. Nor would the time elapsed in waiting for the part be deducted. George found himself holding his breath.

Results were beginning to go up on Board 17, in gleaming letters: aluminum, 41.2649; magnesium, 22.1914; copper 10.1001.

Here and there, other boards began sprouting figures.

The audience was in bedlam.

George wondered how the contestants could work in such pandemonium, then wondered if that were not even a good thing. A first-class technician should work best under pressure.

Seventeen rose from his place as his board went red-rimmed to signify completion. Four was only two seconds behind him. Another, then another.

Trevelyan was still working, the minor constituents of his alloy bar still unreported. With nearly all contestants standing, Trevelyan finally rose, also. Then, tailing off, Five rose, and received an ironic cheer.

It wasn't over. Official announcements were naturally delayed. Time elapsed was something, but accuracy was just as important. And not all diagnoses were of equal difficulty. A dozen factors had to be weighted.

Finally, the announcer's voice sounded. "Winner in the time of four minutes and twelve seconds, diagnosis correct, analysis correct within an average of zero point seven parts per hundred thousand, Contestant number — *seventeen*, Henry Anton Schmidt of . . ."

What followed was drowned in the screaming. Number Eight was next and then Four, whose good time was spoiled by a five-part in ten thousand error in the niobium figure.

Twelve was never mentioned. He was an also-ran.

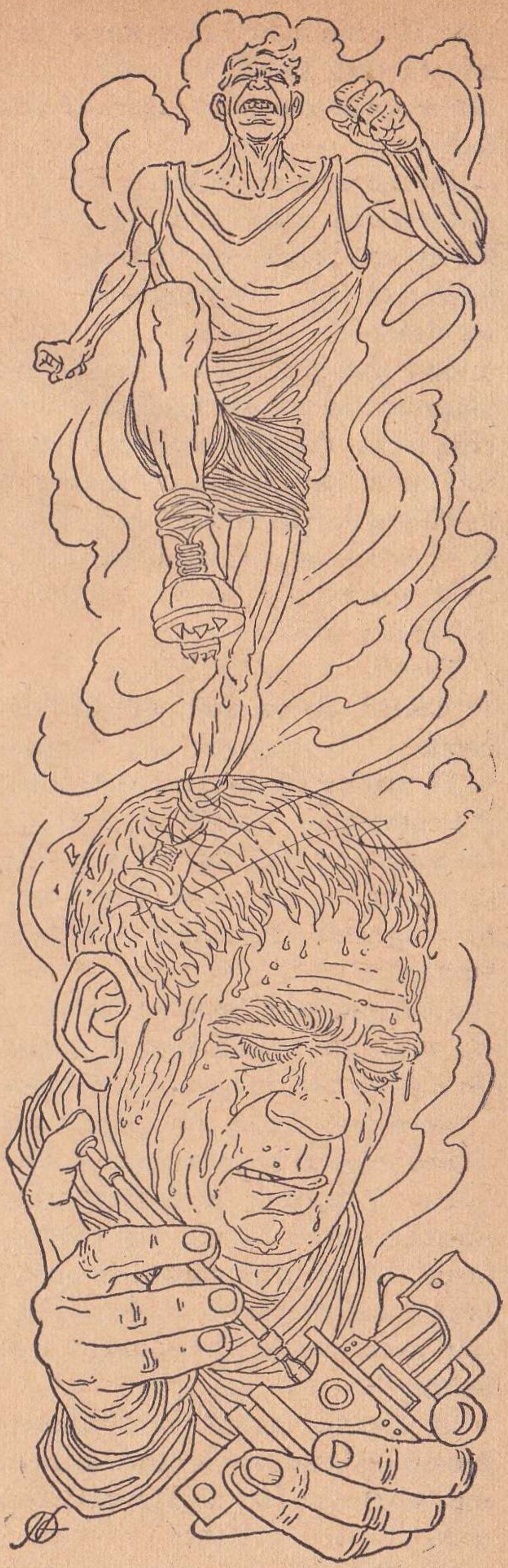
George made his way through the crowd to the Contestants' Door and found a large clot of humanity ahead of him. There would be weeping relatives—joy or sorrow, depending—to greet them, newsmen to interview the top-scorers, or the home-town boys, autograph hounds, publicity seekers and the just plain curious. Girls, too, who might hope to catch the eye of a top-scorer, almost certainly headed for Novia—or perhaps a low-scorer who needed consolation and had the cash to afford it.

George hung back. He saw no one he knew. With San Francisco so far from home, it seemed pretty safe to assume that there would be no relatives to condole with Trev on the spot.

Contestants emerged, smiling weakly, nodding at shouts of approval. Policemen kept the crowds far enough away to allow a lane for walking. Each high-scorer drew a portion of the crowd off with him, like a magnet pushing through a mound of iron filings.

When Trevelyan walked out, scarcely anyone was left. (George felt somehow that he had delayed coming out until just that had come to pass.) There was a cigarette in his dour mouth and he turned, eyes downcast, to walk off.

It was the first hint of home George had had in what was almost a year and a half and seemed almost



a decade and a half. He was almost amazed that Trevelyan hadn't aged, that he was the same Trev he had last seen.

George sprang forward. *"Trev!"*

Trevelyan spun about, astonished. He stared at George and then his hand shot out. "George Platen, *what* the devil—"

And almost as soon as the look of pleasure had crossed his face, it left. His hand dropped before George had quite the chance of seizing it.

"Were you in there?" A curt jerk of Trev's head indicated the hall.

"I was."

"To see me?"

"Yes."

"Didn't do so well, did I?" He dropped his cigarette and stepped on it, staring off to the street, where the emerging crowd was slowly eddying and finding its way into skimmers, while new lines were forming for the next scheduled Olympics.

Trevelyan said, heavily, "So what? It's only the second time I missed. Novia can go hang after the deal I got today. There are planets that would jump at me fast enough. But, listen, I haven't seen you since Education day. Where did you go? Your folks said you were on special assignment but gave no details and you never wrote. You might have written."

"I should have," said George, uneasily. "Anyway, I came to say I was sorry the way things went just now."

"Don't be," said Trevelyan. "I told you. Novia can go hang. At that I should have known. They've been saying for weeks that the Beeman machine would be used. All the wise money was on Beeman machines. The education tapes they ran through me was for Henslers and who uses Henslers? The worlds in the Goman Cluster if you want to call them worlds. Wasn't *that* a nice deal they gave me?"

"Can't you complain to—"

"Don't be a fool, jerk. They'll tell me my brain was built for Henslers. Go argue. *Everything* went wrong. I was the only one who had to send out for a piece of equipment. Notice that?"

"They deducted the time for that, though."

"Sure, but I lost time wondering if I could be right in my diagnosis when I noticed there wasn't any clamp depresser in the parts they had supplied. They don't deduct for that. If it had been a Hensler, I would have *known* I was right. How could I catch up then? The top winner was a San Franciscan. So were three of the next four. And the fifth guy was from Los Angeles. They get big-city educational tapes. The best available. Beeman spectrographs and all. How do I compete with them? I came all the way out here just to get a chance at a Novian-sponsored Olympics in my classification and I might just as well have stayed home. I knew it, I tell you, and that settles it. Novia isn't the only chunk of rock in space. Of all the . . ."

He wasn't speaking to George. He wasn't speaking to anyone. He was just uncorked and frothing. George realized that.

George said, "If you knew in advance that the Beemans were going to be used, couldn't you have studied up on them?"

"They weren't in my tapes, I tell you."

"You could have read—books."

The last word had tailed off under Trevelyan's suddenly sharp look.

Trevelyan said, "Are you trying to make a big laugh out of this? You think this is funny? How do you expect me to read some book and try to memorize enough to match someone else who *knows*."

"I thought—"

"You try it. You try—" Then, suddenly, "What's your profession, by the way?" He sounded thoroughly hostile.

"Well—"

"Come on, now. If you're going to be a wise guy with me, let's see what you've done. You're still on Earth, I notice, so you're not a Computer Programmer and your special assignment can't be much."

George said, "Listen, Trev, I'm late for an appointment." He backed away, trying to smile.

"No, you don't," Trevelyan reached out fiercely, catching hold of George's jacket. "You answer my question. Why are you afraid to tell me? What is it with you? Don't come here rubbing a bad showing in my face, George, unless you can take it, too. Do you hear me?"

He was shaking George in frenzy and they were struggling and swaying across the floor, when the Voice of Doom struck George's ear in the form of a policeman's outraged call.

"All right now. *All* right. Break it up."

George's heart turned to lead and lurched sickeningly. The policeman would be taking names, asking to see identity cards and George lacked one. He would be questioned and his lack of profession would show at once; and before Trevelyan, too, who ached with the pain of the drubbing he had taken and would spread the news back home as a salve for his own hurt feelings.

George couldn't stand that. He broke away from Trevelyan and made to run, but the policeman's heavy hand was on his shoulder. "Hold on, there. Let's see your identity card."

Trevelyan was fumbling for his, saying harshly, "I'm Armand Trevelyan, Metallurgist, Nonferrous. I was just competing in the Olympics. You better find out about him, though, officer."

George faced the two, lips dry and throat thickened past speech.

Another voice sounded, quiet, well-mannered. "Officer. One moment."

The policeman stepped back. "Yes, sir?"

"This young man is my guest. What is the trouble?"

George looked about in wild surprise. It was the gray-haired man

who had been sitting next to him. Gray-hair nodded benignly at George.

Guest? Was he mad?

The policeman was saying, "These two were creating a disturbance, sir."

"Any criminal charges? Any damages?"

"No, sir."

"Well, then, I'll be responsible." He presented a small card to the policeman's view and the latter stepped back at once.

Trevelyan began indignantly, "Hold on, now—" but the policeman turned on him.

"All right, now. Got any charges?"

"I just—"

"On your way. The rest of you—move on." A sizable crowd had gathered, which now, reluctantly, unknotted itself and raveled away.

George let himself be led to a skimmer but balked at entering.

He said, "Thank you, but I'm not your guest." (Could it be a ridiculous case of mistaken identity?)

But Gray-hair smiled and said, "You weren't but you are now. Let me introduce myself, I'm Ladislas Ingenescu, Registered Historian."

"But—"

"Come, you will come to no harm, I assure you. After all, I only wanted to spare you some trouble with a policeman."

"But why?"

"Do you want a reason? Well, then, say that we're honorary townsmates, you and I. We both shouted for the same man, remember, and we townspeople must stick together, even if the tie is only honorary. Eh?"

And George, completely unsure of this man, Ingenescu, and of himself as well, found himself inside the skimmer. Before he could make up his mind that he ought to get off again, they were off the ground.

He thought confusedly: The man has some status. The policeman deferred to him.

He was almost forgetting that his real purpose here in San Francisco was not to find Trevelyan but to find some person with enough influence to force a re-appraisal of his own capacity of education.

It could be that Ingenescu was such a man. And right in George's lap.

Everything could be working out fine—fine. Yet it sounded hollow in his thought. He was uneasy.

During the short skimmer-hop, Ingenescu kept up an even flow of small-talk, pointing out the landmarks of the city, reminiscing about past Olympics he had seen. George, who paid just enough attention to make vague sounds during the pauses, watched the route of light anxiously.

Would they head for one of the shield-openings and leave the city altogether?

No, they headed downward and George sighed his relief softly. He felt safer in the city.

The skimmer landed at the roof-entry of a hotel and, as he alighted,

Ingenescu said, "I hope you'll eat dinner with me in my room?"

George said, "Yes," and grinned unaffectedly. He was just beginning to realize the gap left within him by a missing lunch.

Ingenescu let George eat in silence. Night closed in and the wall-lights went on automatically. (George thought: I've been on my own almost twenty-four hours.)

And then over the coffee, Ingenescu finally spoke again. He said, "You've been acting as though you think I intend you harm."

George reddened, put down his cup and tried to deny it, but the older man laughed and shook his head.

"It's so. I've been watching you closely since I first saw you and I think I know a great deal about you now."

George half-rose in horror.

Ingenescu said, "But sit down. I only want to help you."

George sat down but his thoughts were in a whirl. If the old man knew who he was, why not have left him to the policeman? On the other hand, why should he volunteer help?

Ingenescu said, "You want to know why I should want to help you? Oh, don't look alarmed. I can't read minds. It's just that my training enables me to judge the little reactions that give minds away, you see. Do you understand that?"

George shook his head.

Ingenescu said, "Consider my first sight of you. You were waiting in line to watch an Olympics, and your micro-reactions didn't match what you were doing. The expression of your face was wrong, the action of your hands was wrong. It meant that something, in general, was wrong, and the interesting thing was that, whatever it was, it was nothing common, nothing obvious. Perhaps, I thought, it was something of which your own conscious mind was unaware.

"I couldn't help but follow you, sit next to you. I followed you again when you left and eavesdropped on the conversation between your friend and yourself. After that, well, you were far too interesting an object of study—I'm sorry if that sounds cold-blooded—for me to allow you to be taken off by a policeman. Now tell me, what is it that troubles you?"

George was in an agony of indecision. If this were a trap, why should it be such an indirect, roundabout one? And he *had* to turn to someone. He had come to the city to find help and here was help being offered. Perhaps what was wrong was that it was being offered. It came too easy.

Ingenescu said, "Of course, what you tell me as a social scientist is a privileged communication. Do you know what that means?"

"No, sir."

"It means, it would be dishonorable for me to repeat what you say to anyone for any purpose. Moreover no one has the legal right to compel me to repeat it."

George said, with sudden suspicion, "I thought you were an Historian."

"So I am."

"Just now you said you were a Social Scientist."

Ingenescu broke into loud laughter and apologized for it when he could talk. "I'm sorry, young man, I shouldn't laugh, and I wasn't really laughing at you. I was laughing at Earth and its emphasis on physical science, and the practical segments of it at that. I'll bet you can rattle off every sub-division of construction technology or mechanical engineering and yet you're a blank on social science."

"Well, then, what *is* social science?"

"Social science studies groups of human beings and there are many high-specialized branches to it, just as there are to zoology. For instance, there are culturists, who study the mechanics of cultures, their growth, development and decay. Cultures," he added, forestalling a question, "are all the aspects of a way of life. For instance it includes the way we make our living, the things we enjoy and believe, what we consider good and bad and so on. Do you understand?"

"I think I do."

"An Economist—not an Economic Statistician, now, but an Economist—specializes in the study of the way a culture supplies the bodily needs of its individual members. A Psychologist specializes in the individual member of a society and how he is affected by the society. A Futurist specializes in planning the future course of a society, and an Historian— That's where I come in, now."

"Yes, sir."

"An Historian specializes in the past development of our own society and of societies with other cultures."

George found himself interested. "Was it different in the past?"

"I should say it was. Until a thousand years ago, there was no Education; not what we call Education, at least."

George said, "I know. People learned in bits and pieces out of books."

"Why, how do you know this?"

"I've heard it said," said George cautiously. Then, "Is there any use in worrying about what's happened long ago? I mean, it's all done with, isn't it?"

"It's never done with, my boy. The past explains the present. For instance, why is our educational system what it is?"

George stirred restlessly. The man kept bringing the subject back to that. He said, snappishly, "Because it's best."

"Ah, but why is it best? Now you listen to me for one moment and I'll explain. Then you can tell me if there is any use in history. Even before interstellar travel was developed—" He broke off at the look of complete astonishment on George's face. "Well, did you think we always had it?"

"I never gave it any thought, sir."

"I'm sure you didn't. But there was a time, four or five thousand years ago, when mankind was confined to the surface of Earth. Even then, his culture had grown quite technological and his numbers had increased to the point where any failure in technology would mean mass starvation and disease. To maintain the technological level and advance it in the face of an increasing population, more and more technicians and scientists had to be trained, and yet, as science advanced, it took longer and longer to train them.

"As first interplanetary and then interstellar travel was developed, the problem grew more acute. In fact, actual colonization of extra-Solar planets was impossible for about fifteen hundred years because of a lack of properly trained men.

"The turning point came when the mechanics of the storage of knowledge within the brain was worked out. Once that had been done, it became possible to devise educational tapes that would modify the mechanics in such a way as to place within the mind a body of knowledge ready-made, so to speak. But you know about *that*.

"Once that was done, trained men could be turned out by the thousands and millions and we could begin what someone has since called the Filling of the Universe. There are now fifteen hundred inhabited planets in the galaxy and there is no end in sight.

"Do you see all that is involved? Earth exports education tapes for low-specialized professions and that keeps the galactic culture unified. For instance, the reading tapes insure a single language for all of us. Don't look so surprised, other languages are possible, and in the past were used. Hundreds of them.

"Earth also exports high-specialized professionals and keeps its own population at an endurable level. Since they are shipped out in a balanced sex ratio, they act as self-reproductive units and help increase the populations on the Outworlds where an increase is needed. Furthermore, tapes and men are paid for in material which we much need and on which our economy depends. *Now* do you understand why our Education is the best way?"

"Yes, sir."

"Does it help you to understand, knowing that without it, interstellar colonization was impossible for fifteen hundred years?"

"Yes, sir."

"Then you see the uses of history." The Historian smiled. "And now I wonder if you see why I'm interested in you."

George snapped out of time and space back to reality. Ingenescu, apparently, didn't talk aimlessly. All this lecture had been a device to attack him from a new angle.

He said, once again withdrawn, hesitating, "Why?"

"Social scientists work with soci-

eties and societies are made up of people."

"All right."

"But people aren't machines. The professionals in physical science work with machines. There is only a limited amount to know about a machine and the professionals know it all. Furthermore, all machines of a given sort are just about alike so that there is nothing to interest them in any given individual machine. But people, ah— They are so complex and so different one from another, that a social scientist never knows all there is to know or even a good part of what there is to know. To understand his own specialty, he must always be ready to study people; particularly unusual specimens."

"Like me," said George, tonelessly.

"I shouldn't call you a specimen, I suppose, but you are unusual. You're worth studying, and if you will allow me that privilege, then, in return, I will help you if you are in trouble and if I can."

There were pin wheels whirring in George's mind. All this talk about people and colonization made possible by Education. It was as though caked thought within him were being broken up and stored about mercilessly.

He said, "Let me think," and clamped his hands over his ears.

He took them away and said to the Historian. "Will you do something for me, sir?"

"If I can," said the Historian, amiably.

"And everything I say in this room is a privileged communication. You said so."

"And I meant it."

"Then get me an interview with an Outworld official; with . . . with a Novian."

Ingenescu looked startled. "Well, now—"

"You can do it," said George, earnestly. "You're an important official. I saw the policeman's look when you put that card in front of his eyes. If you refuse, I . . . I won't let you study me."

It sounded a silly threat in George's own ears; one without force. On Ingenescu, however, it seemed to have a strong effect.

He said, "That's an impossible condition. A Novian in Olympics month—"

"All right, then, get me a Novian on the phone and I'll make my own arrangements for an interview."

"Do you think you can?"

"I know I can. Wait and see."

Ingenescu stared at George thoughtfully and then reached for the visiphone.

George waited, half-drunk with this new outlook on the whole problem and the sense of power it brought. It couldn't miss. It *couldn't* miss. He would be a Novian yet. He would leave Earth in triumph despite Antonelli and the whole crew of fools at the House for the— he almost laughed aloud—Feeble-minded.

George watched eagerly as the visiplate lit up. It would open up a window into a room of Novians, a window into a small patch of Novia transplanted to Earth. In twenty-four hours, he had accomplished that much.

There was a burst of laughter as the 'plate unmisted and sharpened but for the moment no single head could be seen but rather the fast passing of the shadows of men and women, this way and that. A voice was heard, clear-worded over a background of babble. "Ingenescu? He wants me?"

Then there he was, staring out of the 'plate. A Novian. A genuine Novian. (George had not an atom of doubt. There was something completely Outworldly about him. Nothing that could be completely defined, or even momentarily mistaken.)

He was swarthy in complexion with a dark wave of hair combed rigidly back from his forehead. He wore a thin black mustache and a pointed beard, just as dark, that scarcely reached below the lower limit of his narrow chin, but the rest of his face was so smooth it looked as though it had been depilitated permanently.

He was smiling. "Ladislas, this goes too far. We fully expect to be spied on, within reason, during our stay on Earth, but mind-reading is out of bounds."

"Mind-reading, Honorable?"

"Confess! You knew I was going to call you this evening. You knew I was only waiting to finish this drink." His hand moved up into view and his eye peered through a small glass of a faintly violet liqueur. "I can't offer you one, I'm afraid."

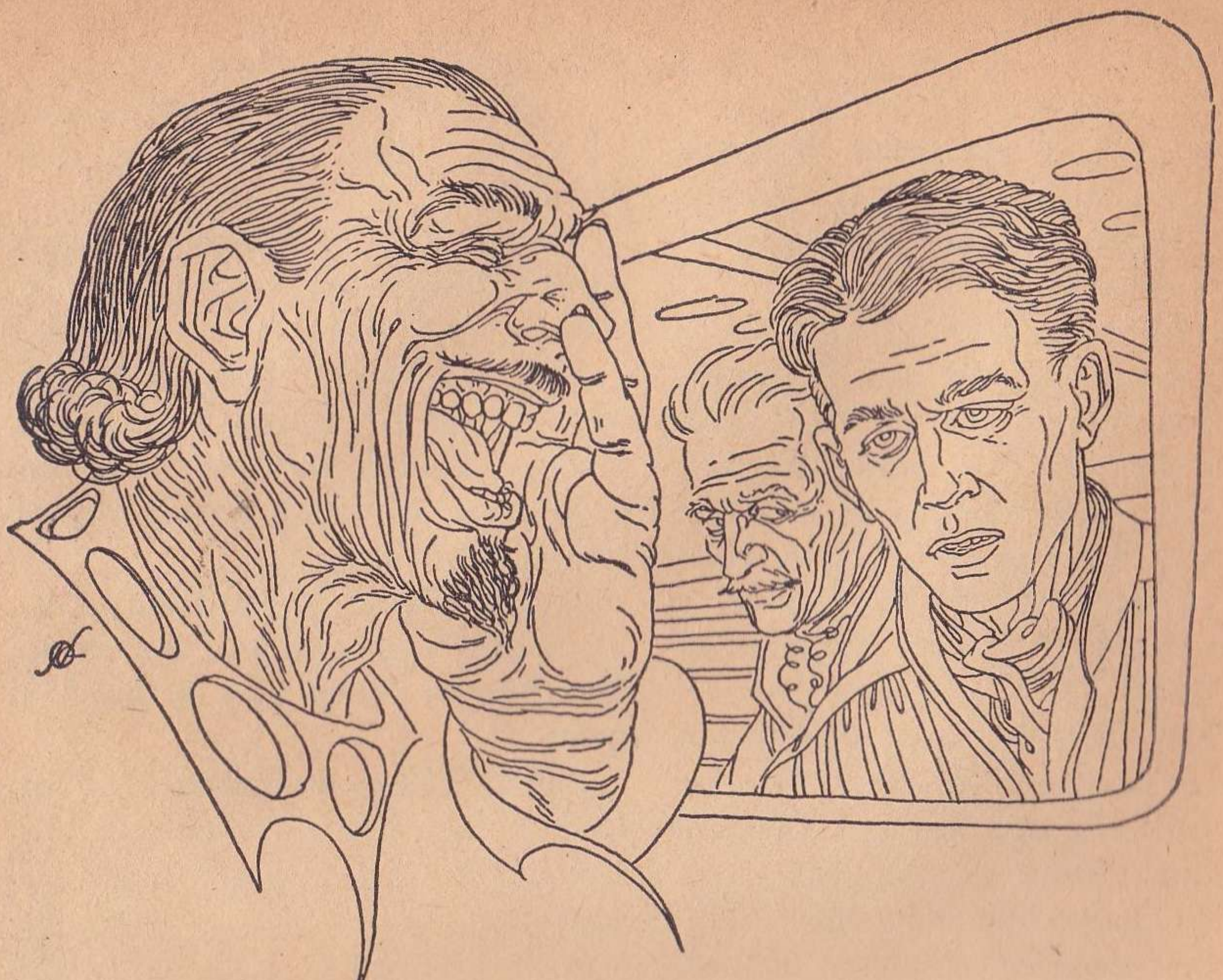
George, out of range of Ingenescu's transmitter, could not be seen by the Novian. He was relieved at that. He wanted time to compose himself and he needed it badly. It were as though he were made up exclusively of restless fingers, drumming, drumming—

But he was right. He hadn't miscalculated. Ingenescu *was* important. The Novian called him by his first name.

Good! Things worked well. What George had lost on Antonelli, he would make up, with advantage, on Ingenescu. And some day, when he was in his own at last, and could come back to Earth as powerful a Novian as this one that could negligently joke with Ingenescu's first name and be addressed as "honorable" in turn—when he came back, he would settle with Antonelli. He had a year and a half to pay back and he—

He all but lost his balance on the brink of the enticing daydream and snapped back in sudden anxious realization that he was losing the thread of what was going on.

The Novian was saying, ". . . Doesn't hold water. Novia has a civilization as complicated and advanced as Earth's. We're not Zeston, after all. It's ridiculous that we have to come here for individual technicians."



Ingenescu said, soothingly, "Only for new models. There is never any certainty that new models will be needed. To buy the educational tapes would cost you the same price as a thousand Technicians and how do you know you would need that many?"

The Novian tossed off what remained of his drink and laughed. (It displeased George, somehow, that a Novian should be this frivolous. He wondered uneasily if perhaps the Novian ought not to have completed that drink, or even the one or two before that.)

The Novian said, "That's typical pious fraud, Ladislas. You know we can make use of all the late models we can get. I collected five Metallurgists this afternoon—"

"I know," said Ingenescu. "I was there."

"Watching me! Spying!" cried the Novian. "I'll tell you what it is. The new-model Metallurgists I got differed from the previous model only in knowing the use of Beeman Spectrographs. The tapes couldn't be modified that much, not that much" —he held up two fingers close together—"from last year's model. You introduce the new models only to *make* us buy and spend and come here hat in hand."

"We don't *make* you buy."

"No, but you sell late-model technicians to Landonum and so we have

to keep pace. It's a merry-go-round you have us on, you pious Earthmen, but watch out, there may be an exit somewhere." There was a sharp edge to his laugh, and it ended sooner than it should have.

Ingenescu said, "In all honesty, I hope there is. Meanwhile, as to the purpose of my call—"

"That's right, *you* called. Oh, well, I've said my say and I suppose next year there'll be a new model of Metallurgist anyway for us to spend goods on, probably with a new gimmick for niobium assays and nothing else altered and the next year— But go on, what is it you want?"

"I have a young man here to whom I wish you to speak."

"Oh?" The Novian looked not completely pleased with that. "Concerning what?"

"I can't say. He hasn't told me. For that matter he hasn't even told me his name and profession."

The Novian frowned. "Then why take up my time?"

"He seems quite confident that you will be interested in what he has to say."

"I dare say."

"And," said Ingenescu, "as a favor to me."

The Novian shrugged. "Put him on and tell him to make it short."

Ingenescu stepped aside and whispered to George, "Address him as 'Honorable.'"

George swallowed with difficulty. This was it.

George felt himself going moist with perspiration. The thought had come so recently, yet it was in him now so certainly. The beginnings of it came when he spoke to Trevelyan, then everything fermented and billowed into shape while Ingenescu had prattled, and then the Novian's own remarks had seemed to nail it all into place.

George said, "Honorable, I've come to show you the exit from the merry-go-round." Deliberately, he adopted the Novian's own metaphor.

The Novian stared at him gravely. "What merry-go-round?"

"You yourself mentioned it, Honorable. The merry-go-round that Novia is on when you come to Earth to . . . to get technicians." (He couldn't keep his teeth from chattering; from excitement, not fear.)

The Novian said, "You're trying to say that you know a way by which we can avoid patronizing Earth's mental supermarket. Is that it?"

"Yes, sir. You can control your own Educational system."

"Um-m-m. Without tapes?"

"Y-yes, Honorable."

The Novian, without taking his eyes from George, called out, "Ingenescu, get into view."

The Historian moved to where he could be seen over George's shoulder.

The Novian said, "What is that? I don't seem to penetrate."

"I assure you solemnly," said Ingenescu, "that whatever this is it is being done on the young man's

own initiative, Honorable. I have not inspired this. I have nothing to do with it."

"Well, then, what is the young man to you? Why do you call me on his behalf?"

Ingenescu said, "He is an object of study, Honorable. He has value to me and I humor him."

"What kind of value?"

"It's difficult to explain; a matter of my profession."

The Novian laughed shortly. "Well, to each his profession." He nodded to an invisible person or persons outside 'plate range. "There is a young man here, a protégé of Ingenescu or some such thing, who will explain to us how to Educate without tapes." He snapped his fingers, and another glass of pale liqueur appeared in his hand. "Well, young man?"

The faces on the 'plate were multiple now. Men and women, both, crammed in for a view of George, their faces molded into various shades of amusement and curiosity.

George tried to look disdainful. They were all, in their own way, Novians as well as the Earthman, "studying" him as though he were a bug on a pin. Ingenescu was sitting in a corner, now, watching him owl-eyed.

Fools, he thoughtly tensely, *one and all. But they would have to understand. He would* make *them understand.*

He said, "I was at the Meatllurgist Olympics this afternoon."

"You, too?" said the Novian, blandly. "It seems all Earth was there."

"No, Honorable, but I was. I had a friend who competed and who made out very badly because you were using the Beeman machines. His education had included only the Henslers, apparently an older model. You said the modification involved was slight." George held up two fingers close together in conscious mimicry of the other's previous gesture. "And my friend had known some time in advance that knowledge of the Beeman machines would be required."

"And what does that signify?"

"It was my friend's lifelong ambition to qualify for Novia. He already knew the Henslers. He had to know the Beemans to qualify and he knew that. To learn about the Beemans would have taken just a few more facts, a bit more data, a small amount of practice perhaps. With a life's ambition riding the scale, he might have managed this—"

"And where would he have obtained a tape for the additional facts and data? Or has Education become a private matter for home study here on Earth?"

There was dutiful laughter from the faces in the background.

George said, "That's why he didn't learn, Honorable. He thought he needed a tape. He wouldn't even try without one, no matter what the prize. He refused to try without a tape."

"Refused, eh? Probably the type of fellow who would refuse to fly without a skimmer." More laughter and the Novian thawed into a smile and said, "The fellow is amusing. Go on. I'll give you another few moments."

George said, tensely, "Don't think this is a joke. Tapes are actually bad. They teach too much; they're too painless. A man who learns that way doesn't know how to learn any other way. He's frozen into whatever position he's been taped. Now if a person *weren't* given tapes but were forced to learn by hand, so to speak, from the start; why, then he'd get the habit of learning, and continue to learn. Isn't that reasonable? Once he has the habit well-developed, he can be given just a small amount of tape-knowledge, perhaps, to fill in gaps or fix details. Then he can make further progress on his own. You can make Beeman metallurgists out of your own Hensler metallurgists in that way and not have to come to Earth for new models."

The Novian nodded and sipped at his drink. "And where does everyone get knowledge without tapes? From interstellar vacuum?"

"From books. By studying the instruments themselves. By *thinking*."

"Books? How does one understand books without Education?"

"Books are in words. Words can be understood for the most part. Specialized words can be explained by the technicians you already have."

"What about reading? Will you allow reading tapes?"

"Reading tapes are all right, I suppose, but there's no reason you can't learn to read the old way, too. At least in part."

The Novian said, "So that you can develop good habits from the start?"

"Yes, yes," George said gleefully. The man was beginning to understand.

"And what about mathematics?"

"That's the easiest of all, sir . . . Honorable. Mathematics is different from other technical subjects. It starts with certain simple principles and proceeds by steps. You can start with nothing and learn. It's practically designed for that. Then, once you know the proper types of mathematics, other technical books become quite understandable. Especially if you start with easy ones."

"Are there easy books?"

"Definitely. Even if there weren't, the technicians you now have can try to write easy books. Some of them might be able to put some of their knowledge into words and symbols."

"The young devil has an answer for everything," said the Novian to the men clustered about him.

"I have. I have," shouted George. "Ask me."

"Have you tried learning from books yourself? Or is this just theory with you?"

George turned to look quickly at Ingenescu, but the Historian was passive. There was no sign of anything but gentle interest in his face.

George said, "I have."

"And do you find it works?"

"Yes, Honorable," said George, eagerly. "Take me with you to Novia. I can set up a program and direct—"

"Wait, I have a few more questions. How long would it take, do you suppose, for you to become a Metallurgist capable of handling a Beeman machine, supposing you started from nothing and did not use Educational tapes?"

George hesitated. "Well . . . years, perhaps."

"Two years? Five? Ten?"

"I can't say, Honorable."

"Well, there's a vital question to which you have no answer, have you? Shall we say five years? Does that sound reasonable to you?"

"I suppose so."

"All right. We have a technician studying metallurgy according to this method of yours for five years. He's no good to us during that time, you'll admit, but he must be fed and housed and paid all that time."

"But—"

"Let me finish. Then when he's done and can use the Beeman, five years have passed. Don't you suppose we'll have modified Beemans then which he *won't* be able to use?"

"But by then he'll be expert on learning. He could learn the new details necessary in a matter of days."

"So you say. And suppose this friend of yours, for instance, had studied up on Beemans on his own and managed to learn it; would he be as expert in its use as a competitor who had learned it off the tapes?"

"Maybe not—" began George.

"Ah," said the Novian.

"Wait, let *me* finish. Even if he doesn't know something as well; it's the ability to learn further that's important. He may be able to think up things, new things that no tape-Educated man would. You'll have a reservoir of original thinkers—"

"In your studying," said the Novian, "have you thought up any new things?"

"No, but I'm just one man and I haven't studied long—"

"Yes. Well, ladies, gentlemen, have we been sufficiently amused?"

"Wait," cried George, in sudden panic. "I want to arrange a personal interview. There are things I can't explain over the visiphone. There are details—"

The Novian looked past George. "Ingenescu! I think I have done you your favor. Now, really, I have a heavy schedule tomorrow. Be well!"

The screen went blank.

George's hands shot out toward the screen, as though in a wild impulse to shake life back into it. He cried out, "He didn't believe me. He didn't believe me."

Ingenescu said, "No, George. Did you really think he would?"

George scarcely heard him. "But why not? It's all true. It's all so much to his advantage. No risk. I and a few men to work with—

A dozen men training for years would cost less than one technician. He was drunk! Drunk! He didn't understand."

George looked about breathlessly. "How do I get to him? I've got to. This was wrong. Shouldn't have used the visiphone. I need time. Face to face. How do I—"

Ingenescu said, "He won't see you, George. And if he did, he wouldn't believe you."

"He will, I tell you. When he isn't drinking. He—" George turned squarely toward the Historian and his eyes widened. "Why do you call me George?"

"Isn't that your name? George Platen?"

"You know me?"

"All about you."

George was motionless except for the breath pumping his chest wall up and down.

Ingenescu said, "I want to help you, George. I told you that. I've been studying you and I want to help you."

George screamed, "I don't need help. I'm not feeble-minded. The whole world is, but I'm not." He whirled and dashed madly for the door.

He flung it open and two policemen roused themselves suddenly from their guard duty and seized him.

For all George's straining, he could feel the hypo-spray at the fleshy point just under the corner of his jaw, and that was it. The last thing he remembered was the face of Ingenescu, watching with gentle concern.

George opened his eyes to the whiteness of a ceiling. He remembered what had happened. He remembered it distantly as though it had happened to somebody else. He stared at the ceiling till the whiteness filled his eyes and washed his brain clean, leaving room, it seemed, for new thoughts and new ways of thinking.

He didn't know how long he lay there so, listening to the drift of his own thinking.

There was a voice in his ear. "Are you awake?"

And George heard his own moaning for the first time. Had he been moaning? He tried to turn his head.

The voice said, "Are you in pain, George?"

George whispered, "Funny. I was so anxious to leave Earth. I didn't understand."

"Do you know where you are?"

"Back in the . . . the House." George managed to turn. The voice belonged to Omani.

George said, "It's funny I didn't understand."

Omani smiled gently, "Sleep again—"

George slept.

And woke again. His mind was clear.

Omani sat at the bedside reading, but he put down the book as George's eyes opened.

George struggled to a sitting position. He said, "Hello."

"Are you hungry?"

"You bet." He stared at Omani curiously. "I was followed when I left, wasn't I?"

Omani nodded. "You were under observation at all times. We were going to maneuver you to Antonelli and let you discharge your aggressions. We felt that to be the only way you could make progress. Your emotions were clogging your advance."

George said, with a trace of embarrassment, "I was all wrong about him."

"It doesn't matter now. When you stopped to stare at the Metallurgy notice board at the airport, one of our agents reported back the list of names. You and I had talked about your past sufficiently so that I caught the significance of Trevelyan's name there. You asked for directions to the Olympics; there was the possibility that this might result in the kind of crisis we were hoping for; we sent Stanislas Ingenescu to the hall to meet you and take over."

"He's an important man in the government, isn't he?"

"Yes, he is."

"And you had him take over. It makes me sound important."

"You *are* important, George."

A thick stew had arrived, steaming, fragrant. George grinned wolfishly and pushed his sheets back to free his arms. Omani helped arrange the bed table. For a while, George ate silently.

Then George said, "I woke up here once before just for a short time."

Omani said, "I know. I was here."

"Yes, I remember. You know, everything was changed. It was as though I was too tired to feel emotion. I wasn't angry any more. I could just think. It was as though I had been drugged to wipe out emotion."

"You weren't," said Omani. "Just sedation. You had rested."

"Well, anyway, it was all clear to me as though I had known it all the time but wouldn't listen to myself. I thought: What was it I had wanted Novia to let me do? I had wanted to go to Novia and take a batch of unEducated youngsters and teach them out of books. I had wanted to establish a House for the Feeble-minded. Like here and Earth already has them—many of them."

Omani's white teeth gleamed as he smiled. "The Institute of Higher Studies is the correct name for places like this."

"Now I see it," said George, "so easily I am amazed at my blindness before. After all, who invents the new instrument models that require new-model technicians? Who invented the Beeman spectrographs, for instance? A man called Beeman, I suppose, but he couldn't have been tape-Educated or how could he have made the advance?"

"Exactly."

"Or who makes Educational tapes? Special tape-making techni-

cians? Then who makes the tapes to train *them*? More advanced technicians? Then who makes the tapes—You see what I mean. Somewhere there has to be an end. Somewhere there must be men and women with the capacity for original thought."

"Yes, George."

George leaned back, stared over Omani's head and for a moment, there was the return of something like restlessness to his eyes. "Why wasn't I told all this at the beginning?"

"Oh, if we could," said Omani, "the trouble it would save us. We can analyze a mind, George, and say this one will make an adequate architect and that one a good woodworker. We know of no way of detecting the capacity for original, creative thought. It is too subtle a thing. We have some rule-of-thumb methods that mark out individuals who may possibly or potentially have such a talent.

"On Reading Day, such individuals are reported. You were, for instance. Roughly speaking, the number so reported comes to one in ten thousand. By the time Education Day arrives, these individuals are checked again and nine out of ten of them turn out to have been false alarms. Those who remain are sent to places like these."

George said, "Well, what's wrong with telling people that one out of . . . of a hundred thousand will end at places like these? Then it won't be such a shock to those who do."

"And those who don't? The ninety-nine thousand nine-hundred and ninety-nine that don't? We can't have all those people considering themselves failures. They aim at the professions and one way or another they all make it. Everyone can place after his or her name: Registered something-or-other. In one fashion or another every individual has his or her place in society and this is necessary."

"But we?" said George, "The one in ten thousand exception?"

"You can't be told. That's exactly it. It's the final test. Even after we've thinned out the possibilities on Education Day, nine out of ten of those who come here are not quite the material of creative genius, and there's no way we can distinguish those nine from the tenth that we want by any form of machinery. The tenth one must tell us himself."

"How?"

"We bring you here to a House for the Feeble-minded and the man who won't accept that is the man we want. It's a method that can be cruel, but it works. It won't do to say to a man. 'You can create. Do so.' It is much safer to wait for a man to say, 'I can create, and I will do so whether you wish it or not.' There are ten thousand men like you, George, who support the advancing technology of fifteen hundred worlds. We can't allow ourselves to miss one recruit to that number or waste our efforts on one member who doesn't measure up."

George pushed his empty plate out of the way and lifted a cup of coffee to his lips.

"What about the people here who don't measure up? How do you handle them?"

"They are taped eventually and become our social scientists. Ingenescu is one. I am a Registered Psychologist. We are second echelon, so to speak."

George finished his coffee. He said, "I still wonder about one thing."

"What is that?"

George threw aside the sheet and stood up. "Why do they call them Olympics?"

THE END

IN TIMES TO COME

Next month "Brake" is the lead novelette—a story by Poul Anderson. Achieving escape velocity for Earth is at the moment the big problem in spaceship design. But like most anything else too much of a good thing can be distinctly an acute danger. And there is nothing like three or four violent dissident groups aboard a single spaceship to make a problem as big as the whole solar system!

Murray Leinster has the other novelette—"Med Service." It's a bit of a problem right now to see to it that small outlying communities have adequate medical service. But what do you do when there is a galaxy of small outlying planets? And such unusual and interesting diseases. . . .

I don't ordinarily mention the items for the month after next, but starting in the September issue will be Bob Heinlein's new novel. Since you'll forget this item before you reach the end of the yarn I'll mention that Thorby was born to be a slave—even though you won't believe that when you finally discover where he was born. But you'll meet him first being sold at auction in the slave market. Being sold to a one-eyed, one-legged beggar since no one wants the filthy little brat. . . .

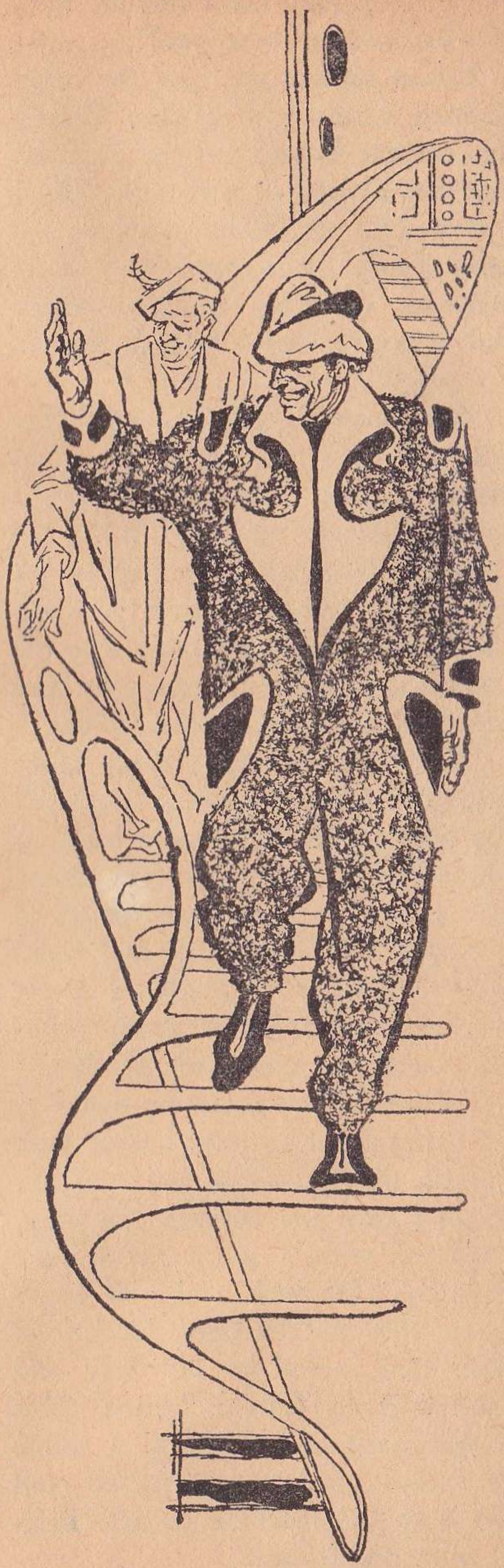
THE EDITOR.

RUN OF THE MILL

The most effective type of superman is apt to be the one you can't notice is super. No muss, no fuss... just results because you didn't know it could happen that way. . . .

BY ROBERT SILVERBERG

Illustrated by Freas



Dave Tobias sat by the computer, listening to its metallic chattering and mumbling. He watched the yellowish tape extruding painfully inch-by-inch from the response tray, taking note of its length while carefully ignoring its neatly-typed message.

He knew what it was going to say. A man didn't need a computer to tell him that he wasn't able to handle a situation. Tobias knew that he and his friends and the whole planet of Dariak I rolled into a shiny helix couldn't handle the situation. The computer's cold analysis of the factors involved would only put the lid on the problem.

"How's it coming, Dave?" a

quiet voice said from behind him. "Is the answer here yet?"

Tobias turned and saw the dark-skinned features of Claude Culver, the current holder of the sinecure that was Dariak's presidency. Culver was a tall, well-fleshed man in his early forties who wore the usual morning costume, leather sandals and a bright strip of cloth around his waist.

"The answer's on the way," Tobias said. He pointed to the eight inches of protruding tape. "It won't be long before we'll get it."

Culver locked his thick hands together and leaned against the wall. "Will your machine tell us *why* the Lodarians found it necessary to land here and carry off half a village?"

"No," Tobias said. "You know that. The computer won't even tell you how to get our people back, or where we're going to find them. That's two or three steps ahead of ourselves." He stood up and faced Culver squarely. "Claude, I know you expected miracles from me—but you're not going to get them."

"What do you mean by that?"

"I mean that I didn't bother with any of the questions you and the Council gave me for the computer. I started with a much more basic question." He took a slip of paper from the gold-chased blackwood table that served as his desk and handed it to Culver. "Here. This is the question, exactly as I wrote it. I also integrated it myself and fed it to the machine myself. Read it, why don't you?"

Culver looked blankly at the cyber technician for a moment, then accepted the slip. He read it out loud.

" 'Question: Are we capable of dealing with the Lodarians by ourselves?

" 'Subquestion: Assuming a negative answer for the former, is it desirable for us to obtain aid in this matter elsewhere?' "

Culver let the paper slide to the floor. A frown crossed his tanned, placid face. "What's the idea of this, Dave?"

Tobias shrugged. "I'm lazy," he said, grinning. "It seemed like a good idea to check this particular point before we go any further into the matter."

The two men stared silently at each other for a few seconds. The droning of a large rainbow-colored insect distracted them, and Tobias swiped perfunctorily at the creature as it swooped around the room, lit briefly on the shining chrome-vanadium surface of the relay bank, and shot through the open window again.

The computer continued its steady *chukk-chukk* while the data Tobias had so painstakingly fed into it during the past week whirled and danced within it. Minutes passed. At last came the final cough that signaled the completion of a run, and the noise ceased.

Culver reached for the tape, but Tobias got to it first. "Uh-uh,

Claude. This is my baby, and I want first look."

He scanned the tape, smiled wanly, and handed it to Culver. "Here. Read it now, and execute me afterward."

Culver read.

"'Answer: In view of known personality characteristics of dominant psych-type of Dariak I, of known aggressive actions of Lodarians, and of unknown personality characteristics of Lodarians, the probability is not high that Dariak contact with Lodarians will prove successful.

"'Answer to Subquestion: Suggested procedure is for Dariak I to obtain aid in negotiation through customary channels. If this dispute is handled by an Earthman negotiator, probability of success is increased by a factor of four.'"

Culver looked up and stared angrily at Tobias. "You knew this was coming, didnt you?"

Tobias nodded.

"What am I supposed to do now?" Culver asked pathetically. "Go outside and tell everybody that we're no good, that we're too dumb to deal with the Lodarians ourselves, that we're going to have to hire a . . . an *Earthman?*"

"I guess that's what you'll have to do," Tobias said mildly. "Since you've been in office, you've been pretty honest, Claude. Why stop now?"

Culver scowled, drew his breechcloth tighter around his middle, and left. Tobias remained seated for a while, toying with an unlit cigarette. He never smoked in the computer room, but the feel of the tube of tobacco between his fingers somehow lessened the tension.

The news would be a bitter pill for the people of Dariak to swallow —but they would manage to get it down, and everyone would feel so unhappy that Culver would declare a national half-holiday and everyone would go swimming and surfboarding. By evening, all would be well, and the request would go flashing out across space for an Earthman to come and save the day.

That was the way it would be, Tobias thought. No one would be particularly distressed by this naked indictment of his planet's spinelessness, exactly because it *was* such a spineless planet.

Outside, the great yellow ball of a sun was climbing toward noon height, and through his window Tobias saw birds with radiant green-and-red plumage slicing through the warm air. Dariak was a good place to live—a perpetual vacationland where no one worked too hard, where no one ever lacked, and where no one had very much calcium in his lumbar vertebrae.

Which was why, when strangers descended from the cloudless sky to cause trouble, the good folk of Dariak found it necessary to run back to Mother Earth for help.

The Council met, the Council heard Culver's story, and the Council was outraged.

The Council also—after half an hour of relatively vigorous debate—voted unanimously to call in an Earthman to deal with the Lodarians, and assigned Dave Tobias the job of finding one.

"Why me?" Tobias asked, after Culver outlined the happenings in the council room to him.

Culver smiled wistfully and said, "It was the opinion of the meeting that you're the one who understands more of this situation than any of the rest of us. And therefore you're the one who ought to talk to someone in the Colonial Office and get help for us."

Tobias thought about it for a moment, then nodded. "If that's the way you want it, that's the way it'll be, Claude. Tell one of your sub-radio boys to get me a hookup with Earth, and I'll do the job." He snickered. "You're really proving my point, you know. You can't even handle a phone conversation by yourselves."

"Don't be crude," Culver said. "We're asking you for a favor, because we know you're a little more aggressive than the rest of us. Don't take advantage of it, Dave."

Tobias smiled at the older man. "I'm sorry," he said humbly. "I'm afraid I've let the confirmation of my theory go to my head, that's all. It's the old I-told-you-so-syndrome. It'll wear off as soon as I get on the wire and start remembering that *I'm* a fifth-generation man myself, and just as weak-kneed as any of you."

Half an hour later, Tobias again had proved his point. He felt a sudden uneasiness as he approached the microphone and knew that he was within a few seconds of speaking to an Earthman. It was a form of stagefright, Tobias thought. An outgrowth of the undeniable truth that five generations of easy living had made the colonists of Dariak unfit for the hard and sharp give-and-take that was necessary when two worlds had dealings with one another.

Tobias stepped to the microphone and grasped its base with his suddenly cold right hand. "Hello?" he said hesitantly.

"Hello," came the firm reply. "This is Waddell, of the Colonial Office, New York. Are you Tobias, of Dariak I?"

"Yes," Tobias said. "Dave Tobias. I'm a computer technician. That is—"

"Of course, Tobias," said the tinny voice coming from the speaker. "This call is costing your planet a fortune, friend. What's on your mind?"

"We . . . we . . . we've been invaded by aliens," Tobias said. He poured out the whole story in an uncheckable torrent of words: how the Lodarians had come in ugly dark-hulled ships, had landed in the village of Mondu one morning, had shepherded about half the village, more than four hundred men, women, and children, into their ships, and had blasted off again.

The Earthman, Waddell, listened patiently. When Tobias was through

he said, "I've got the picture. What sort of people are these Lodarians?"

"The reports we have picture them as tall, blue-skinned humanoids with slit noses and rudimentary third eyes. They said they were down from Lodar IX, which is a planet of a blue-white star pretty far from here."

"What are they like?" Waddell asked.

"They were soldiers," said Tobias. "Wearing uniforms, under strict discipline, moved like clockwork. They didn't speak much. They look like rough customers," he added.

"Um-m-m." The Earthman was silent for a maddeningly long moment, and Tobias found himself becoming conscious of the price-per-second for a call of this sort. Finally Waddell spoke.

"You want a negotiator, eh?"

"That's right," Tobias said. "We . . . let's face it, sir, we're not very aggressive. We don't think we can deal with these Lodarians by ourselves. And we *do* want that village back. Can you help us?"

"I think so," Waddell said amiably. "We'll have a man on his way to you in a day or so, and you can fill him in on the details when he gets there."

Suddenly Tobias remembered one of Culver's hasty last-minute instructions. *Demand only the best,* Culver had admonished him. *Don't let them send us a second-rater. This thing is important.*

"Is there anything else?" Waddell said crisply.

Tobias stared helplessly at the microphone for a second. "You'll send a good man, won't you?" he asked finally. "Someone who can really stand up to the Lodarians? A general, maybe?"

There was something like a pitying chuckle at the other end. Then Waddell said, "Don't worry, friend. We'll take good care of you. Is that all?"

"That's all," Tobias said.

"Mission completed," Tobias told Culver when he had stepped outside the radio room at the Capitol. He felt an odd sense of triumph, and simultaneously a deep shame. He was proud that he had handled the conversation with Waddell so nicely, and ashamed that he should need to find such an achievement a source of pride.

"We heard the whole thing," said Christenson, the vice president. He was a big, bright-eyed old man with a sharply pointed white beard. "They sound like they'll be able to help us."

"Provided we get someone who can do the job," said Culver. "We didn't discuss price or anything—but do we dare try for a stipulation that says we don't pay unless he gets results?"

Tobias shook his head. "They'll laugh at you. No, we're just going to have to depend on what they send us."

"Why weren't you more specific?" Culver asked. "It's too late to do anything about it now, but why didn't you make sure they knew it

was a big job? Remember, we've been invaded by hostile aliens. That's important to Earth as well as to us—and if they don't realize that, they may send us some bumbling career diplomat who won't get anywhere with the Lodarians." He reddened. "After all, we're *not* very important in the galactic scheme of things, and if they don't realize—"

"I think I made it as clear as I could," Tobias said. "If we don't have confidence in their judgment, we shouldn't have hired them in the first place."

"Good point," Christenson said.

"Thanks," said Tobias wryly. "The Earthman ought to be here in a few days. We're not going to get anywhere worrying about him in advance."

"You're right," Culver admitted. "What say a good swim, and then some foot races on the beach? It'll help to pass the time till he comes. I can't think of any other government business that has to be taken care of now . . . can you, Ned?"

"Not I," Christenson said. "I vote for a swim."

"Care to join us, Dave?"

"Might as well," said Tobias. "As long as there's nothing more important to do."

"Even if there is," said Culver. "A swim will relax us."

"Of course," Tobias said. He chuckled.

"What's so funny?" Culver demanded, a little annoyed.

"You are," said Tobias. "I think you must be the most predictable man who ever lived. Come on—let's go relax somewhere."

Leonard B. Kincannon arrived on Dariak I exactly seven days later. There had been one curt telegram the day before from the neighboring system of Kynor, announcing that the Earthman was on the final leg of his journey, and then he arrived.

He came in a two-man hyperjob that whistled into normal space high in the cloudless sky of Dariak I and followed the guide-beam down in a perfect spiral orbit that brought it to rest gently on the appointed beach.

Two men clambered down the catwalk of the small ship, and as they did so a group of Dariaki trotted energetically over the warm white sand to meet them. The group included President Culver, Vice president Christenson, cyber technician Tobias, and a handful of other important citizens who had nothing more urgent to do that morning.

Tobias was in the rear of the group, and he saw Culver reach the two men first. One of the men from the ship was an impressive-looking giant whose teeth flashed brightly even at the distance that separated them. This was obviously Leonard B. Kincannon, Tobias decided, and his heart quickened at the prospect of having this benevolent Goliath come across space to plead their suit.

Then he saw the giant in the radiant uniform step aside, and re-

veal to view a small, nondescript man in a gray business suit. *The pilot,* Tobias thought immediately, and almost at once that thought was replaced by the sickening realization that the mousy man in the business suit probably was, *must* be, Leonard B. Kincannon.

It has to be that way, he thought dismally. He saw Culver shake the small man's hand enthusiastically, and knew it was true. This was the man Earth had sent. This was Leonard B. Kincannon, whose very name, preceding him by a day, had grown to colossal stature on Dariak I.

Tobias slowed to a walk and headed across the sand. Disillusionment, he was discovering, was a sour-tasting thing. He walked up to where Culver and the others were standing in a loose semicircle around the two Earthmen, the brawny pilot and the scrawny diplomat.

"This is Mr. Tobias," Culver said. "He's the man who made the original contact with Waddell."

"Why, hello," Kincannon said. He extended a hand, and Tobias shook it. It was soft and womanlike, not at all a hand to inspire confidence.

Tobias caught a cold glare from Culver. The others, then, felt the same way about Kincannon—cheated. And they probably were going to blame Tobias for the whole thing.

He glanced at Kincannon again, surreptitiously evaluating him. He was small, all right, no more than five-six or so, with mild, faded-blue eyes, thin blond eyebrows, an unimpressive snub nose, and a gentle mouth curved in a rather vapid smile.

"I suppose you'd like to have all the details about the situation here, don't you?" Culver began, a trifle eagerly.

"Not just yet, please," said the Earthman in a soft voice. "It's been a long journey, and I'm tired. Suppose we talk about it after lunch?"

Later, when Christenson led the two Earthmen to the house that would be theirs temporarily—it belonged to a wealthy fisherman named Sloves who was off on a tour somewhere to the south, and who would not mind—Culver hung back and caught Tobias' arm.

"Well, Dave? What do you think of him?"

Tobias spread his hands. "It's hard to say. He's not very talkative, is he?"

"No," Culver said. "Not at all."

"You want me to admit he's no good, don't you?" Tobias asked harshly. "As if it's my fault they'd send a clinker!"

"No one said he was a clinker, Dave. But we are a little . . . *disappointed,* shall we say? He's hardly the sort of man who looks like he can dictate terms to the Lodarians."

Tobias shrugged again. "The Earthmen apparently think he can, or he wouldn't have been sent."

"But suppose he makes things

worse?" Culver asked desperately. "Suppose they laugh him off their planet and declare full-scale war against us, Dave?"

Tobias turned and grasped Culver by both shoulders.

"Listen, Claude, we've committed ourselves to this thing up to the throat. We admitted we couldn't do the job ourselves—"

"*You* admitted it."

"You agreed with me, didn't you? Don't single me out. I'm just the one who dared to come out and say what we were all thinking—and I didn't say it until the computer confirmed it!"

"I'm sorry," Culver said meekly.

"All right. We asked Earth to bail us out—and now we're going to have to rely on whatever Earth sent us." A sly look came into Tobias' eyes. "Look here, Claude. If Kincannon should botch things, if he bumbles us into a war with Lodar—that's going to make Earth look terrible, isn't it? They'll probably want to save their face somehow. And what better way than intervening in the war they helped to cause? Wouldn't you want to have Earth fighting on our side?"

"You've got a point there," Culver said. "Let's go in and meet the man, shall we?"

They entered the Sloves home. Kincannon was sprawled on a divan, having taken off his shoes and jacket. "Hello, gentlemen," he said as they entered. "Mind if I make myself comfortable?"

"Not at all," Culver said. "I was wondering how long you'd stay in that formal outfit."

"Only as long as I had to, Mr. Culver." Kincannon sat up. "I don't have much time for this project, I'm afraid. My schedule's a busy one. I'd like to find out exactly what happened here, before I journey to Lodar to talk to them about it."

Rapidly, Culver sketched out the events that had taken place. Kincannon nodded over each bit of salient data, and tugged reflectively at his ear when Culver was through.

"Ah . . . I see. Very well. I'll do my best." He smiled pleasantly, and indicated that he would like to be left alone.

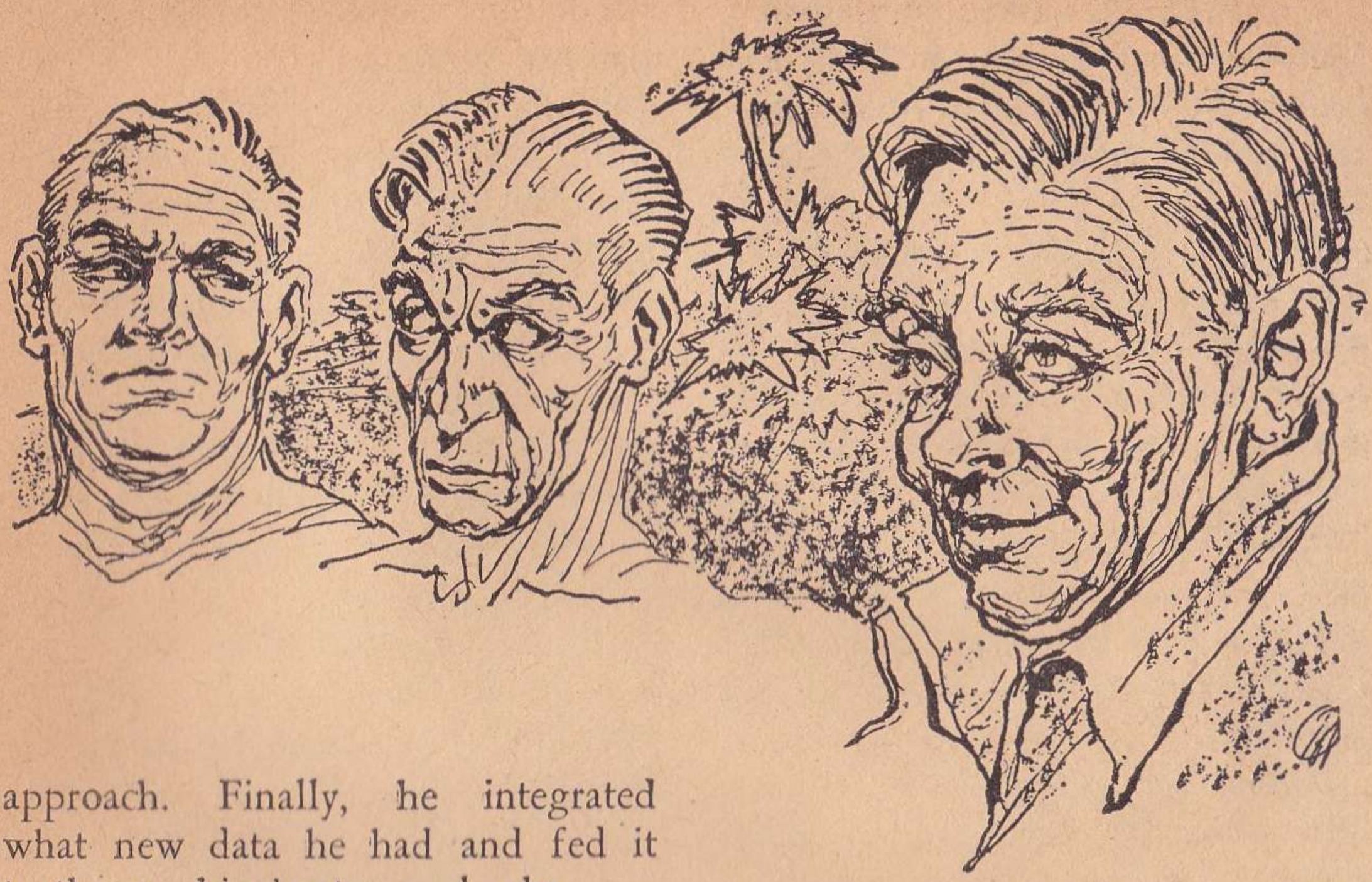
"Well, he's gone," Culver said. He stood there, staring at the place on the beach where the two-man ship had been, and finally turned away. "I hope he doesn't mess things up too badly on Lodar."

"I have a feeling he won't," Tobias said. "Somehow I think there's a pretty strong man underneath that meek-looking exterior."

"He hides it well," Culver said.

They walked slowly back toward the town. Tobias excused himself when they reached the vicinity of the computer lab; he said he had some urgent work to do, mumbled something about figuring the tides for next Wednesday, and ducked inside.

He stood looking at the gleaming computer for a long time before he was able to decide on a line of



approach. Finally, he integrated what new data he had and fed it to the machine's storage banks.

He lit a cigarette and waited, giving the computer time to mull over its new information—a totally unnecessary wait, he knew, since the memory banks absorbed virtually instantly. But he felt he needed the pause, even if the computer didn't. When the cigarette was a stub, he punched out a new question.

"Question: Will the Earthman Kincannon succeed in preventing war between Lodar and Dariak?

"Subquestion: In the event that he does, will the resulting situation be beneficial to Dariak?"

Tobias fidgeted nervously while the machine went to work on the two problems. He could hear its steady murmur as it computed probabilities based on the already-given characteristics of Lodar and Dariak, on the uncertain factor of Kincannon, and on the vague logistics of diplomacy. Finally the tape began to unreel.

"Answer: Yes.

"Answer to Subquestion: There is no answer. Question does not have cognitive meaning."

Tobias toyed with the tape, winding it around cold fingers. He was puzzled. Why the emphatic *Yes* for the question? And why the ambiguous, even more disturbing evasion for the Subquestion?

He started to frame a second question for the machine, one that might clarify these answers. But after a few moments he gave up, shaking his head, and destroyed the answer-tape he had received.

The next few days were anxious ones for the people of Dariak. Tobias noticed a tenseness come

over them, a quiet unmentioned tightness of jaw and of cheek that had never been known on the carefree planet before. They were worried.

No one had much confidence in Kincannon, either, and Tobias did not reveal the unequivocal "*Yes*" of the computer because of the puzzling answer to the subquestion that was attached. Tobias sensed that there was a subtle belief in the village that he, cyber technician Dave Tobias, was somehow personally responsible for the apparent ineptness of the Earthman.

Tobias clenched his fists. Dammit, he'd done his best—and if Earth chose to send a dub, why . . .

But the computer said Kincannon wouldn't fail.

"He's not quite what I expected," someone said. "I figured they'd send us a military man, or a leader of some sort—a heroic figure about six-six, with bulging muscles and iron-hard eyes. Instead we got a little guy in a business suit."

"Earth knows what it's doing," Tobias said. "They must have sent the right man."

"But still . . . still, he doesn't *look* right. He looks like a bank clerk, or something. He's so unheroic! How's he going to swing any weight with the Lodarians?"

"I don't know," Tobias said. "I don't know."

He spent the next four days in a nervous state that hovered tenuously between optimism and pessimism without ever becoming either. Outwardly, he refused to join in the general expression of indignation over the fact that Earth had sent such an unimpressive figure—but inwardly, he confessed that he, too, had little faith in Kincannon, despite the computer's affirmative answer.

On the morning of the fifth day after Kincannon's departure, Tobias was awakened by a sudden thundering barrage of knocks on his door.

Groggily, he opened one eye. "What's going on?"

"The Lodarians! Three big ships just came down," Culver's voice said. "They're armed to the teeth, Dave!"

"I am Major Xablesca," said a tall, solemn-faced Lodarian, bowing stiffly. "I am commander of this detachment. You are the commander of the local outpost?"

"I'm Claude Culver—the President of Dariak. This is my Vice president, Mr. Christenson. And this is Mr. Tobias, who assisted us in contacting you."

"It is a pleasure to meet you," the major said in crisp, measured tones. "Mr. Kincannon of Earth has told us much about you and your planet. We are terribly sorry about this entire incident, and we hope that this misunderstanding will not bar the way to a peaceful interchange of ideas between your world and mine."

"We hope so," Culver said.

"We are aware," the Lodarian said loftily, "of how much there is for us to learn from you—and we

thank you for making it possible for us to so learn." He looked around. "You will excuse me now. I must return to my men. I shall see you later, when it is time to sign the treaty Mr. Kincannon has negotiated for us."

The fierce-looking Lodarian stalked away across the beach. The three Dariaki stood together, none of them caring to voice the thought uppermost in his mind.

Finally Culver turned to Christenson. "How's the tally?"

"We're not missing anybody," the bearded vice president said. "I've just finished counting. They returned every single one of them—all four hundred sixty-three prisoners."

"Good," Culver said. "We have all our own back, at least. Now what?"

"What do you mean?" Tobias asked.

"I mean Kincannon's sold us down the river!" Culver snapped. "Sure, he got us back the people the Lodarians kidnaped. But do you realize what else he's done to us?"

"If you mean that he's gotten us out of a war—"

"I mean that he's taken deliberate steps to destroy our civilization! Oh, he tells us he's foxing the Lodarians, making them love us instead of hate us. Oh, sure! So what does he do? He gets the Lodarians to love us so much that they want to set up an armed camp here, while we teach them how to be peaceful."

Tobias frowned. "All he said was that the Lodarians would like to establish an enclave on Dariak for five years, living with us and learning our ways. The Lodarians just don't know what it's like not to be aggressive, and they're anxious to learn. Isn't that all right?"

"No! I don't care about this high-flown talk of educating the Lodarians to peace. What about us? Do you want a batch of Lodarian soldiers living here on Dariak, marching up and down around here, a constant threat to our lives?" Culver chuckled hollowly. "Oh, no—Kincannon doesn't fool me. Earth wants to feed Dariak to the Lodarians as a bribe to keep them from causing trouble elsewhere. And *we're* hung up in the deal!"

Tobias stiffened. He knew that what Culver said made sense. Allowing the Lodarians to build an enclave on Dariak was a dangerous move no matter how piously the Lodarians claimed they wanted to have their fangs pulled.

But yet . . . yet, Kincannon was here because the computer had suggested it, and Tobias, therefore, was somewhat responsible for the Earthman's interference. He felt called upon to defend Kincannon's actions.

"Let's go see Kincannon," he suggested. "He'll explain. He'll give us some assurance that—"

"We'll go see Kincannon, all right," Culver said. "But only to tell him to pack up and get moving. We're not signing any suicide treaty with Lodar!"

They went to see Kincannon.

Kincannon spoke to them. After a while, they returned to their village. Tobias headed for the computer lab.

Kincannon was gone, having blasted off right after the conference. The Lodarians were still there, busily erecting their ugly, harsh-looking huts. They were staying.

Tobias felt pleased about it, too —not because he cared for the Lodarians, but because he knew Dariak was on the road to self-dependence. There would no longer be the need to call in Earthmen to fight their battles for them.

It would never be the same again. The Lodarian soldiers would change Dariak, would toughen the Dariaki by . . . well, osmosis, Tobias thought. He smiled. Kincannon didn't realize what he had actually done when he arranged this compromise.

Gone would be the dreamy-eyed beachcombers of the past; with the Lodarians as models, the Dariaki would awaken, would stiffen up, would develop backbones.

He looked at his watch. It was still early; later, there would be a meeting of the villagers to discuss the new plans. First, Tobias had to settle a few things in his own mind.

The planet would prosper. Industries, space travel, export and import—these would come. Kincannon had unwittingly tripped the trigger, and now Dariak could enter the heart of galactic trade.

Why had Kincannon done it? Out of expediency, he said. Wars were costly nuisances, and it was better for everybody concerned if the Dariaki accepted the Lodarian enclave. Finally, Culver had consented.

Expediency. No, not quite that. Dariak would *use* the Lodarians, would grow around them into a mighty planet. Kincannon hadn't figured on that. *And yet*—

Tobias leaned forward and stared at his fingertips. Something still nagged at the back of his mind, something that ate into his brain and left quivering suspicion. He was the only man on the planet who could find out the truth, too. *I've got to do it,* he thought, and then wondered idly why the urgency. Why *did* he have to check?

He shrugged. He'd do it anyway. A cold bead of sweat trickled down his face as he walked to the computer, lips pursed speculatively, and integrated the terrifying question.

"Question: Will the changes that will come to Dariak as a result of the treaty with Lodar be beneficial to us?"

He thought for a moment, then tapped out:

"Subquestion: Would we have regarded these changes as beneficial a week ago?"

Part of his mind wondered why he was doing this. Another part quelled the thought. And then the answer clicked out.

"Answer to Question: Yes.

"Answer to Subquestion: No."

Tobias let the tape slip to the

floor. He had the explanation, then, of why the computer had refused to reply earlier. The computer operated logically, and so was unable to take into consideration a question whose answer would be *No* one time and *Yes* a week later.

Why had the answer changed?

Simple, part of Tobias' brain responded. The factor that had been added to the situation: Kincannon. He had worked the trick, the run-of-the-mill little Earthman.

Dariak had expected a seven-foot hero in shining armor; instead, they got Kincannon—just run-of-the-mill. But there was nothing wrong with that, if the mill-run product was perfect.

What Dariak had wanted Earth to send was a kind of a superman—a super-Lodarian, really, bigger and stronger and uglier, with a blaster in each hand.

The superman had come, but his weapons were better than blasters. Tobias looked down at the rolled-up yellow strip of tape at his feet, and at the suddenly narrowing walls of the computer lab. He had the evidence. He swayed dizzily.

A week ago, the Dariaki had wanted only to be left alone—so said the computer. Now, suddenly, they wanted to become galactic leaders. And the Lodarians had wanted to conquer the universe. Now they wanted to learn the ways of peace. *Kincannon did that,* Tobias thought.

It was impossible for him to believe that their drives could have been so different a week ago. But though they had changed, the computer hadn't—and its testimony revealed exactly what Kincannon had done.

Kincannon was the most dangerous weapon there was—a weapon that attacked need and desire, and altered it. Tobias shuddered. There was no defense against it; by the time you knew you were being attacked, you didn't want to fight back any more.

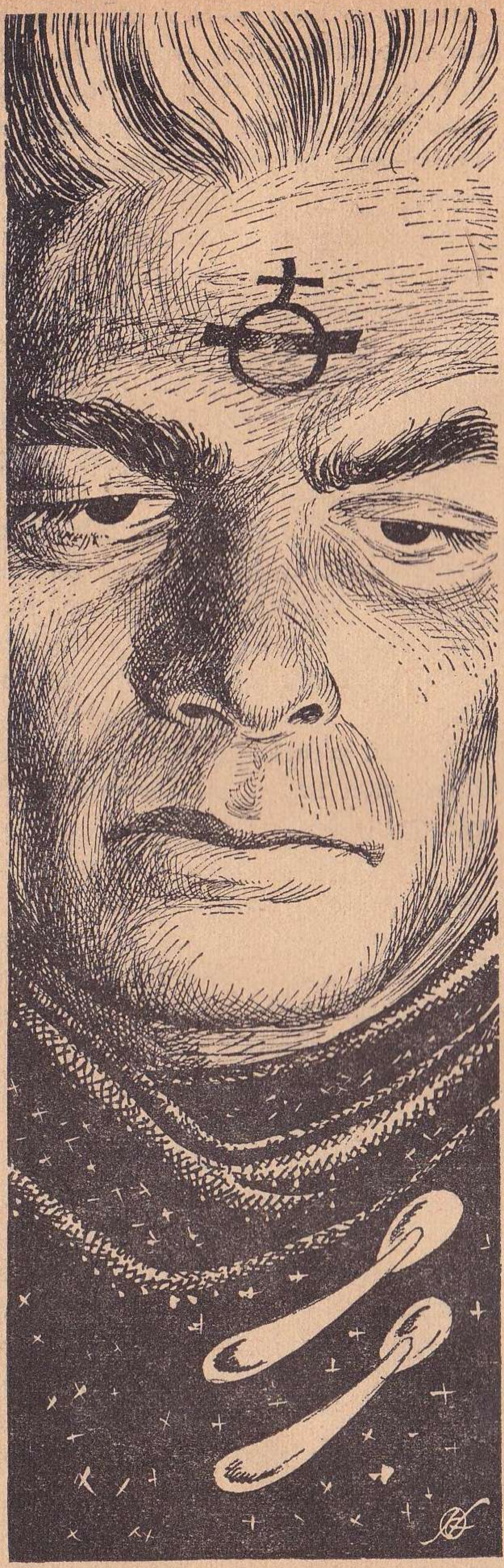
Part of Tobias' mind felt faint indignation, as he came to the intellectual realization that he had been manipulated. It stung his ego—for a moment. Then the rest of his mind took over, the part that felt calm acceptance of the fact that Kincannon had acted for everyone's greatest good. He felt a strange sense of pride that the universe could produce such a man.

No one but Tobias knew what had been done—and he had consulted the computer. He destroyed the tape. Glancing out of the window he saw the Lodarians busily setting up their enclave.

That's the way we'll look when we build our spaceport. We've always wanted to build a spaceport.

He smiled and shook his head, thinking of the pudgy Earthman on his way to his next task somewhere in the galaxy. *Just run-of-the-mill,* he thought abstractedly. *Just a dumpy little run-of-the-mill superman.*

THE END



DIVINE RIGHT

Immortality is the ancient dream—the everlasting maintenance of the Self I Am. And that, it happens, is inherently impossible by the Nature of Things. Fellowship; yes. Immortality? Not quite. . . .

BY LESTER del REY

Illustrated by Freas

The cybernetics wing of Eos Institute lay in the shadow of the central tower, where even the faint twilight failed to reach it. Most of the building was dark in the lull of annual finals. The successful students were out celebrating their newly created Fellowships; those who had failed were already gone, to make whatever they could of their doctorates. Only a few lights shone from windows here and there as neophyte Fellows cleaned out their laboratories or grew accustomed in private to the official masks that proved their rank.

The lights were on in the room where Mark Saxon waited, but there was no mask to conceal his blond,

square-cut face or cover the sterility symbol tattoed on his forehead. He was rubbing the mark unconsciously now while his big body was slumped in front of the humming computer. Then, as two rows of symbols began forming on the panel, he groaned faintly and swung away.

He snapped off the lights and power and turned toward the laboratory window, gazing across the parklands around the Institute. The palace of the World Custodian lay beyond, already bathed in a rosy flood of light. Above the dome, the great figure of a masked Minerva poised, eager body and arms stretched toward the east, as if reaching for the dawn. Mark stared at it, as he had done a thousand nights before, but this time the inspiration was lacking in the sight.

Abruptly, the musical tone of the phone sounded. Mark swiveled to reach the receiver and saw the little panel light up with the pleasantly plain face of Letty, receptionist and general girl Friday for this floor.

"Dr. Saxon?" She bent closer, trying to make out his face, and worry quickened on her own features. "Mark, you shouldn't be sitting alone in the dark!"

He shrugged. "I'm all right, Letty. Any word from the dean?"

The question was more automatic than hopeful, though. He'd put in his appeal for a continuation of his research project weeks before, when he finally realized he couldn't complete it this term. It was too much to hope for any action now, at the end of the final day.

"Not yet, Mark. But the dean hasn't left yet, so there's still time." Letty was determined to sound optimistic, though she must have known as well as he how little chance he had. "Fellow Northrup wants you to see him, though."

Mark shrugged again. Northrup had made overtures of friendship before, but the young Fellow somehow rubbed Mark the wrong way. There was an air of too sure familiarity mixed with a peculiar attitude that might have been normal for an older brother in his advances. Besides, it wasn't normal for a Fellow to associate too closely with a mere doctor. "Anything else?" he asked.

"There's a box of books and papers from Central Files for you being sent up. And the janitor wants to know when he can start cleaning out your lab. I told him he could just wait until your time's up at midnight."

"Thanks," he told her, and hung up. It fitted. He'd waited two months for the material from Central Files, but they weren't ready here to wait five more hours for him to leave.

He sighed and dropped back to his seat in front of the computer, switching it on, staring at the impossibly duplicated rows of symbols that appeared. One row represented a supposedly exact mathematical analysis of the personality of the current custodian; the second did the same for another custodian who had

been in office over a hundred years ago. Yet the two were identical. Either his three years of work here was a failure, or else Custody was in the hands of an immortal man!

It was utter nonsense. It was an idea from the degraded depths of rumors spawned by the anarchistic Ruddies. Only malcontents driven to fantastic fantasies by their sterility could believe such things about the custodian.

Automatically, Mark's fingers went up to touch the tattoo on his forehead, and he winced. Then he shook his head. He wasn't unbalanced by his sterility. He'd learned to accept it without even attempting to avoid looking at the mark that had been put there after his routine examination when he was fourteen. With a fifth of all children born completely sterile after the final wars, the race had been forced to separate them publicly, and Mark had realized the need of his tattoo. It wasn't the first shock in his life.

He'd been orphaned in one of the political upsets of his section. After he'd adjusted to the Custodial home, he'd been ripped out for a series of examinations and then given to the guardianship of a Fellow who kept him isolated from all playmates. Finally, when he'd learned to love the man, "Uncle Will" had been sent to one of the Custodial Hermitages with almost no warning and no hope of any further contact. The knowledge of sterility had only been another in a series of events that separated him from the human race. He'd bottled his bitterness away in his brain with the loneliness of his whole life, submerging it under his fight for acceptance into the Institute and the Fellowship that would justify his existence.

Now was no time to drift back into childish fantasies of immortality, where the divine right of survival couldn't be denied. He had to admit that either his data or his methods were wrong. Given time, he could find the error, then. But not in the five hours until midnight!

As if in answer to his thoughts, the phone hummed again. This time, Letty was smiling. "Mark, good news! Dean Grisholm wants to see you in his office, at once! It must mean—"

"It doesn't mean anything yet," he told her. He'd long since learned to avoid hope without good reason, and this late reprieve offered little encouragement. But at her hurt look, he forced his voice to a more cheerful tone. "Maybe it will, though. Wish me luck, Letty!"

She crossed her fingers quickly, before cutting off. Mark gathered up the papers that were to have been his final proof, staring again at the rows of symbols on the panel. For a second, he reached for a blank sheet of paper, intending to add them to his notes. But the results were too fantastic. He hadn't claimed complete success, so there would be no dishonesty in omitting this. Some things had to wait until they could be explained—if he ever got

a chance to find an explanation. He cut off power and headed out into the hall, toward the elevator that would take him to the top of the central tower, where the dean's offices were.

The clerical help was gone when he reached them, but the door was open to the inner office, and he could see Grisholm sitting at his desk. The man was a short, stout Santa Claus type, with his face hidden by a grizzled beard and the Fellowship mask over it. Mark had heard rumors that his appointment four years before by the new custodian was resented by other Fellows; the man's previous career had been something of a mystery, beyond his listing in the graduate rolls. The students seldom saw him, except for the sight of him moving to and from his house in the park outside.

Now he looked up and his lips parted in a brief smile. "Come on in, Mark. Thought I'd recognize that towhead, though it's twenty years since I sat in on the examination for you. Not many blonds born these days." He thrust out a plump hand, then motioned to a chair as if Mark were more than a mere doctor. "Now what's all this about appealing for an extension on your research? Any proof the added time will let you finish?"

Mark handed the papers across, trying to remember the man. But that whole early examination was a blur, as if hypnotic erasure had been used. He'd never discovered the purpose of the test, though he'd learned that many of the students here had gone through a similar experience.

Grisholm dropped the papers after a quick glance. "Suppose you summarize. You were reversing normal information theory practice, as I get it, trying to find the factors in language which have significance only to the personality. Trying to find how personality shapes speech. Psychic bits, eh? Right?"

"Roughly, yes." Stated so baldly, it robbed the work of the subtlety of its departure from standard information analysis, but it was accurate enough. His original monograph lay on the dean's desk, and he indicated it, trying to summarize his improvements. In the last two months, he'd found the fruitful attack he'd been seeking. Except for the one case—which still might be due to faulty data—he'd rebuilt his computer and organized his methods so well that he could get a positive index of a man's individuality from as little as five hundred words of his writing, even when the writer tried to change his style. He'd spotted pen names the writers believed to be completely secret and repeatedly matched writing samples against the writers.

"All this in the last two months since your original report?" Grisholm asked skeptically. "After three years on that?"

"I had help," Mark told him. Letty had slaved night after night in the converted cellar of her house to finish the important filing and

cross-checking, and she'd even persuaded several of her friends to help. "I'd have gotten even further on regular research time if my requests for aid from the clerical pool hadn't been denied!"

Grisholm grinned wryly. "You covered that pretty thoroughly in your petition. It read as if the whole Institute had been conspiring to keep you from finishing. No, never mind —I'm not offended. Maybe you were short-changed a little. We ran into more demands on the pool than usual this year, and I had to allocate help where it seemed most productive."

He waited, as if expecting a protest. Mark let it ride, and Grisholm shrugged before going on. "You had an interesting line of research, but hardly useful except as pure knowledge. Maybe it matters academically who wrote what of Shakespeare, but it won't solve any important world problems. You mentioned something of great importance in your original application, but I don't think you really knew of such a thing. Or did you?"

"I was going to use identity proof to disprove the Ruddy rumors about the custodian being an immortal man, using us all," Mark answered. There was no way of knowing how the slanderous stories of transplanted brains and other atrocities had begun, any more than the lies about the Fellows planning to move to the Moon and blast the Earth. But it had bothered him as a child, and no story was too wild for some of the adult people to swallow.

Then he jerked as he remembered the symbols on his computer panel abruptly. Now he'd probably have to tell the whole business and—

"Dr. Saxon!" Grisholm's eyes were cold and sharp behind the mask. "Some things don't need disproof, I might remind you! If you are trying to make your work something that affects the custodian so you can appeal over my head, you'll have to do better than that!"

"I wasn't trying anything!"

The dean's eyes grew even sharper. "Um-m-m. You're sterile, I see. There's some evidence of a feeling of persecution in your petition. Now you show an overconcern with immortality. We usually weed out all cases of sterility paranoia, but—"

"I protest!" Mark found himself on his feet, his hands clenched, his blood pounding against his temples. "You have no right!"

Suddenly Grisholm's body relaxed and he leaned back in his chair, chuckling. "Trapped, damn it! Very clever, Mark. You needled me into showing what might be called personal prejudice against you, so I guess you can invoke your right to protest directly to the custodian. All right, you win. But first, let me show you something."

He leaned forward to the scanner that connected to the Central File, pulling out a complex electronic key and inserting it while he tapped out a code on the indexer. "This is from the secret files, so I'll need your

promise not to speak of it to anyone."

Mark nodded, forcing himself back to his chair while his blood pressure began dropping to normal. He hadn't meant anything clever; he hadn't even remembered the rule on personal prejudice. But he could not let the chance go, since he suspected that some measure of real prejudice was involved.

Grisholm spun through the index that appeared on the screen and grunted as he found something. "Here, take a look at this."

Slipping by on the screen was a student's report, dated nearly a hundred years before. Clumsy, roundabout and in strange symbols, it still duplicated most of Mark's work!

"I should have been told of this," Mark protested.

Grisholm released the index. "No reason. We've found duplicate projects sometimes pay off handsomely. You're judged on what you do with a line of work, not how much has been covered before. But in this case, there was also an appeal to the custodian—and Fellowship was withheld. Precedent's against you. Besides, from such an appeal you get only unqualified acceptance or rejection. On the other hand, even if I fail you, I can give you a recommendation of merit. That will make things a lot easier for you."

"I still appeal," Mark told him. He was sure now that Grisholm didn't mean to give him an extension; the whole argument could have been ended too easily by simply agreeing to that.

Grisholm reached for a rubber stamp, slapped it on Mark's report, and signed quickly, before dropping the papers down one of the slots on his desk. "All right, that's it. You'll get a three-day extension here, automatically, until your appeal is heard. Now let's get out of here. My cook's been waiting supper for hours. Here, I'll take you down with me."

He flicked off the lights and touched a button that opened a small door to a private elevator. He seemed in the best spirits in the world, more than ever like a genial Santa Claus left over from Christmas. It was all wrong for a man over whose head an appeal had been forced, and it worried Mark, though he tried to mumble his thanks.

Grisholm brushed the words aside as they reached the ground floor. "Forget it, boy. Why not join me for dinner? Now that your fate's out of my hands, there's no reason against it." He smiled, as if it were some unusually good joke. "At my age, a man needs young company once in a while."

"Thank you," Mark said awkwardly. He groped for a reason to refuse and seized on the first polite lie he could think of. "But I've already got a date."

Grisholm nodded, the amusement on his face deepening. "Of course, of course. Don't let me keep you, then."

He stood watching as Mark moved

away, ruining the younger man's idea of returning to his laboratory. Maybe it was just as well, though. It was well past dinnertime.

Mark headed toward the all-night tavern just outside the Institute grounds, trying to make sense of Grisholm's behavior and failing. He was also bothered by the fact that the earlier report had been in the secret files. It didn't make logic. Even that could have been used to end some of the rumors about the custodian—unless it also indicated the presence of an immortal dictator over them!

He cursed at the thought and threw it savagely out of his mind. Immortality was impossible. Besides, it would ruin the whole integrity of the Custody. Without that, there was no hope of preventing the full descent of another dark age. It was bad enough now, but without the protection of Custody—

Even Twentieth Century men who studied the complex patterns of historic cycles had seen that such an age was coming. The signs of increasing conformity, mass fads, surrender of individual rights and anti-intellectualism had all been there. The pendulum of history swung from Hellenism through Rome to the Middle Ages, then back through the Renaissance to the Revolution of Science, while excesses of folly or brutality at the extremes repeatedly proved ruinous.

Now, with too much technology, the risk of another relapse into neofeudal power thinking was unthinkable, as the brief horrors of the final wars had proved.

Out of desperation, the Custody had been created after those wars. Progress must go on, though many of the new discoveries would have to be restricted to the few who could accept them safely. Every scrap of sociological knowledge must be used to control the coming darkness and prepare for the needed smooth transition to another age of advancement. This time, intellectual apathy must not be accompanied by the physical brutality of constant power struggles. The Institute was founded to select a few suitable Fellows, with one of their number chosen for a single term each twenty years as World Custodian. Originally, the office had been chiefly advisory, but time and the follies of local rulers had turned it into the effective government of the world.

The town beyond the Institute showed that the theory was working, too. Old and overcrowded, there was still a measure of law and sanitation. The people were dulled and crushed under a self-imposed burden of tradition, superstition and disregard of human values. They were only too willing to be relieved of their problems by handing over all their rights to anyone who would rule. But through the control of Custody, their rights had never been completely abandoned. There had been no return of serfdom, inquisitions, torture chambers or crusades.

No matter what his computer

showed, Mark had to trust in the integrity of the custodian.

The tavern was almost deserted, and a sign announced that the kitchen was closed. Mark found a table and waited while the barman finished some argument with the single waiter about horoscopes, then gave his order for yeastburger and beer. One of the tavern girls stuck her tattooed face over the balcony, recognized him, and went back to her room. Final week was always bad for the shops that lived off the students.

When the food finally came, it was almost as tough as his thoughts. He still couldn't understand the secret filing of the report. If it were only of academic interest, as Grisholm had said, there was no reason for any restriction on it. The only justification for hiding such work that he could see had to lie in the ridiculous stories spread by the Ruddies; since they were impossible, the whole thing was nonsense.

His brown study was interrupted by a voice beside him. "Mind if I join you, Mark?"

He looked up to see a slim young man in a Fellowship mask dropping into the opposite seat. It took a minute to recognize that it was Northrup. He hadn't meant to see the man, but it was too late to avoid him now. Mark grunted something that might pass for a greeting, resenting the need for speech.

That need was removed temporarily as the waiter rushed over, bowing obsequiously before the new arrival. "Compliments of the house, your Fellowship," he announced. A sparklingly clean glass and a bottle of wine seemed to spring into existence on the table. "Shall I open the kitchen, your Fellowship? The filet will take only a little time."

"Anything for you, Mark?" Northrup asked. He'd been a Fellow for two years, long enough to take the advantages for granted. The waiter turned to face Mark now, showing a mixture of apology and accusation for not having been warned of Mark's important friend.

Mark shook his head, and Northrup shrugged. "Just coffee for me, waiter. I was trying to get in touch with you, son."

"Letty told me," Mark admitted. He hated being called son by a man only a few years older. That name had been reserved for Uncle Will's use. "I didn't expect to see you here, though."

Northrup grinned casually. "I saw you coming this way and followed. Nothing else to do. I got tired of watching the new Fellows trying to get over the shock of passing."

"I suppose making Fellow didn't mean a thing to you?" Mark asked. Northrup's manner galled him more than it usually did.

"Hell, not much. I made sure I'd have an angle that would get me the degree. I knew I'd make it, so why get all excited over it?"

"Must be nice to have a sure line of research!"

Northrup had his original doctorate in brain histology, as Mark remembered. He'd been doing Fellowship work on something about the physical mechanism for storing memories.

Now his grin deepened. "Maybe I'd have made it on the research. I pretty well proved that the human brain can hold a thousand times more than anybody figured—enough for a thousand lifetimes and plenty to spare. But I wasn't counting on it being enough. I was figuring the custodian would get me passed after I fixed up his dog. Oh, forget it. I didn't come here to brag. Mark, I've got a proposition for you."

He leaned forward, the smile slipping from his lips, while the visible part of his face took on an almost fatherly look. "I've stumbled on an idea Grisholm's crazy about—so good it means pure research with no administrative work. I want you to help me with it, son! It means

top pay—and at least some chance for an honorary Fellowship some day! More than you can expect anywhere else!"

That wouldn't be hard, Mark realized. He wasn't ready for the usual work open to an educated sterile male. He might get a job in Data Reduction at a local Custody branch, with a minor administrative post in twenty years. Or some local prince might take him under patronage, since he'd attended the Institute—though no sterile man could marry his way into the governing lines, of course. Or he could take the vows and retire to a Custody Archive, if they'd have him. Northrup's offer sounded much too good—suspiciously so.

"Thanks, but I haven't officially failed yet," he reminded the other. He fumbled momentarily, hunting for a way out of the need of a decision. "What's your new project got to do with the custodian's dog?"

Northrup laughed. "Nothing, of course. That was just insurance on getting a degree, before I ever thought of the project. But you know about the dogs?"

Everyone knew about them, of course. For as long as could be remembered, each custodian had carried on the tradition of having two large dogs with him at all times in preference to other bodyguards. There were groups of legends about the remarkable intelligence such dogs developed.

"Well, I was lucky. One of his mutts got run over badly when I was near enough to reach it. So I found a young dog and switched brains. Any good brain man could have done it, but most of them won't touch animals, of course. So the custodian was properly grateful, and here I am in my mask."

"That operation—it can be done to human brains?" Mark asked thickly. He could feel the pulse drumming in his throat, like the sudden ugly throb of suspicion in his mind. He reached for his beer to cover his reaction, but his hands shook as he lifted the glass.

Northrup seemed not to notice. "Why not? They developed it in the final wars. Tricky work, but no more impossible than grafting skin from person to person. Brains don't store well, but we sometimes get accident cases where we make the switch." His lips curled in sudden amusement. "Probably that's the source of those Ruddy immortality lies. They seem to think grafting on a young body will rejuvenate an old brain."

"It doesn't?"

"Of course not, son. Or maybe it does, a little, but not enough to matter. I read somewhere they tried to make it work that way, once, but nothing came of it. A good thing, too. Make everyone start hunting bodies and where'd the race get?" Northrup finished his coffee and got to his feet. "Well, think over my offer. If you don't wangle the degree, look me up."

"I'll do that. And thanks, Northrup," Mark told him with careful

friendliness. He watched the Fellow move toward the door, where the waiter was hastening to open the way for him. Then, after a decent wait, he left his bill and tip and headed back to the Institute.

He knew what he had to do now. The thoughts in his mind made him sick, but there was too much evidence now to be dismissed. The ability to transplant brains fitted too well with the ancient rumors, the evidence on his computer, and the hiding of the one method which might end such doubts. Northrup had indicated that no immortality could come of an operation, and Mark prayed he was right, but too many impossible things had already been done; rejuvenation couldn't be completely ruled out as long as secrets could be locked away so easily at the custodian's desire.

This time he locked the door after entering his laboratory, contrary to his usual practice. The box of material from Central Files had been delivered, he saw with relief. Most of it would be useless in the time he probably had, but what he needed should be there. He pawed through it hastily, scanning the titles on the reels of tape, then nodded. The tape of custodians' speeches through the centuries was there; he'd meant to use it as his final triumph, to end the rumors forever. Now—

He ripped the tape from the can and fed it into the reader on the computer, picking out thousand-word sections for each of the custodians at random. Twenty-one of the twenty-three who had served were represented. The computer clucked away, filing the sections in its memory circuits and beginning the complicated analysis needed to break down the individuality of each writer.

Now doubts crept back as he sat waiting for the results. Negative evidence might prove nothing, since many great men had used professional men to write their speeches; traditionally, the custodian wrote his own copy, but there was no proof of that. Also there was no sure way to estimate what changes might occur in an individual who lived through centuries of time. He'd been naïve to think he could prove anything. Maybe the custodian had been right in storing the method in the secret file.

Then finally the machine began spilling out its answers. Mark copied them, one below another, as they appeared. At first inspection, there seemed no exact correlation. But as Mark studied the rows of symbols more closely, his last doubts vanished.

From speech to speech, except for the two oldest custodians, there were too many similarities. The differences were only slightly greater than those between a man's normal earliest and latest writing, and those were probably caused by outside help with the first drafts. There was no question of continuity in Mark's mind as he finished.

For four hundred years, the same

man had occupied the palace of the custodian! The twenty-year limitation had become a mockery. And the office that was to lead the world back to a better future had been corrupted into the greatest seizure of power in all history.

It was a monstrous joke on humanity. And it could only be the end of all their hopes. An immortal, long since skilled in getting only himself re-elected, with centuries in which to establish his absolute control! A man who would never be so foolish as to give up any of that power by letting humanity regain the lost love of freedom. A man to whom the *status quo* meant the best of all worlds, however bad it might be for those under him!

For a second, Mark sat with the damning evidence in his hands, while fear and sickness washed over him. He should destroy it at once, of course. It was no business of his. Even without Fellowship, there was Northrup's offer. Whatever the custodian might be would have no effect on his life. As for the future—well, what had a sterile man to worry about that? There'd be none of his blood in the generations that would suffer for this!

But the picture of one man living forever in a world where nearly a quarter of the population was denied even racial immortality was too monstrous. Mark stood up abruptly, shoving the reel of tape and his answers into a small brief case, along with the carbon of his research paper. It was evidence against the fraudulent practice of Custody, and somehow it must be used.

Unfortunately, it wasn't enough. As long as nobody could prove immortality was possible, this could be explained away by any clever man: Proscribed ritual that made all Custodial writing identical—any of a hundred explanations. And the answer to how it was done would lie stored away in the secret files where nobody could find it. The only final proof would have to come from one of the half hundred men on Earth who had the secret of those files—and no man in such a position would give up his power for any idle dream of integrity; in four hundred years, the custodian would have learned how to pick his men better than that!

Mark didn't even know which Fellows were trusted, except for the custodian himself and Dean Grisholm.

Grisholm's scanner! And it hadn't been cut off, as far as Mark could remember. The dean had released the indexer, but he'd left without removing his key or switching off power. In the case of an ordinary scanner, it would still be working. It seemed incredible that it should have been left open to the secret files, yet most of the older Fellows grew careless in the confidence their positions inspired.

Only a fool would risk it, Mark knew. There might be an alarm that would be triggered after an automatic cutoff. The whole office

might be a trap, once the dean left it, and no explanation would account for his entering. For that matter, the cleaning staff had probably locked up after themselves. Unless the private elevator would open for him, his chances of getting in were pretty weak. Yet somehow he knew he had to try it.

He hastily crammed sheets of self-printing paper into his bag and stepped cautiously into the hall, already feeling a thickness in his throat at what he planned. Everything seemed deserted, even to the booth where Letty worked. He heard the cleaning staff busy somewhere above him, but they had already worked their way down from the upper floors. He moved through the empty halls, feeling that a Custody policeman was staring at him from every corner.

There was still no sign of a guard when he reached the elevator door, however. He pressed the button that was worked into the ornamental scroll, holding his breath, ready to run at the sound of an alarm. The door opened quietly, to reveal the little cage waiting. It closed silently as he touched the top button, and the elevator began rising smoothly. A few seconds later, he stood in the darkened office.

He'd forgotten that there would be no lights, or that he couldn't switch them on without the danger of attracting attention. Then, as his eyes adjusted, he saw that some illumination came through a transom from the hall. He listened again for the cleaning staff and fumbled his way to the scanner. He could hear his blood pounding in his ears now, and his hands were slippery and cold as he reached carefully for the indexer control. There was still time to back out. With luck, he could leave without being seen. Then it was too late as his finger pressed down on the button.

There was no alarm he could hear. Light came on, softly illuminating the panel, and the index began sliding by slowly. It was too short for the general index, indicating that it was still adjusted to the secret files!

He speeded it up, passing through the alphabet to "I." Identification—he hesitated at that, then went on; illusion, immaculation; immortality. He pressed for subheadings, waiting until *Means to achieve.*

There were seven listings under that! He took them in order of dates. The oldest was for suspended animation, and he rejected it quickly as being effectively useless. Then there was one that produced continuous growth as a side effect. The third seemed to have nothing to do with the subject.

He started to reject it, then hesitated; it would be a logical step to bury the real method in such apparent irrelevancy. He skimmed through the report, which dealt with a sort of electronic educator; it was a development of the idea of the hypnophone - encaphaloscriber, designed to force knowledge directly from the mind of the teacher to that

of the student or students. Apparently any amount of knowledge could be passed on in that way.

Remembering the long years and effort that had gone into his own education, Mark grimaced bitterly. Here, potentially, lay the answer to educating the whole race out of their slump. The new dark ages could have been ended almost at once. Yet it lay buried in the files, kept from use by the custodian who had been appointed to further the ending of man's relapse!

But it had nothing to do with the subject. He puzzled over that, looking for some clue, until the very end of the paper. There, in a brief summary, the researcher had indicated that through the use of the machine, knowledge might be made truly immortal. It was the sort of thing that had made cross-indexing so complicated that only electronic machines could handle it. Mark shoved the reject button and went on to the next entry.

He bent forward sharply at the title of the paper and began skimming it rapidly. There was no doubt now. This was the answer to Northrup's objections—a method of insuring the rejuvenation of brain tissue through multiple transplantation!

He began copying it now, using the self-printing paper he had brought, no longer bothering to read. He had his proof—a ghastly proof that meant the death of three brains each time the custodian was rejuvenated, since they obviously would not be replaced in other bodies to threaten exposure through their horror-won knowledge. Four hundred years of immortality, won by the butchering of how many other men? What sort of a monster must the custodian be by now?

Mark's hands were shaking as he stuffed the sheets of copy into his brief case. He zipped it closed and reached for the indexer, to leave it as it had been. His finger touched the button, and then stopped, while cold shock washed over him.

The pages on the screen were gone. In their place, pale eyes stared out through a silver mask, while a pair of amused lips opened like a cat about to hiss at a captured mouse. The symbol on the mask was that of the custodian!

Mark hit the button frantically, but the face remained on the screen. And now there was a voice from a speaker somewhere inside the machine. "Mark Saxon, I believe? My guards are on their way to escort you to me. You'll make things much simpler by waiting quietly for them. It seems we have a few things to discuss."

The face vanished and the screen went dark. For a second, Mark stood paralyzed. Then he grabbed his bag and darted for the private elevator. However slim his chances, he had to try to escape, at least until he could spread his information! The door seemed to take forever to open, and the little cage hardly seemed to move as he started downward. But

if they didn't know he was using it, it might improve his chances.

He studied the row of buttons, counting them. The number indicated that the elevator ran to the subbasement of the Institute, rather than just to the ground floor, and he pushed the lowest one. Like most of the students, he'd spent some time in the lower basements during the first-year period of hazing.

From outside the shaft, there was the sound of hard heels pounding across the entrance hall. The guards must have arrived. If they tried to use the private elevator—

But apparently they hadn't been told of that. The cage dropped downwards, while the commotion above faded. Then the door was opening, and the dank smell of the basement hit his nostrils. For the moment, he seemed to have eluded pursuit. It wouldn't matter in the long run. He was sick with the knowledge that he could have no hope of escaping the search of the custodian for more than a few days, and that his attempts might only make whatever horror faced him even worse. But a queer determination carried him on.

He twisted through the maze of the basement, looking for something he could identify. Finally, one corridor number placed him, and he nodded. He'd followed it before, escaping a hazing party, and he knew the way now. He could only hope that no guards were waiting at the end, where it connected with the subway tunnels.

He was in luck. There were no guards, and one of the irregular evening trains was already in the station as he dashed across it, running for the nearer of the two cars. The door clattered shut behind him and the train rumbled away. Around him, a group of citizens stared at his tattoo with hard eyes, then spotted his student insignia, and went on with their conversation. Apparently they were on their way to break up a group of Ruddies whose hideout had been spotted. The Custody frowned on torturing the malcontents beyond certain limits, but the men were fingering their clubs fondly in anticipation of the fun to come.

Mark considered the Ruddies, but his mind rejected the idea of joining them almost at once. Officially, they were permitted as a necessary enemy for the citizenry to feel superior to; their presence made it easy to channel off some of the normal animosity of the times from more dangerous subjects. Actually, they served as a convenient place for the planting of informers, and Mark's presence among them would probably be reported almost at once.

He shoved his way out at the third stop. He couldn't return to his room, but he had to have some place to organize himself. The only place he could think of was the basement of Letty's house, where they had set up the equipment for the effort to finish his work. It had a typewriter and copying supplies he'd need, at least.

He found a newsstand still open and picked up copies of the local paper and four others from neighboring principalities. As a university city, Aurora was more cosmopolitan than most towns. The five weren't enough, of course, but it was a start. Somehow, he had to find the addresses of every paper he could, since his only hope of getting his story released was to hit every publication and hope that one editor would take a chance. If he could get the facts before even a few hundred of the more intelligent citizens anywhere, Custody might never be able to suppress it completely.

Letty's house was dark when he reached it, as he had expected. Unlike human values, material things were treated with respect in this age of falling living standards, and electric bulbs were never burned uselessly among the citizenry. He debated waking her, then abandoned the idea; it would be better for her if she could honestly deny knowing he was there. He unlocked the entrance and went in, pulling down the heavy shutters before turning on one light. He opened the local paper, searching for the masthead page. At the Institute, he'd never bothered with papers, since the local news was no concern of his.

The editor's name and the address was there. And below it was a line in darker type: "Published under direction of Fellow J. A. Mannheim, for the Custody."

Mark swore, and grabbed for the other papers, but all had similar notices!

He should have guessed—or known; the control of all sources of information by the custodian was hardly a secret. But the old catchwords about freedom of the press had clouded the issue, and he'd never even looked at a masthead before. Probably most readers didn't. There was no point now in sending out his facts, the censor would kill them at once.

Letters to individuals? He knew no one outside research circles, where all their interests lay with the Custody. His chance of finding even one reader of the few circulars he could send out who would do more than turn his material over to the authorities was almost nonexistent.

He was hopelessly blocked at informing the world. The custodian's grip was too secure. But there was one other method—

A faint sound brought him around in a nerve-tensed leap.

Letty stood at the head of the worn stairs, her hand on the knob and her back to him. Then, as she heard him, she turned to face him, and her smile was as thin as the worn gown she had slipped on. "Mark! I thought you were a prowler! Wait till I get some clothes on and I'll bring you some coffee."

"What did they report over television, Letty?" he asked as quietly as he could.

Surprisingly, she seemed relieved at the chance to admit that she'd

heard about him. Some of the worry evaporated from her face. "Just that you'd had a breakdown—worry about your degree. That we should report you for treatment before it gets worse. Mark, I know how you must have felt. Anybody'd break down. But they want to help you. Why don't—"

"I don't want their help," he told her. "There's nothing wrong with me, Letty."

She sighed heavily, her hand hovering on the doorknob. Then she nodded, and the tight smile returned. "All right, Mark. But you look tired. Come on up and we can . . . we can talk about it while you get some rest. You'll feel better then."

"I feel fine," he repeated. "I didn't break down over the degree. Letty, you know me better than that. Hell, I even had a job offer from Northrup. Come away from that door!"

"All right. Why don't you tell me all about it?" She came down a few steps.

He nodded, grimly. "You asked for it. But you won't like it. I found two men with the same individuality formula. Two separate men, Letty—"

Her sudden nervous laughter cut off his words. She choked it back at once, trying to put sympathy onto her face. "Is that all? Mark, I'm sorry. We tried to keep it from you, of course. I guess we let one case slip through. But you don't have to worry about it. We never meant to tell the dean. I suppose it was a shock, finding it and thinking he might know. But I've helped a lot of students with their work. Who cares about a few little details, when you've got so much good work to show? You don't think all that stuff about science is anything but a test of how clever you are, do you? Why, I know once when the dean himself—"

"Letty," he interrupted her flow of words. He'd never doubted her normal attitude toward science, and the familiarity of it had helped break his first shocked reaction. "Letty, what did you do with the duplicates the card sorter turned up?"

She indicated a box on one of the tables. "I've got more upstairs. I'll get them," she offered.

"No dice," he told her.

She screamed as he caught her, and then went limp. As he tied her up and gagged her loosely, she didn't even struggle. He carried her upstairs, placing her in the first room he could find, aware that she could make her way to a window and summon help eventually.

There were a couple dozen sets of duplicates when he went through the box and checked with the files. Most were cases that were easily recognized as having one member who was already listed as being dead. Immortality, it seemed, wasn't confined to the custodian! Quite a few Fellows had been granted the boon. It must make for a nice, tight clique; and it helped to explain how someone could be found to perform

the operation. One of the duplicates was Northrup.

Then he stared in amazement at another. The formula for Dean Grisholm was identical with that from the custodian's first policy speech!

He tried to picture the face under the mask on the scanner; it had seemed to be a thin face, while his whole impression of the dean was one of pudginess. But the fat could be simuflesh, and the mask and beard had hid his face completely. It could be the same man, leading a double life. It had to be, according to the formula here. Certainly it might have advantages, and both the dean and the custodian were known to be isolated by their work for long periods.

No wonder Grisholm had been amused. It must have been screamingly funny to him to have Mark appeal over his head to himself!

He heard Letty dragging clumsily along the floor as he passed toward her phone, using a flashlight to find it.

But he'd have time enough before she could attract attention. He blanked the viewing pickup and dialed, hoping his memory of the number he'd been given months before was correct.

Apparently, it was. Northrup's face looked out of the screen, registering surprise at seeing no face in his own.

"This is Mark Saxon," Mark told him. "You may have heard that I'm in a jam?"

"Hi, son. Sure, I heard. What really happened? You're no nearer breakdown than I am."

"Of course not. I found an angle to get my Fellowship, that's all. I had to act a little peculiar." If Northrup knew what had happened, he'd probably assume Mark was trying to use blackmail against the custodian, which should fit the apparent level of ethics of a man who'd sacrifice others for his own existence. "But I need a little time before I can get in touch with the custodian's office. And I'd like to discuss it with you first."

"If I can assure you I won't call the authorities first, I suppose?" Northrup guessed.

"No chance. I've got to trust someone, and you're my only hope. Know where Letty lives?" He paused while the other nodded, then tried to act as if making up his mind. "I'll be there in about half an hour. Her basement. I've been working there. And don't let her see you come up."

He hung up without waiting for an answer. Northrup lived less than ten minutes away by car, and Letty's position was just high enough to entitle her to a two-seater. He found it in the tiny garage, shorted the ignition, and wheeled it out, grateful for the few times when his Uncle Will had let him drive, during a trip they had made. Nobody would expect a student to operate a car—particularly when the escaping student was heading back toward the Institute.

It was only seven minutes later when he buzzed at Northrup's door. "Mark," he called softly. "I changed my mind."

There was a rustle inside, but no sound of a phone being lifted. A few seconds later, the door released and the Fellow motioned him in. "I was just getting ready to leave, Mark. Come on in. Grab a drink over there. You look as if you need it."

Mark took it gratefully. He was traveling on the ragged edge of his nervous energy now.

"What's all the dope?" Northrup asked. "If you're going to trust me, there's no point in stalling, son."

Mark dug the proper material from his case. "It's nasty," he warned the other. "I've got proof, though. First, this shows that brain transplanting can bring immortality. And you know something of my work, don't you? Then you'll have to take my word that Dean Grisholm is actually the same as a custodian who lived a hundred years ago! If I can get that information to the custodian, don't you think it deserves a Fellowship?"

"If you're right, it should," Northrup admitted. "Why not take it to him?"

"I'd never get to him. The dean has me pegged for the booby hatch."

Northrup nodded and took the papers over to the light, as if to study them carefully. The weight in his pocket might have been a gun, but he seemed to be disarmed enough to have forgotten it. The story was close enough to the truth for him

to accept, and he'd probably be only too glad to arrange for Mark to meet the custodian directly.

"Uncle Will!" Mark called softly.

Northrup turned casually. "Yeah, son?"

Then shock hit his face. His hand groped for the pocket where the gun must be, but he was too late. Mark was across the room, his big body striking the smaller man and bouncing him back over a table into a crumpled heap.

Mark yanked his jacket up over his head, pinioning his arms, until the gun had been transferred. Then he released the Fellow.

Northrup sighed and dropped into a chair, reaching for his half-finished drink. "So you found out? Smart boy. I always knew you were." His voice had altered in tone, sounding more like Mark's adopted uncle now. "Your uncle . . . I didn't really desert you. There was an inoperable, unsuspected hepatoma, already metastasizing. The Hermitage retirement was to permit this . . . well, this continuation."

"At the cost of three other lives!"

"No, Mark. You're wrong about that. Was your uncle the sort of monster that would make him? Was he, son?" He leaned back, reaching for his drink again. "Look, you're right about a lot of things. But you're wrong, too. Suppose I tell you what really happened. It's even— Wait!"

Mark wasn't waiting while the other stalled until the guards checked back here. The gunbutt slapped against Northrup's temple, bringing almost instant unconsciousness. It shouldn't have mattered, but he bent over to check the other's heart; somehow its firm beating made him feel better. The one killing he had to do was enough to worry about.

He dialed the palace, making no attempt to blank the screen this time. Ten seconds after he identified himself, he was looking at the silver mask and smiling lips of the custodian, telling the same story he'd told Northrup, but substituting another Fellow for the dean as the immortal conspirator. It sounded pretty thin, since the custodian should have known all such facts himself with the files at his command. But he was hoping the man would put it down to his own bad logic.

Apparently it worked. The custodian nodded. "If you're right, of course, I'll excuse your illegal acts. And I've already decided to accept your work as proof of Fellowship rating. Where can my men . . . or I . . . meet you?"

"I'll call tomorrow noon," Mark told him. "I've got a hideout, I trust, and I'm almost dead from fatigue. Besides, I want to see my name on Dean Grisholm's list of graduates in the paper tomorrow, so I'll know you mean it."

The lips under the mask firmed, and then relaxed again. "All right, Saxon. I can always cancel it, if you don't call. Only keep this to yourself!"

Mark hung up, and turned back to Northrup. He found the keys

to the Fellow's car in one pocket. Then he stripped off the mask and put it on. It was what he had come here for—his passport to the inner sanctum of the Institute; the death penalty for wearing it wouldn't matter to him now, probably—and might help in preventing anyone suspecting. He carried Northrup with him gently to the bigger and newer car and drove away. He was probably being a fool again, but it would only take a few seconds to drop the man off where he would be found by the night patrol and taken in for care.

It was almost an hour later when he drove through the gate of the Institute and into the parking lot. He had driven about slowly, trying to check his plans and be sure of every step. Too much still depended on luck, but he could find nothing better.

He left the car and began walking rapidly toward the little house of Dean Grisholm. Above his head, the mockery of hope still shone on the masked figure of Minerva, and the palace of the custodian lay only a little farther away.

Gaining entrance there would be easy—but useless. No ordinary Fellow could get through the guards and underlings. Within minutes, he would be picked up and rendered helpless. But the house of the dean was another matter. A Fellow moving toward it would be accepted, particularly on the morning before the publication of the Fellowship lists; there could be any kind of last-minute business from the Institute. And the dean had neither guards nor assistants in constant attendance. His immunity to danger lay in the fact that he seemed of no great importance. Only a man who knew he was also the custodian would offer any risk, and he must feel his tracks were covered.

Of course, he might not be there. But he would have to be seen coming from the house in the early morning, on his way to his office to deliver the official list of successful students. Not to do so would be highly unusual, and there was no reason why he should avoid it. If the house were empty now, Mark could wait.

He considered the two servants, and shook his head. Their habit of leaving each night must be legitimate; Grisholm wouldn't want anyone around when he slipped back and forth, probably.

The only problem was getting in. But that shouldn't be too difficult. There were windows leading into a basement of some sort, and it was a period house, made to look at home in the gardens and parkland around it—it must use the antique wooden frames that Uncle Will had been fond of. Removing the putty and points from that was no problem.

It was easier than that, as it turned out. The basement windows weren't even locked. Mark considered it doubtfully, but it fitted the carelessness about the scanner and elevator.

He made sure the gun was free in his pocket, then slid in. Shielding the flash, he located the steps from what seemed to be a recreation room and headed up them.

Everything was silent on the first floor. Then his ears caught the faint sound of snoring! If the dean-custodian had already returned and gone to sleep, nothing could have been better. One single shot, and the world would be freed. There would still be the other immortals, but they must be split up to permit the custodian's easy control of them; in the violent struggle for power that must follow the custodian's death, the whole sordid business could come out. At least, there was a chance this way.

He hadn't thought of what must happen to himself. He refused to think of it now. He located the door from which the sounds came, tried the knob, and found it unlocked. With his gun in one hand and the flash in the other, he shoved forward.

Blinding lights hit his eyes at once. Soemthing seemed to leap out of nowhere, and teeth raked his wrists, snapping over his hand and jarring the gun away from him. Then the lights dimmed until his shocked eyes could make out the form of one of the custodian's dogs carrying the gun away from him. He'd forgotten about them!

"Better sit down, Mark," Grisholm's voice said, not unkindly. The man was standing across the room, smiling in amusement. "Let me look at that hand. Wolf tried to be gentle, I know, but he might have scratched the skin. Sit down! And don't try anything. These dogs are just as immortal as you think I am—they have enough experience to justify all those legends about their intelligence. Now, let's see that hand."

Mark had dropped numbly into the chair behind him, unable to think or react. His mind was frozen in a circle of broken thoughts. His finger was still trying to push at the trigger he no longer felt. But some surprise registered as Grisholm's hand caught his wrist and began examining it, before swabbing something on his skin. The pudgy hand felt real—there was no trace of simuflesh.

"Northrup's coming out of it," another voice from the doorway said quietly.

Mark's eyes jerked up unbelievingly. Standing there was a lean figure in a silver mask, and the voice was that of the custodian!

Mark's voice was a hoarse whisper. "Two of you! But—"

"But still the same man, in many ways," Grisholm said. The dean dropped onto a couch beside the custodian, while the two dogs seemed to confer, watching Mark from the corner of their eyes. "Oh, you're nearly right in a lot of ways, Mark. I'm actually the previous custodian—the one who supposedly went into Hermitage. What were your plans for me, anyhow? Blackmail?"

"I was going to kill you! You filthy monster!"

Grisholm nodded happily. "I'm glad of that, Mark. A better try than I'd hoped for, too. Not your fault it failed. In this society, too few students have the mental flexibility to examine the hints of immortality we hand out. And the ones who do aren't usually able to overcome their conditioning enough to realize the direct answer is the only possible one in this society. I'm glad you didn't disappoint my faith in you."

"It won't work," Mark told him. He was trying to force cold anger over his confusion, but the best he could do was to imitate it. "I can't argue with four hundred years of cunning, but you can't convince me. A trap like this for your students may be clever, but some day the world is going to be rid of you."

The custodian smiled faintly. "Almost my own words once. Mark, that's a day I hope won't come for centuries. No, I can't convince you now, but your own logic would in time. Look at the governors of this world. They're on the average some of our best stock. Can you imagine what one of them would do as custodian? Sooner or later, there would be an end to the original purpose; and then Custody would be the worst means of preserving the most undesirable features of our society—with the best belief that it was the right thing to do. If the original plan is to work, the custodian has to be a man above the attitudes of this time."

Mark fought against the argument, while it slid under his guard, mixing with his old childhood idea that the custodian must be greater than any man could be. Superficially, it made sense. But not when the man could preserve himself through the horror of all those rejuvenations.

As if reading his thoughts, Grisholm broke in. "There is no killing, Mark. You overlooked the means, though we hoped you might understand when you spent time enough to read it—while we watched through the scanner, of course! The only practical method of immortality, such as it is, lies in the educator machine. It's far more effective than the inventor thought, you see. It's capable of transferring a whole mind into the brain of the user. Northrup has the brain he was born with—but your uncle lives on in him. And, of course, that's why there are two of us. It will work as often as desired. Mental immortality, Mark—not physical."

"Think about it," the custodian suggested. "A sterile man should realize what it means—the divine right denied him by his body can be taken over by his mind; he can effectively be his own children! Something too good for anything but the best brains of the age! And you've qualified. We aren't offering you death or torture, but *life*!"

"A nice promise to whip me into line! Do you think I'd trust you?"

The custodian shrugged. "No, I suppose not. Here." The gun lay on the table near him. Now he picked it up and handed it over. "Keep that, until you're convinced.

Oh, I'm not worried about your having it—because your only chance for immortality lies with us. But if it makes you feel better, keep it trained on me until you know I'm sincere."

Mark's fingers trembled as he took the gun. It was true—immortality, the dream of every man who had ever lived, was something they could give him. His mind could be driven into body after body, perhaps through all eternity. And they might have some way of proving that all this had been simply a qualifying test for that.

He raised the gun in hands that were finally completely steady, pointing it squarely at the custodian. Then his finger squeezed down savagely on the trigger!

Nothing happened but a muted click.

"I switched guns," Grisholm told him, and the man's lower face was beaming with a strange delight. "If you'd examined it, you'd have seen the difference. If you hadn't fired, incidentally, you'd have been given exactly what we promised—just as the others who went that far with the test have received the gift, or will receive it. Now—"

"Why'd you fire?" the custodian asked. "Why throw away a chance like that, Mark Saxon?"

Mark fought to control the hysteria that shock on top of shock was forcing him toward. He hadn't thought. It hadn't needed thought. Was there anything better in *possessing* a whole brain and body than in simply removing the brain? Was the death of the donor of that brain any less real because he lived on physically when his personality died before the conquest of another and a machine? He struggled with words, trying to curse them while he told them what any decent man should realize—that such a gift was more horrible than any death—more horrible even than being used as the body and brain for such a gift to another.

Grisholm nodded. "Which, of course, is what will happen to you now, Mark. We'd be foolish not to use such a brain somehow—and when coupled with enough stability to stand up under all this without cracking more than you have, you become invaluable to us. Still not sorry you tried to kill us?"

He laughed at the answer, as if there were humor in the words. "Stubborn," he commented to the custodian. "Well, if I'm to get any sleep before graduation listing, we've wasted enough time. Get on with it, Tom."

"It really isn't horrible, Mark," the custodian said quietly. "If I could convince you of what it really is like, I'd try. But I guess there's no use arguing further."

His finger touched something on the table beside him, and there was a sudden whirr in the chair where Mark sat. Bands of metal had whipped around him painlessly, pinioning him to his seat. And a whirring over his head made him look up

to see something the size of a wash-tub lowering, automatically centering a skull-shaped depression over his head. A similar affair was descending toward the custodian.

"You!" He gasped with the realization.

The custodian nodded. "Me, Mark. Because sixteen years from now, there must be a well-established successor to be appointed, just as Grisholm had me ready. It's logical—it takes the best brain we can find for the job. But if it's any consolation, it requires two whole years with this thing to make the fix permanent."

That was the final horror. Two years of regular sessions, while his mind slowly faded and another took its place! Two years of knowing what was coming, and being unable to stop it!

The dogs came over to stand beside him. They weren't needed. He wasn't going to fight physically. He'd have to fight mentally, to drive back into his own mind, to find the death-wish that had to be in every brain. Somehow, he had to will himself to death before the real loss of himself could be finished. It was all he could do now to defeat this monstrous recruiting scheme.

The larger dog licked his hand, whining something that sounded like words. Unconsciously, he reached out to pat its head, wondering if it were the dog Northrup had saved.

There was a soft chuckle in his mind, and words began to form in the silence around him. "I can read a little of your thought—there's some leakage," the custodian's thoughts whispered along his nerves. "No, Mark. The story Northrup told you was simply part of the trap—because your uncle Will in him still loves you and had faith you could pass any test. May I come in?"

And slowly, in spite of anything Mark could do, his mind entered Mark's. But there was no taking over. It was as if a corner of the brain expanded quietly, and another mind developed beside his own—a richer, surer mind, open to his. Tom Shaefer seemed to sigh in Mark's head, accepting what he found with no horror for any secret there. Then there was a feeling of another presence, somehow expanding out of the mind of Shaefer.

"Sidney Grisholm," Custodian Shaefer's mind said, and seemed to move aside while Grisholm came chuckling into existence, to introduce another. It went on and on, until the single brain of Mark Saxon was a community of twenty-two others beside himself, including the great orator whose mind had written all their speeches. And still there was no crowding of the personality that was wholly, permanently Mark's own.

"It can't be explained, Mark," one of the others seemed to say. "It has to be felt. And so far, there is no limit to what those incredible cells of the human brain can stand.

If Northrup is right, a thousand minds are not too much. But there is a price."

Then light hit his eyes again, and he was aware that the first hour was over, and that the helmets had been withdrawn.

Slowly, the minds inside his own began to fade away, leaving him almost alone, while his head seemed to split into a thousand shivering fragments.

He took the pain-killer Grisholm held out, muttering his thanks. There would be two years of violent headaches, he knew. And during those years, the new minds inside his own would grow stronger until they were permanent, as much a part of himself as his own.

Then there would be more years of headaches as he forced his brain to its limits to develop and master still more knowledge, to make himself worthy to take over the Custody. They would never let him relax and coast on their abilities, but would drive him on, trying to make him just a little better than they had been.

"We're asking a lot of you," the custodian said aloud, while a faint ghost of his mind seemed to echo it in Mark's brain. "Sometimes I wonder if we have the right to ask it of anyone. Maybe you'll think we're the monsters you felt before, Mark, for putting you through it. You still have the right to refuse, if you want."

He turned the words over, considering the price. It didn't matter —as it hadn't mattered to those other minds he had met. Man had always had duties and obligations, prices to pay, and misery to bear in the anguish of developing himself.

"Or the right to accept," Grisholm said. "But now you'd better get whatever rest you can. You'll have to be ready to take your Fellowship with the others in the morning, you know."

Fellowship! He tasted the word, nodding. The only real right lay there—the right men had dreamed of and striven for without any hope. It was the right to true Fellowship with the minds of others, the end to loneliness and fear. Immortality didn't matter, save for the time it could give in the fellowship of other minds, and the increasing community of such minds it could bring.

He stepped to the window for a last glimpse of Minerva facing and reaching for the dawn, and now the old inspiration was back. With the community of his mind linking together and building in warmth and understanding, he could dream again, as other such communities of mind must be dreaming. With their number increasing and their dreams deepening, time no longer mattered.

Some day the dawn would come, and there would be men ready for it. It was a dawn he might see in some mind or other—see and share!

THE END

THE SEA URCHIN AND WE

A sea urchin isn't exactly smart...but maybe we learned some mighty basic, and extremely important lessons from something even lowlier than the humble sea urchin of today!

BY ISAAC ASIMOV

In any free association test, the chances are appreciable that the word "evolution" will evoke the response "fossils." And fossil remains are usually of bones, teeth, shells, scales and other hard parts of a body. Evolution, as most of us think of it, is thus largely a history of morphological change—that is, changes in shape—of the hard parts of the body, plus what can be deduced therefrom—which is often precious little—about the soft parts.

We've got the shape of the hard parts neatly categorized from the trilobite to the Neanderthal. We can trace the steps in the morphological development of the horse, the elephant and man in a series of skeletal gradations. See any museum of natural history.

But think of the questions morphology can't answer. Did Eohippus have any vitamin requirements the modern horse does not have, or vice versa? Did Neanderthal man utilize his amino-acids in any way differently from us? What, precisely, was the clotting mechanism involved in the blood of Tyrannosaurus Rex?

Barring time-travel, we'll never know. But we might be able to make reasonable guesses, perhaps,

if we study and compare the biochemistry of the various living species that exist today.

Biochemical evolution is less spectacular than morphological evolution. A morphological invention such as wings has been made at least four independent times — insects, pterodactyls, birds and bats—in four different styles, but biochemical inventions are usually made once, or if more than once, then in identical style. The uses to which the various B vitamins are put were decided very early in the game and all living cells today, from bacteria to those of man, use them in the same way. There are many other examples of the biochemical uniformity of life despite tremendous morphological variations.

But uniformity isn't universal. Biochemical differences among species do exist and then things become really interesting.

Take the case of fat digestion among mammals. Fats are one of the major food components and an important body fuel. To be utilized by the body, the fatty substances in food must first be digested by the action of enzymes in the intestines. There is one catch. Fats are not soluble in water and digestive fluids are mostly water. Fats will not be digested with anything approaching efficiency unless something is done to enable them to mix with the watery digestive fluids.

The answer is found in the liver secretion known as bile. The bile, which is discharged into the small intestine, does not itself contain digestive enzymes but it does contain substances known as bile salts. The bile salts consist of molecules with double-jointed solubility properties. One half of the molecule is similar to fats in its structure and that half will dissolve in fats. The other half contains groups of atoms that are soluble in water.

In order to satisfy both halves of itself, bile salt molecules group themselves along the surface where fat and water meet. In this way, the fatty portion can face the fat and dissolve in it, while the rest can face the water and dissolve there. Both halves of the molecule are happy. The more surface between fat and water that there is, the more bile salt molecules can be made happy. One way in which the amount of surface can be increased is to distribute the fat through the water in the form of small bubbles. The smaller the bubbles, the more surface there is for a given weight of fat. The addition of bile salts to a mixture of water and fat thus encourages the formation of such small bubbles.

Bile salts are, in this manner, the body's natural detergents. They homogenize fats in the intestines, and the tiny bubbles that result mix well with the watery digestive fluids and can be attacked by enzymes.

There are two main varieties of bile salts, differing in the chemical structure of the water-soluble half.

In order to avoid going into the chemical details, we will simply call the two varieties the G-salts and the T-salts. Both exist in the biles of various animals. Both do their detergent job adequately. In one respect, though, they behave differently. There is a fatlike substance called cholesterol which the G-salts don't seem to handle very well. The T-salts, however, homogenize cholesterol fine.

Now, in general, herbivorous animals—plant-eating—are particularly strong in G-salts and poor in T-salts. This is all right because plants are less fatty on the whole than animals are and what plant fat does occur is quite poor in cholesterol. Now since the G-substance, out of which G-salts can be made, is present in quantity in all cells, whereas the T-substance is present in much smaller amounts, why bother manufacturing T-salts that you can do without? So herbivorous animals stock up on G-salts and do well.

The animal fat, however, that forms part of the diet of carnivorous—meat-eating—animals is rich in cholesterol. The bile of carnivorous animals is rich in T-salts. Those animals need it and even though the T-salts are more difficult to scrounge up in quantity, they do it.

Now where does man fit in? Man is a member of the Primate order, which runs from the lemurs to himself and includes the apes and monkeys. All primates, with only one exception, are herbivorous. The one exception, of course, is man himself. Homo sapiens is omnivorous in fact—that is, he will eat anything he can digest and a few things he can't—and carnivorous by choice.

Man has adapted himself to this kind of diet as far as morphology is concerned, but what about his biochemistry? His bile is still the bile he has inherited from his herbivorous primate ancestors and is rich in G-salts and poor in T-salts, so though his diet is full of cholesterol, he lacks the equipment to handle it properly and keep it in solution, or at least well-mixed with water.

You ask: So?

So is there any connection between this and the fact that Homo sapiens is the one species that is plagued with gallstones, which are conglomerations of cholesterol—usually—that has precipitated out of the bile little by little? Is there any connection between this and the fact that Homo sapiens is the one species that is plagued with atherosclerosis—our number one killer these days—which consists largely of the deposition of cholesterol little by little in the walls of the arteries?

Is there? I honestly don't know. The argument as I've presented it sounds good, but biochemistry these days is, in many ways, but the handmaiden of medicine. Few biochemists devote themselves to the workings of various species except where some definite problem of immediate interest to Homo sapiens

is concerned. Therefore not enough is known about various animal biles and their manner of working to make the above argument airtight. So far, it's just a speculation which I've come across at the end of a review article and which I pass on to the readers of Astounding Science Fiction, who are hardened to speculation.

Can biochemical evolution affect the morphological evolution with which we are familiar? Maybe. We can try on some more speculation for size.

All animals produce a compound called uric acid as a waste product, some producing more than others. Birds and reptiles, for instance, produce uric acid in a quantity as one of their main waste products. (I'll have more to say about that later in the article.) They have special ways of getting rid of it and we can forget them for now. Mammals produce only small quantities of uric acid, but its disposal raises a problem.

The logical way for mammals to get rid of uric acid is to dump it into the urine. The trouble is that uric acid is quite insoluble so it takes a lot of urine to get rid of a little bit of uric acid. Most mammals don't even bother, but by-pass the problem completely. They have an enzyme called uricase, which breaks up uric acid to a substance named allantoin. Allantoin is considerably more soluble than uric acid and can be dumped into the urine without trouble. That ends the problem.

Or at least it ends it for other mammals; not for man. Man and the anthropoid apes differ from all other mammals in not having uricase. (There is a variety of dog, the Dalmatian coach-hound, which seems to be low in uricase, but it has some.) Any uric acid which is formed in man or ape stays uric acid. It must get into the urine as best it can since it can be eliminated only in that way. If too much gets into the urine for the latter to hold, it will precipitate out and form one variety of kidney stone. If there's too much even to get into the urine in the first place, it may precipitate out in other parts of the body, beginning usually with the joint of the big toe, and the condition known as gout results.

Since man and apes share this problem, the loss of uricase must be dated far back in time at a point where the human stock had not yet diverged from that of the anthropoid apes, unless you're willing to believe that man and each species of ape have separately and coincidentally lost their uricase, which I'm not.

The question is, why should the enzyme, uricase, have been lost? To be sure, in one way, there doesn't have to be a reason. Mutations take place in haphazard fashion, and are usually for the worse. But then, mutations for the worse generally don't survive in the long run; only mutations for the better—in the sense of better fitting the environ-

ment. If some pre-anthropoid had lost the enzyme, uricase, would not he and his descendants have been at some disadvantage because of their extra propensity for joint troubles? Would not his normal cousins have won out, survived, and passed on uricase to the anthropoids and men of today?

The answer is, yes. That is, yes, unless the absence of uricase had survival value that made up for the disadvantages. And here comes a piece of speculation I bumped into recently in a chemical-news weekly.

The absence of uricase means that the concentration of uric acid in the blood and tissues of apes and man is higher than in that of other species. Uric acid is a member of a group of compounds called purines, some members of which are stimulants of the nervous system. The purine stimulant you are probably best acquainted with is the caffeine in coffee. Now what if a higher concentration of uric acid in the blood of the pre-anthropoid who lost uricase kept him at a higher level of mental activity than was the case with his uricase-containing cousins? Would not that have more than made up for the off-chance possibility of gout? Could not the uric acid, in fact, have been one of the chemical factors involved in stimulating gradual development of the brain into the large specialized structures now present in apes and, particularly, in man? If so, what price gout?

Consider the manner in which life forms moved out of the sea—in which life originated—into fresh water and onto land. That involved not only the familiar morphological evolution, but biochemical evolution as well. In the sea, cells developed in a liquid containing certain ions —chiefly sodium, potassium, calcium, magnesium, chloride and sulfate ions—in certain concentrations.

Life made the adjustment to those concentrations once and apparently that was it for all time.

When animals grew more complicated and became a group of cells enclosed in some form of shell, skin, protective membrane or what have you, the individual cells remained immersed in an inner liquid resembling sea water in ionic composition. The outer portions of the body, as well as many other things, changed to suit altered conditions when animals moved out onto the land, but the internal liquid, the liquid with which the cells were in actual contact, remained about the same. Our own blood, after you subtract the various blood cells and dissolved proteins and other organic material, is remarkably like a quantity of trapped sea water, and so is the interstitial fluid that exists in the spaces between our cells.

In other words, we've never left the sea; we've taken it with us.

(To be sure, the resemblance between the ionic composition of blood and sea water is not exact. Some people suggest that our blood resembles the primeval sea; the sea

as it was when organisms first enclosed themselves; and that since then, the ocean has changed its composition somewhat, this change not being reflected in our blood.)

This way seem to you as though biochemical evolution is something that does *not* happen, but remember the Red Queen's advice that in her country it takes all the running one can do to stay in one place.

Primitive sea creatures have no trouble maintaining the ionic composition of their internal fluids because it is mostly in even balance with sea water, and they have learned, with the millions of years, to tolerate slight changes that may develop in sea water and hence in their own fluids. But when a sea creature invades the fresh water—which, biochemically, is as difficult a feat as the invasion of land—a completely new situation develops.

Fresh water is only a thousandth as rich in ions as is sea water. When a sea creature tries to live in fresh water, it must somehow counteract the natural tendency of the ions within itself to leak out—or, for that matter, for water to leak in—and equalize the ionic concentration inside and outside the animal.

To do that, fresh-water animals have developed a number of intricate biochemical mechanisms to keep the ion composition of their internal liquid steady at the values to which they are accustomed. They have evolved, biochemically, like mad just to stay in the same place.

In one way or another, the mechanisms usually involve kidney action. Water is constantly entering the fresh-water creature, and ions enter, too, by way of the food it eats. The kidneys are so designed that they pass water out again but hold back the ions. The creature is thus an ion-trapping sieve.

It is considered that any creature that can keep a surplus of ions inside its body against a deficiency on the outside must have had some ancestor that adapted itself to fresh water. All vertebrates apparently come into this classification and so it is deduced biochemically that the original vertebrate from which all others—including you and I—are descended developed in fresh water.

To be sure, a number of fresh-water vertebrates migrated back to the sea to become the ancestors of the marine fish and marine sharks—the two are not the same, the fish being bony and more advanced, the sharks cartilaginous and more primitive—of today. By the time the fish and sharks returned to the sea, the sea water was a bit richer in ions than their internal liquid was. They had the reverse problem now; to keep surplus ions from entering or—which amounts to the same thing—water from leaving. The fish solved the problem by cutting down on water loss through kidneys and by evolving special biochemical mechanisms to force ions out. (The sharks had another solution, which I'll mention later.)

You can find details, by the way, of this and other similar matters in

an excellent little book by Ernest Baldwin called "Comparative Biochemistry," published by the Cambridge University Press in 1948. It may be my ignorance but I'm not aware of any comparable book in the field since then, alas.

The conquest of the dry land involved a whole new series of biochemical modifications. One of these concerned the matter of waste-disposal.

The chief elements found in the organic materials of living creatures are carbon, hydrogen, oxygen, and nitrogen—which chemists symbolize as C, H, O, and N respectively. When foodstuffs — which include complicated molecules built up out of anywhere from dozens to millions of atoms of these elements, plus a few others—are broken down for energy, what is left behind are simple molecules which are waste-products to be gotten rid of. The carbon, hydrogen and oxygen end up as carbon dioxide (CO_2) and water (H_2O). In the case of most water-dwelling animals, the nitrogen ends up as ammonia (NH_3).

Now for any creature living in fresh water, there is no problem. Carbon dioxide and ammonia are soluble in water, and water is just water. Dump all three substances into the river. The waste water will just mix with the river-water, the carbon dioxide will come in handy to the water plants, the ammonia will eventually be utilized by plants and bacteria. The plants and bacteria will build carbon dioxide, water, and ammonia back into the complicated molecules that the animals will again swallow, digest, and use for energy and to build their own tissues. Round and round things go.

In fact, the only suspicion of risk involves ammonia which is highly poisonous. One part in twenty thousand of blood is enough to kill. Fortunately for the fresh-water fish, they're passing so much water through their kidneys in their effort to keep up their ion content that the ammonia is flushed out as fast as it is formed and never has the chance to build up even the small concentration needed for poisoning.

What about sea fish which pass less water through their kidneys? They still manage to flush out the ammonia adequately, though in their case it's much more of a near squeak.

But then we reach the amphibia—toads, frogs et cetera—the first vertebrates to invade the land. As water-dwelling tadpoles, they excrete ammonia, but as adult, land-living creatures, ammonia is no longer possible. Water is in such short supply for any creature that doesn't live actually immersed in it, that it can't possibly be spent sufficiently recklessly to keep the ammonia concentration low enough.

Before any creature could invade the land, then, it had to develop a type of nitrogen waste that was considerably less poisonous than ammonia. The adult amphibian ac-

complished this. It broke its nitrogen down to urea (NH_2-CO-NH_2). As you see, the urea molecule is made up of a fusion of the parts of two ammonia molecules and one carbon dioxide molecule. Urea is soluble in water and is much less poisonous than ammonia. It can be allowed to build up to a much higher concentration than ammonia so that a given amount of nitrogen waste can be eliminated in a much smaller quantity of urine, and precious water is conserved.

Here we have one case where a biochemical invention was made independently more than once. The sharks—who preceded the amphibia and were not ancestral to them—after migrating from their fresh-water origin back to the sea were faced with keeping ions from the ocean surplus from invading their body. Instead of developing ion-excreting mechanisms as the marine fish did, they worked out the trick of breaking down nitrogen compounds to urea instead of ammonia. Then they allowed urea to concentrate in the blood as they could never have done with ammonia.

In fact, they allowed urea to accumulate to a concentration of 2 per cent, which is enough to kill other creatures. (Even though urea is less poisonous than ammonia, it isn't entirely harmless. Nothing is.) Through the ages, shark tissue acclimated itself to urea. The urea in the blood acted as the ions did, in a way, and made the total ion content—with urea included—of shark blood higher than that of the ocean. The problem was, therefore, once again to keep the ions from leaking out and the sharks could use their old fresh-water adaptations for the purpose instead of having to invent new mechanisms, as the sea fish did.

So you see, although sharks and amphibia developed the same urea dodge independently, they did so for different reasons.

Incidentally, some sharks migrated back to fresh water after having developed the urea-waste mechanism. Once in fresh water, the presence of urea in the blood was not only unnecessary, it was downright embarrassing. It made the ion content of the blood artifically high so that it was harder than ever to keep it steady against the ion-free fresh water. The fresh-water sharks did the best they could by cutting down the urea concentration in blood from 2 per cent to 0.6 per cent, but there they reached their limit. Shark tissue had grown so accustomed to urea, it had become positively dependent upon it. Shark heart, for instance, won't beat in blood containing no urea. (Our hearts would do fine.) So you see, biochemistry can be a tricky thing.

Even urea requires a certain amount of water to be eliminated. It's all right for frogs and toads. One way or another they get enough water, even those species that seem to live away from water, and their eggs are always supplied with plenty of water.

Of the vertebrates descended from amphibia, the mammals, too, produce urea. They get ample water for the purpose and their young develop viviparously, that is, within the mother's body, where it is always in contact with the mother's water supply.

The birds and reptiles are another case completely. They lay eggs and within those eggs, the young must develop. The chick egg, for instance, can contain only a certain amount of water and for the three weeks between fertilization and hatching, the young chick must make that do because it will not get one drop more.

Water-economy becomes more important than ever. There isn't even enough water to take care of urea, so urea becomes inadequate as a waste prdouct. A new invention is necessary. That new invention is uric acid—which I mentioned earlier in the article. Uric acid contains the fragments of four ammonia molecules and three carbon dioxide molecules, and its advantage over urea is this: uric acid is quite insoluble in water. (Remember, that is its *disadvantage* in man.) The young bird or reptile developing in the egg just piles up the uric acid wastes in a little dump heap. Little or no water is required.

As is well known, morphological evolution can be traced in embryos. At various times during development, a human embryo passes through a unicellular stage, an invertebrate stage, and a cartilaginous stage. It shows at various times gills, a tail and a pelt of body hair. In the same way, biochemical evolution can be traced.

The developing chick excretes mostly ammonia for the first four days, when the total excretion is so small and the egg so large in comparison to the tiny embryo that dangerous concentrations are not reached. Then for the next nine days, nitrogen wastes are mostly in the form of urea, there still being a reasonable amount of water to keep the urea concentration low enough. Finally, during the last eleven days when things are getting tight, the wastes are mostly in the form of uric acid.

Turtles seem to be betwixt and between. Their egg-laying is done in closer contact with seas or rivers and they apparently produce both urea and uric acid.

Again a duplication of inventions. Certain invertebrates have also invaded the land—some even earlier than even the vertebrates did. The insects and land-snails, for instance, also invented the uric acid dodge, quite independently.

In connection with all this, I seem to recall that spiders have beat out all other creatures by excreting nitrogen in the form of guanine. Guanine is a compound resembling uric acid, but it contains parts of five ammonia molecules, instead of only four as uric acid does, and it is even less soluble than uric acid. The only trouble is, I can't for the life of me find the reference and I never

know how far I can trust my memory.

I have already mentioned the fact that from biochemical considerations we can say that vertebrates first developed in fresh water. It is also possible to speculate from other biochemical considerations about the ancestry of the vertebrates.

It seems, you see, that there is an important compound in our muscles which is intimately connected with the mechanism whereby muscles contract and relax. It is called creatine phosphate and we will abbreviate it as CP. Now here's an interesting thing: CP is found in vertebrate muscle of all sorts, but it is *not* found in invertebrate muscle.

Invertebrate muscle contains instead a similar compound with similar functions, called arginine phosphate, which we can abbreviate as AP.

Now the problem is: at what point in evolution was CP invented as a substitute for AP? Since all vertebrates have CP, it was probably invented at some point before the vertebrates developed—unless the different groups of vertebrates each invented it independently, which seems too unlikely to consider.

Well, the vertebrates—which are characterized by bony skeletons—are part of a large group of animals called the chordata. The less advanced animals in this group haven't reached the point where they have bones, but instead have inner stiffenings of some softer material. The indispensable minimum that makes an animal a member of the chordata is the presence of a cartilaginous rod called a notochord inside the body at some time in life.

There are three groups of these primitive chordates. The most advanced type is amphioxus, which is fish-shaped—with fins missing and a fringed hole where a mouth and jaws should be. It has a notochord running the length of its body all the days of its life. Its muscles have CP, just as your muscles do.

The most primitive of these primitives are the tunicates, which show a small scrap of notochord in their larval form.

As adults, they lose it altogether and are so invertebrate in appearance that they were originally classified as mollusks. The tunicates have AP in their muscles, just as invertebrates do.

The intermediate group of the three includes the balanoglossus, a wormlike creature. It doesn't have a fully developed notochord, but it does have a scrap of it that hangs on into adult life.

Well, to end the suspense, balanoglossus muscle has both AP and CP.

Can AP be traced farther back?

The answer is yes. The larvae of balanoglossus resemble the larvae of certain echinoderms—a group of animals that includes the familiar starfish—so much that before the adult form of the balanoglossus was

discovered, the larvae were classified as echinoderms.

What about the echinoderms, then? These are divided into a number of groups, of which the majority, including the starfish, contain AP in their muscles just as other invertebrates do. However, there is one group, the brittle stars—which resemble star fish except that the "arms" are longer and more flexible, and emerge from a globular little "body"—with muscles that contain CP, as do those of vertebrates. The final group, the sea urchins—with spiny bodies shaped like disks that are round above and flat below—contain both CP and AP.

CP can't be traced any farther back, so far. It would seem then that at some time in the past, some creature—of which the sea urchin is the most direct descendant—invented CP. From this creature was evolved ancestral balanoglossus, and from balanoglossus was evolved the vertebrates—including man.

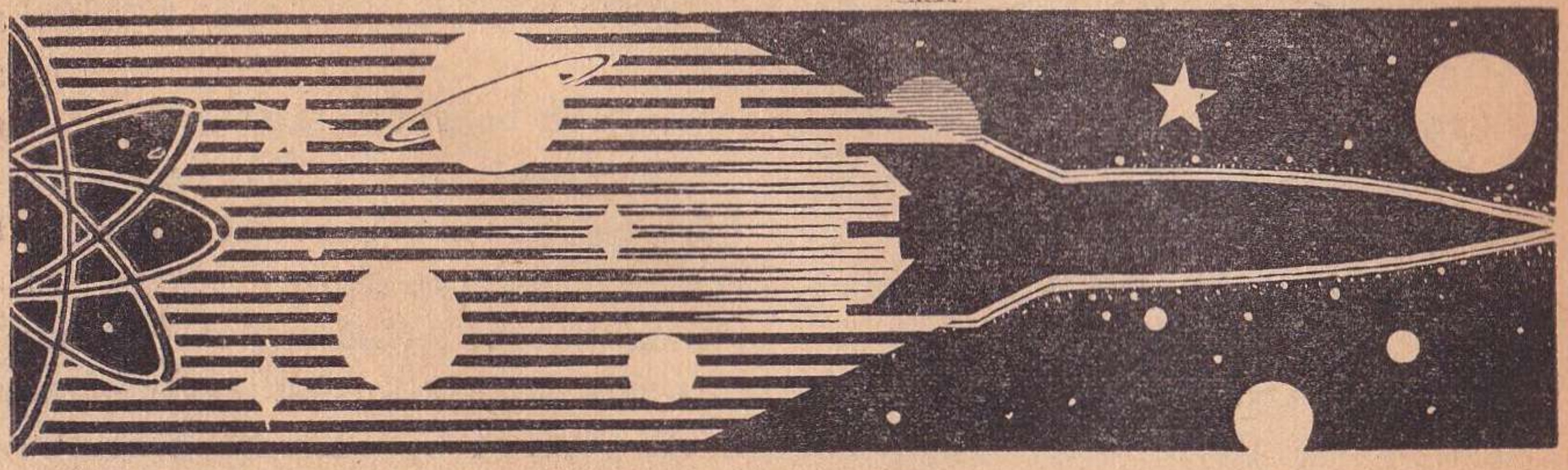
So if you should ever see a sea urchin, be respectful. Of all the invertebrates from amebae to insects and from worms to octopi, it is possibly your closest relative.

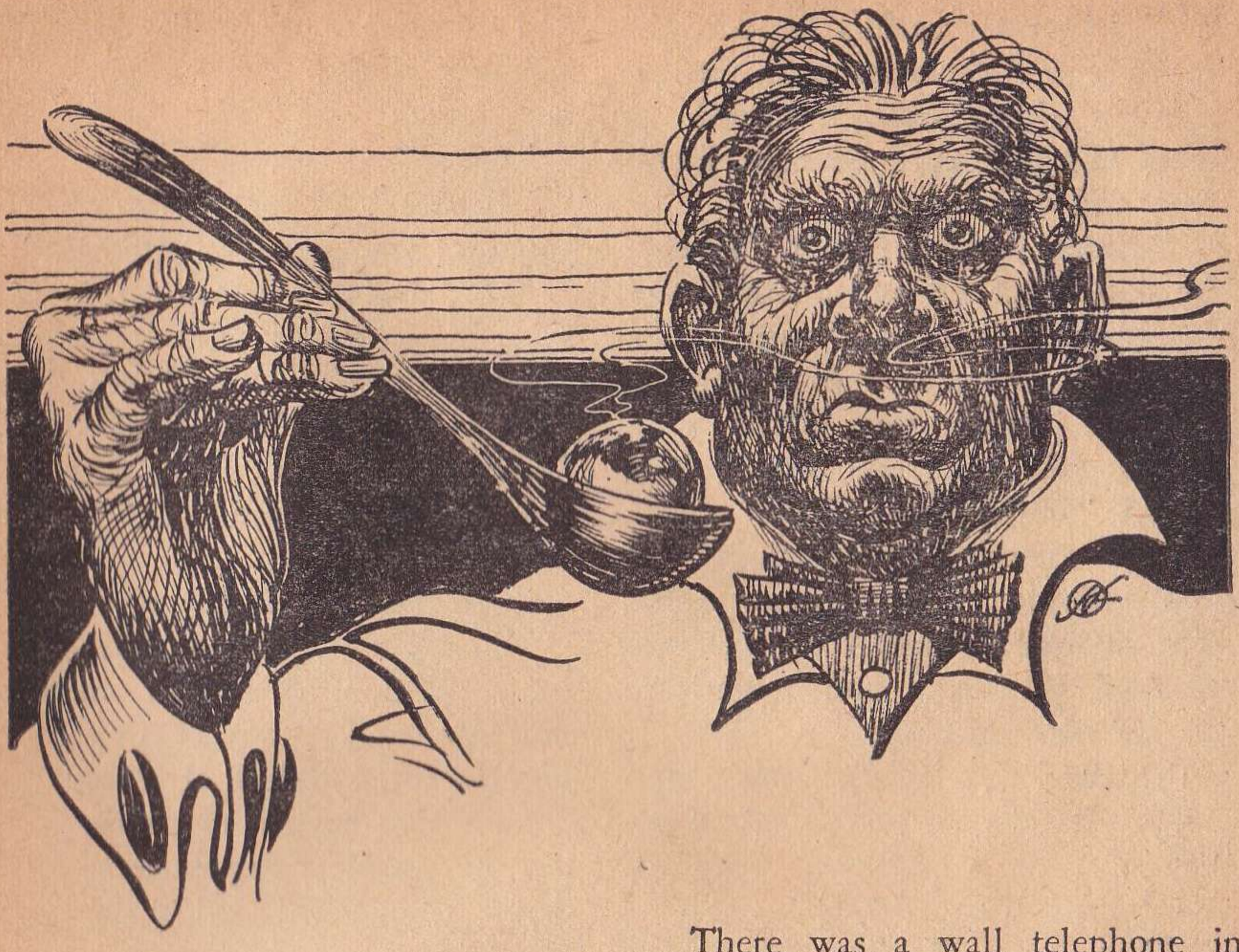
All I have said so far ranges from sheer guesswork to reasonable—but shaky—deduction. The main trouble connected with all phases of comparative biochemistry is lack of data, and that simply because so few people work on sea urchins and turtles and balanoglossus and spiders in a biochemical way.

This is a pity not only because comparative biochemistry is a fascinating field and one that can help us understand man; there's another reason, as far as I'm concerned, and —surprise!—a science-fictional one. I've already said that the biochemistry of life forms is less changeable than their morphology, so that a brand-new life form is more likely to be understandable biochemically than morphologically.

Do you want to bet, then, that when and if extraterrestrial life is discovered—or discovers us—a well-developed science of comparative biochemistry won't come in very handy, indeed?

THE END





HOT POTATO

There is such a thing as kicking a man upstairs, and such a thing, too, as giving a man an untenable honor. And when it comes to a refugee government that's been refugee-ing for a generation . . . what do you do?

BY ALGIS BUDRYS

Illustrated by Freas

There was a wall telephone in the main kitchen of the Royal Cheiron Hotel. When it rang, one of the potboys answered it and Thomas Harmon, Supervising Chef, paid it no attention. He was tasting a sauce one of the underchefs had prepared. He rolled his tongue to let the more important taste buds at the back of his mouth give him their judgment. Twenty years here, from potboy to his present position, and he hadn't been a young man when he began. But his taste had only improved as his other senses slackened and lost their distracting vigor. He was a good chef —not quite as good as his reputation, perhaps—but good.

The underchef was looking at him anxiously, out of the gold-

flecked brown eyes that had already, in these few centuries since the ex-colony's foundation, emerged to mark the difference between Earthmen and Centaurians.

Harmon nodded slowly. "Good," he said. "But I'd add a little more jonesgrass." Jonesgrass wasn't quite thyme. But thyme didn't grow on Cheiron, which was Alpha Centaurus IV. Jonesgrass would have to do. "Just a touch, Steffi."

Steffi nodded respectfully, his face relieved. "Just a touch. Right, Mr. Harmon. Thank you." Harmon grunted pleasantly and moved on to the next underchef.

"Excuse me, please, Mr. Harmon." It was the potboy who'd answered the telephone. Harmon turned his head sharply:

"Yes, boy?" His tone was a little more snappish than he would have liked. But interruptions threw him off his stride. And now he recalled the ring of the telephone, and that annoyed him even more. He was rather sure of who it would be, calling in the middle of his workday like this.

"I'm sorry, Mr. Harmon." The boy's expression was just properly intimidated. Harmon smiled softly to himself. It wouldn't do the boy any harm. Any good chef was a bugbear to his help, for at least one good reason. It gave apprentices an appreciation of the master's status, and firm self-confidence when they finally achieved his station for themselves. Also, it weeded out the flustery hearts before they had an opportunity to do something seriously asinine in the middle of a busy hour.

"Well?"

"There's . . . there's a call for you, sir. They say it's important."

"No doubt," he growled. But since he suspected who it was, he went to the phone. And he'd been right. It was Hames, President Wireman's Chief of Protocol.

"Mr. Prime Minister?" Hames asked punctiliously.

"Yes. What is it, Hames?"

"President Wireman has asked me to inform all cabinet members that he's calling an emergency meeting for seven o'clock. I realize that doesn't give anyone much time, sir, but the president asked me to stress that it is important, and to ask everyone to please be prompt."

"What is it this time, Hames? Another resolution to be read into the record of the Centaurian Congress?"

"I'm sure I don't know, sir. May I inform the president you'll be at his apartment on time?"

Harmon frowned at the telephone. "Yes . . . yes, I'll be there. I'm sworn to serve the interests of the Government in Exile, after all." He hung up. And the Royal Cheiron wouldn't be discharging its famous Mr. Thomas for taking a few hours off, so that was all right. In the end, all Hames' call meant was that anyone ordering dinner at the Cheiron tonight wouldn't quite get the best in the exotic terrestrial cuisine for which its kitchen was famous.

So, no one on Cheiron being qualified to judge—except for the handful of refugee Earthmen—there was no apparent loss to anyone. Harmon found himself resenting it just the same. He called over his head assistant, informed him bluntly that the dinner hour was in his hands, and went to his suite to change.

The suite, as befitted his position on the hotel staff, was well-situated, and the bedroom was comfortable to the final degree. There was an adjoining sitting room, furnished with a stiff luxury that both complemented the grace of his bedroom and made it difficult to use. Harmon generally stayed out of it, preferring to keep the adjoining room as another badge of rank, rather than as anything useful. He was ten years a widower, a man of habits as confined as they were educated, and he had no need for more space than his bedroom gave him—which was a good deal in itself. He knew the suite was his for as long as he cared to stay; even after his faculties stiffened to a point where his most useful contribution would be his name in conservative type at the foot of the dining room menu.

He took down the suit the hotel valet had placed in his closet this morning, and laid it out on the bed. Dressing slowly, reacting pleasurably to the touch of soft, expensive, perfectly tailored fabric, he reflected on the usefulness of what, on Earth, had been a slightly eccentric hobby.

He studied his reflection in the closet mirrors. Spare, with a little pot belly and a distinguished sweep of white hair, he could have passed easily for the man entitled to own the Royal Cheiron, rather than a member of its staff.

He picked up his room telephone and asked to have his car brought around to the side entrance. While he waited, he reminded himself there was a wedding banquet scheduled for next week. He spent the time roughly blocking out a menu for the affair, engrossed in the delicate business of balancing the flavor and texture of one dish against the next, reminding himself to consult with the wine steward before he made any final decisions.

He drove slowly to the part of Cheiron City where President Wireman lived. From time to time he looked up at the pale blue sky, with its yellower sun and faintly-seen smaller moon. He had never quite tired of the sight, for reasons that varied and had changed through the years of his life on this planet. At first there'd been the attraction of unfamiliarity, and he'd gazed like a goggle-eyed rueben from the back country farms looking up at his first tall building. Then, after the strangeness had worn off, he'd been on the night staff of the hotel—an awkward, fortyish man who wasn't at all sure of himself, trying to do a young boy's work, often feeling like a dolt as he stumbled over the frequently impenetrable accent that

had crept over the language here. In those days, he'd been grateful for the sight of dawn.

Now he drove through narrowing streets and thought of how far beyond Cheiron's sky Earth and the Solar System lay—of the really unimaginable distance that separated them.

Four hundred years ago, this had been Man's earliest foothold on the stars—earliest, and, as it developed, only. The passage time had been worked down from ten years to five and a half, toward the end, but that was the best they could do. They were tinkering with an ultradrive just before the Invaders hit Earth. They still were, but it was too late for the Solar System. Centaurus was the focus of the human race today, and Earth, like the Western Roman Empire, was a jumble of ruins where the wolves prowled down out of the hills.

It wouldn't have mattered in the end, Harmon thought to himself. Once the colony had taken hold, every century was another step toward this day whether the Invaders had ever come or not. The Centaurian System Organization covered its own solar system, stretched out its own colonies, trafficked with races and systems far beyond Earth's touch, and loomed so large in its own right that the Invaders hadn't dared strike at the child over the parent's corpse.

His car hummed precisely to itself as he turned the corner of the street where Wireman's apartment house stood, in a neighborhood that had slipped badly. As he parked, behind a car he recognized as Secretary of the Treasury Stanley's limousine, he saw Secretary of Defense Genovese draw up in a taxi, pay the driver, and wave the change away. Harmon crossed the street and met Genovese in the threadbare lobby.

"How are you, John?"

"Hello, Tom. How're things?" They shook hands, a bit awkwardly out of rusty habit, and made small talk waiting for the elevator.

"How is your wife, John?"

"Fine, Tom—just fine."

"Business good?"

"Couldn't be better. I started working on a big account today. If I land it, the commission'll just about put Johnnie through school all by itself."

"Well, that's very good news. I hope you get it. Where're you sending him? I understand the city university here is very good."

"That's what I hear. But he's holding out for KenLi—that's the engineering school in Areban. That's an awfully long way away—he won't get home except for Christmas and summers. But, if he really wants to go, that's his business. He's big enough to know his own mind. Of course, there's a girl going to another school in the same city—that may have something to do with it." Genovese chuckled.

They got into the creaky automatic elevator together, and rode up

to President Wireman's floor. The hall was narrow, and badly lit. Harmon always felt uncomfortable, waiting out here, trapped in a tight enclosure walled by featureless, brown-painted doors, all alike; so many secret panels hiding activities that were best kept tightly locked away; plans and schemes that would wilt if ever taken out in the air. Genovese pushed the doorbell.

Hames answered the door, holding it open wide and flattening himself against the wall of the narrow corridor that led past the kitchenette. "Mr. Prime Minister. Mr. Secretary of Defense. The rest of the cabinet is already in the living room. President Wireman will be with you in a moment."

"Thank you, Hames," Genovese said, stepping aside to let Harmon go first, and Harmon reflected on the change that always took place in them when they came here; the sudden weight of dignity that formalized their manners and modulated their voices. He walked into the living room, with its carpet and furniture all wearing out, with the springs sagging in the couch and armchairs and the nap gone off the upholstery.

We come in here, he thought clumsily after the manner of an infrequently witty man, and we assume the gravity of another world.

Puns, he thought, meanwhile bowing his head in acknowledgment as the other men in the crowded room left their seats to shake his hand and murmur greetings. Young Takawara was quite fond of them, I remember. If he could make them work out bilingually, so much the better. He was clearly the best of my assistants. I wonder what happened to him, on that last day when everything was so confused and we barely got off and fought our way through the Invaders' ships.

We were all so much younger, then. We were all so relieved that at least the president and his cabinet were able to get away. We would have waited for the others if we could, but we thought we had at least saved the most important people. We were wrong. We left the only ones who mattered when we left all our Takawaras behind.

Stanley had saved him a place on the couch. Harmon took it thankfully. "How are you, Mr. Secretary?"

Stanley was about his own age, dressed in a slightly more conservative suit than his own, but one of equal quality. They shared tailors, and Harmon's account was in the bank Stanley managed.

"Quite well, thank you, Mr. Minister." Whenever they happened to meet ordinarily, Stanley called him Tom. "And you?"

"Quite well." He looked around, reflecting that questions of health were becoming less a matter of politeness and more literal every day. There was Yellin, paradoxically the Secretary of Health and Welfare, sitting stooped over his cane, his yellowed hands clasped over it and his rheumy eyes looking off at noth-

ing, dressed in shabby clothes and cheap black shoes. Next to him was Duplessis, who might have been his brother—a little younger, a little more active, but only a little. He pictured them living in their furnished rooms, hermits in gloomy little caves, debating whether the day was warm enough for them to shuffle painfully downstairs and out to a park, day after day through all these years—perhaps regretting they'd ever come to Cheiron at all—old before the Invaders came, and lost here on this foreign world that held nothing for them.

Hames came out of the corridor leading from the bedroom. "Gentlemen, the President of the United Terrestrial and Solar System Government."

They all got to their feet—a roomful of old men.

Ralph Wireman, when he came in, looked no younger.

He was a thin, slump-shouldered man. Harmon noted the worn look of his clothes—the subtle discoloration that years of perspiration had made in the dye, and the limp hang of cloth that had stretched to his movements and rubbed thin until no cleaning or pressing could make it hold its shape.

He was a tired man. His black hair had receded, thinned, and turned white. Deep creases ran down his hollow cheeks and formed folds under his long jaw. His nose had sharpened, and the corners of his mouth had sunk into his cheeks. His lips were faintly blue. The lean vigor that had been his characteristic had disappeared completely, turning into stringiness and set, stubborn, determination. The last time Harmon had seen him, his eyes had still been feeding on a buried core of vitality. But tonight even that last spark was gone, as though the final watchfires of an encircled army had gone out at last.

"Gentlemen." His voice breathed up through his rattly throat.

"Good evening, Mr. President," Harmon said, wishing he hadn't come.

"Good evening, Tom."

The rest of the cabinet now said "Good evening" in rough chorus, and once that was over they could all sit down, with Hames standing watchfully beside the president's chair.

I wonder what it is tonight? Harmon thought. When they had first come to Cheiron, these meetings had had some kind of life to them. There had still been purposefulness in those days: conferences with the local government of Cheiron, meetings with the officials of the Centaurian System Organization, finances to be arranged out of what Solar System funds had been available in credits here before the collapse—it had been a busy time. But it had been a waning life, and after all the organizational procedures became cut and dried; after the frequent invitations to address the Centaurian Congress had dwindled down to resolutions never read

but simply inserted into the Record, bit by bit stagnation had crept over them all.

In those early days, there'd been hope. They'd even thought the Centaurians might go to war with the Invaders and make Earth free again. But the Centaurians and the Invaders had been a bit too closely matched—so closely that no one could predict an outcome. And the Centaurians had been a long time away from Sol, and the links had grown thin. Their language, four and a half light-years away from home by radio, had drifted toward the foreign. Their interests, taken up by the enormous frontier of their own system, had turned away. Their memories of Earth, four hundred years outdated, had legendized to watery sentiments of a dim and distant, archaic little world they looked back on, sometimes, but would not trade for the ravage and destruction that were the risk of losing to the Invaders.

The Government in Exile was twenty years older, now. And men who'd been middle-aged were something more than that today. Even Genovese, the youngest of them all; the bumptious, unsettling Boy Wonder, was one of them now.

Harmon looked at Wireman's eyes again, and wondered if it was finally all over tonight.

But Wireman didn't bring it out immediately. He clung to the old pattern of cabinet meetings, waiting to hear the usual preliminary reports that were still being given as they had been when Geneva stood and an army of clerks had been busy preparing digests and critiques of the week's events.

Harmon looked from Yellen to Duplessis to Asmandi to Dumbrovski—from Health to Postmaster General to Labor to Agriculture—and it was like trying to see phantoms.

"Edward?" Wireman breathed.

Stanley got up. His papery cheeks twitched, and he shrugged. "There's nothing new. The Centaurian government has unblocked the usual month's dribble from our assets. I made the usual application to have the sum increased, and got the usual answer that the series of Invader government claims against Terrestrial assets here is still being adjudicated. In short, they're keeping us going but no more than that. They don't want to give the Invaders any solid bone of contention."

Wireman nodded painfully. "Karl?"

Hartmann, the Attorney General, stood up as Stanley sat down. "The Invader's latest claim is being reviewed by the Centaurian Supreme Court. I filed the usual brief quoting precedents against allowing it."

"I think it's clear," Wireman said. "The legal situation bears no resemblance to the *de facto* state of affairs. The Centaurian System Organization is sympathetic to us, but it would be folly for them to go to war with the Invaders for our benefit. If, at some time, Centaurian and Invader interests clash sufficient-

ly to cause a war, then we may expect the Supreme Court to suddenly discover precedents conclusively in our favor, and for all the other wonderful things to happen for our benefit."

The same familiar treadmill, Harmon thought. We stay alive, and after a fashion we continue to function. Or perhaps we don't, any more.

Hartmann was back in his chair, and now Wireman straightened a little.

Here it comes, Harmon thought in expectation.

"Gentlemen . . ." Wireman's voice was very old, and very tired. "We're approaching an unexpected crisis." He looked over at Harmon, plainly asking for help, but Harmon still had no idea of what kind of help he needed. A prime minister was a man who could help under any circumstances but these. So long as Wireman was still alive, it was he who represented Earth, who was the symbol of something gone twenty years to ruin but still alive so long as he was. Only if Wireman were to go would Harmon again have a function, and weight. Wireman's weight. Harmon dropped his eyes helplessly, and after a minute, Wireman took up the fraying thread.

"We know . . . we've always known . . . that if the Centaurian System Organization could find some way to help us without becoming overtly involved, it would do so. The paradox, of course, has always seemed insolvable. But it no longer is."

Harmon raised his head quickly.

"As you know," Wireman continued, "the Liberation Fund has been maintained through all these years to keep open a line of communication with resistance groups on Earth. It has always seemed to me of paramount importance that we do so, even though the cost of maintaining the necessary ultrafast scout ship has been a crippling burden on the fund. But without those few radio contacts which we have made from time to time, we would be completely cut off from our home and our people. Up to this time, we have never been able to do any more. Such groups as we were able to contact were small, ineffective, and hopelessly scattered. But recently, one dominant, highly organized and well-led group has emerged. I refer, of course, to the one led by former Lieutenant Hammil, who has requested and been granted the rank of General.

"Even so, I have never entertained any hope, for General Hammil's group could not supply itself sufficiently well to be anything but a nucleus against the day when outside help could be provided—help which we were in no position to send, and which no other government could supply without risking war.

"But, only yesterday, I discovered that for the first time since our arrival here, we are in a position to

make a positive move toward Earth's liberation. Briefly: The Areban Automatic Weapons Company, which is a major supplier of the Centaurian System Army, has just received a contract to manufacture a new type of automatic rifle. As a consequence, its contract for the present type has been canceled—and it has on hand a large stockpile of completed weapons of the earlier type, all new and in perfect condition, for which it has no conceivable market anywhere in the system. I was approached by their agent, who told me that his company will supply these weapons to us, together with suitable ammunition, on speculation against the day when a liberated Earth will be able to pay them. In short, gentlemen, we can be free again."

Harmon had never seen him look quite so tired, or so hopeless, as he did after he finished.

Yellin took an audible, quavery old man's breath. The end of his cane scraped over the carpet. For a moment, they were all a little paralyzed. In another moment, they'd all be talking at once. But Wireman said: "Tom, I'd like a private conference with you and John," and the outburst choked. Hames bent over to help Wireman out of his chair, and Harmon saw Genovese getting to his feet, looking thoughtful. "I'm afraid we'll have to go in the kitchen," Wireman said in his dignifiedly apologetic way. "Mrs. Wireman is resting in the bedroom."

The kitchenette pressed in on all sides of them with its cement floor, rust-stained sink, and peeling cupboard doors. Wireman sat on a newspaper spread on the narrow window ledge, and after he sat down he looked up at Genovese with a mixture of pain and wry amusement. "Now you can tell me I'm crazy, John."

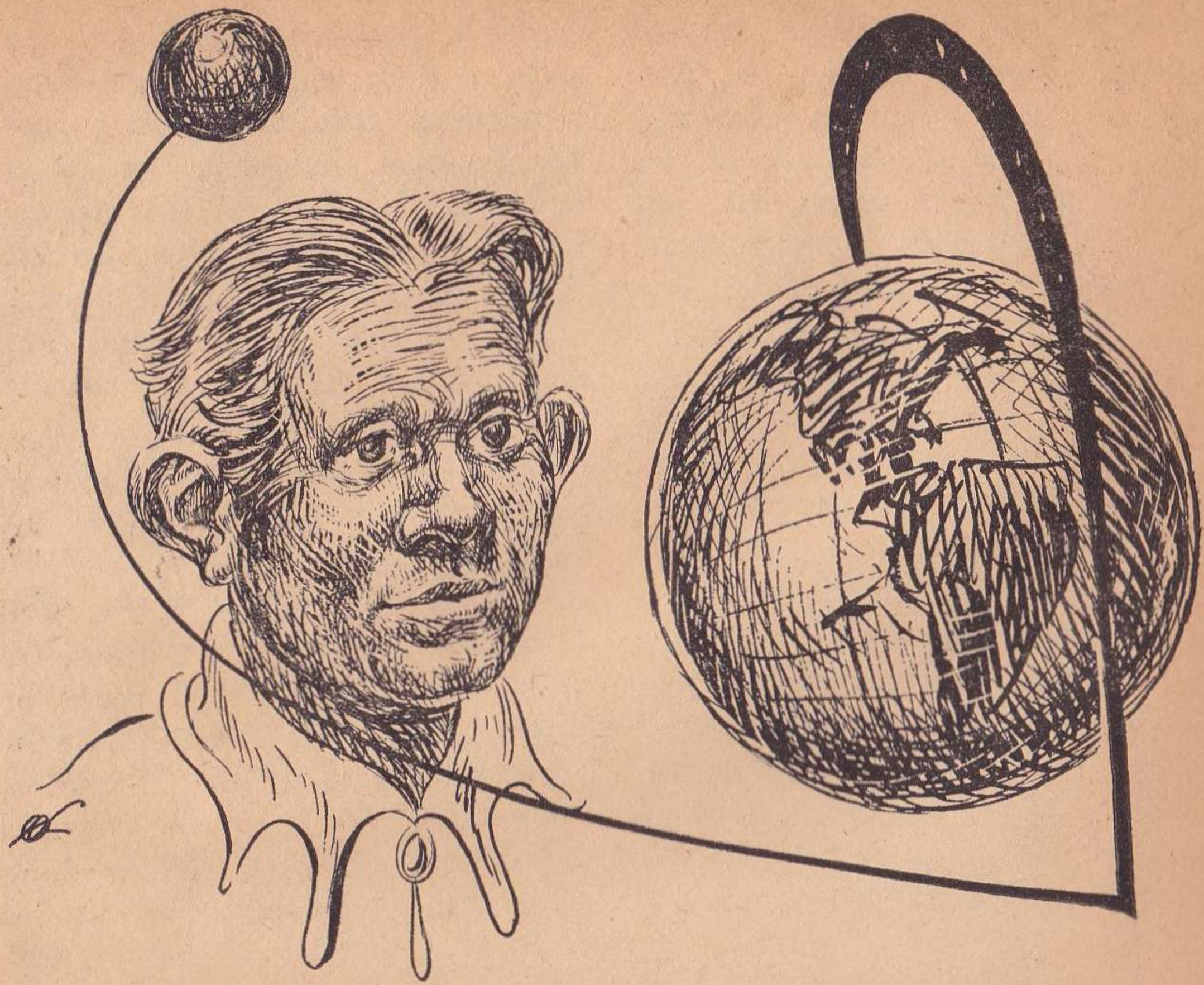
Genovese leaned uncomfortably against the sink, his lower lip pulled back between his teeth. He shook his head. "It won't work, Mr. President. Never in a million years. Automatic rifles against a disciplined army of occupation with every modern weapon in the book. No—never."

Wireman looked at Harmon. "Is that your opinion, too, Tom?"

Harmon nodded, feeling the oppression of the narrow room, looking at the ancient stove on which Mrs. Wireman had to cook.

Somewhere, Wireman found a smile to bring to his exhausted face. It was like watching a man smile on the rack. "You're right, of course. And yet—do you believe that fairy tale about the arms contracts? The sudden oversupply of weapons? The idiot company throwing its product down a rathole?"

Harmon grunted. His shoulders jerked erect, and he brought his knuckles down sharply on the edge of a shelf. "No! No, of course not! Sorry, Ralph—I'm getting out of practice, I guess. The Centaurian government's making a move at last!"



Wireman smiled faintly in agreement. "That was my analysis. Officially, they're not involved. But they're giving us the means to get things started, and I think if we do well at all, we'll see the heavier weapons and motorized equipment flooding in exactly as though someone, somewhere, had worked out a logistic schedule years in advance."

Genovese laughed suddenly—a yip of pure excitement that Harmon'd thought the years had buried. But Wireman did not smile. His expression had sunk back into tired, hopeless desperation that only the underlying strength of his determination kept from lapsing into total lifelessness.

Harmon couldn't understand that. Looking at this kitchen, picturing this apartment, he thought about Wireman living out these past twenty years, waiting for this day—living them out here, trying to hang on and live on the pittance that was all he could allow himself from the trickle of available money—watching men no older than himself find positions and live comfortably while he had to stay here, keeping a symbol alive, trapped into being President of the United Terrestrial and Solar System Government, watching

his family eat cheap food and dress in patched clothing, and knowing that even prime ministers could find work and bring no tarnish to the bright memory of Earth's freedom, but that the president could not. The rest of them could admit in public that Earth was no longer there, but someone had to preserve the fiction—someone had to embody the legal fable that the Government in Exile still represented its people—and Wireman was the man. So why, today, was he more weighed-down than ever?

"Tom—"

"Yes, Ralph."

"Tom—and you, John—" Astonishingly, Wireman was almost pleading. "You'll back me with the rest of the cabinet, won't you?"

"Back you? Of course, Ralph." Harmon frowned, perplexed.

Wireman sighed and moved his hand over his face as though wiping away cobwebs. "Thank you," he whispered.

Harmon looked at Genovese, raising his eyebrows. Genovese shrugged, shaking his head. It made no sense to him, either.

"All right, gentlemen, I think we'd better rejoin the others," Wireman said, pulling himself together and standing up slowly. He smiled feebly at Harmon. "A man my age ought to be in a hammock on a back lawn, somewhere, watching the grass grow."

Harmon followed him back into the living room, and Genovese hooked the kitchenette door open again behind them. They took their seats.

The rest of the cabinet was completely still, watching Wireman, occasionally glancing at Harmon and Genovese to guess what had gone on between them. Harmon kept his features still, wondering what Wireman was going to do.

"Gentlemen—" Wireman began. "I assume you've all had time to think over the implications of my announcement."

Harmon doubted it. He'd seen how rusty his own thinking was. He doubted if any of them could be much sharper, and in the case of several of them—Yellin, Duplessis, a few others—it seemed obvious that good judgment was something beyond their present capacity. But every man in the room nodded, honestly enough, for every man's judgment confirmed to him that he really had thought everything out to its final conclusion.

It goes, Harmon thought. Bit by bit, it wears away from disuse and no man can say where it went—but it's gone, and too far to bring back. But we're all there is available; we'll have to do it somehow, tired as we are. He wished desperately that Takawara had gotten away. He wished this had happened ten years ago. He wished there'd been time to gather them all in—all the bright, young people who would be at their peak today. But history never really bends to any one man's wish.

"We have our chance at last," Wireman continued. "We mustn't

spoil it. All our energies, all our efforts, will have to be devoted. There'll be administrative work to do, a definite program to be shaped and put into effect. We'll be conferring with the Centaurian Government again, I imagine. That'll be one more load. In addition, once the rising on Earth has fairly begun, we'll all have to be ready to go back to Earth at a moment's notice. Under the circumstances, considering the transportation difficulties, it might even be advisable to be in space, waiting."

Harmon heard Stanley, beside him, grunt in annoyed surprise. And gradually, as he looked at the rest of the cabinet members and saw Wireman's words being digested, he saw most of the other men's faces change.

"Just a minute, Mr. President!" Stanley said testily, getting up.

Harmon watched Wireman's eyes as he looked at the Secretary of the Treasury, and now Harmon could understand what had troubled the president so much. There were many things in Wireman's look. Surprise was not one of them. "Yes, Edward?" he said with a sigh.

"As I understand it, you're asking us to devote full time to this project. Is that correct?"

"You're a member of my cabinet. You're sworn to uphold the Government, Edward." It was said quietly, and it broke the bubble of Stanley's temper.

He waved a hand uncomfortably. "Well . . . yes. Yes, I am. But, just the same, I've got a position here—a rather important position. I've got responsibilities— Ralph, I'm the manager of the biggest bank in the city!"

"I see. Do you mean that you can't leave your outside job immediately, or do you mean you consider your responsibilities as a banker more important than your obligation to Earth?"

Karl Hartmann was on his feet. "I think that what Secretary Stanley means is he's let down roots here," he put in. "It's . . . after all, Mr. President, it's been twenty years . . . it's a little difficult to suddenly break off all ties. In my case, for example, there's my law office, my home . . . why, my wife has spent ten years furnishing and decorating our house. My son is married to a girl here, and they have children of their own—" Hartmann's glance wavered under Wireman's. It was his turn, now, to become progressively angrier as he stumbled harder. "After all . . . after all, when I came here I had nothing. I had the clothes on my back and nothing else. I worked, Ralph—I worked very hard. I had to learn the law all over again. I had to clerk, and I had to pass Bar examinations—at my age. Back on Earth, I was a pretty good lawyer. That didn't count here. I had to start all over again. I made it. I'm a pretty good lawyer here. And if I go back—what'm I going to do—take my exams for a third time? The first thing there's going to be

is a new election. D'you think I'll be in the next president's cabinet?"

Harmon, thinking of his years scrubbing pots, working his way up, thinking of his position now, hard and fairly earned, heard most of the other men agreeing with Hartmann.

We never realized, he thought—none of us—how we'd really feel when this day came.

"That's a very interesting attitude, Mr. Hartmann," Wireman said tightly, fighting back with no sign of the weakness he'd shown talking to Harmon and Genovese, not giving an inch. "I don't think it's completely shared by other members of this cabinet, most of whom are in situations analogous to yours and Secretary Stanley's." He looked over toward Genovese, and only Harmon saw the clutch of his hand as his fingers closed tensely in the narrow space between his thigh and the edge of his chair. "For instance, I'd like to hear what John has to say."

Genovese was looking down at the floor. He didn't move or raise his head. Wireman tried and failed to reach him with his eyes. Genovese took a deep breath.

"Ed Stanley asked if this was going to be a full-time project, Mr. President. And you referred to his 'outside job.' I think we've got the crux of the thing right there." His voice was low and halting. "Now, I promised you something a while back, Mr. President. I'm not forgetting that. I made that promise as a member of your cabinet. But now I've got something to consider. What Karl said, expressed the spot I'm in. I'm a machine tool salesman in a territory that covers all of Cheiron City, Belfont, Newfidefia, and the little towns in between. I spend six months a year on the road, at least. I make good money, because I learned how to sell. I work hard—I'm not trying to build myself up by saying that: here's the point—I spend all day, every day, being a salesman on Cheiron, for the Cheiron City Machine Tool Works. Except that once or twice a month, when I'm in town, I come up here for a few hours. Now—which is it that's the outside job?

"I want you to understand, it's not that I'm unpatriotic or that I don't remember what they're going through, back on Earth. I've got my share of relatives back there, if the Invaders haven't worked them to death by now. If I was back on Earth, I'd take a gun and do what I could, no matter what it cost me. But—"

"Shame!" Yellin broke in. "For shame! I have never heard—I had never thought to hear—treason spoken in this room!" He was trembling with rage, glaring from Genovese to Hartmann to Stanley.

"You are all summer soldiers!" Duplessis shouted. "While this was a . . . a lodge where you could play at government, you were content to do so. But now that there is work to be done, you're leaving it to us—to the ones of us you've sneered at in your fancy foreign clothes, talking that barbarian lingo and for-

getting every civilized custom. Well, go—go back to your banks and briefs and traveling salesman's routes! We don't need you! Those of us who remembered our homeland and waited for this day will do it for you—old as we are!"

There were others: Asmandi, Dumbrovski in his slow-speaking way, Jones—the room was full of angry men on one side or the other. Genovese sat wordlessly in the middle of it, letting Stanley, Hartmann, and the others who felt the same way, argue it out with Yellin and his side. Harmon felt sorry for him, startled by the dull gray color of his face.

"Gentlemen!" Wireman was still holding himself in. His tight lips were almost invisible, but his voice was under good control as he turned to Harmon. "We haven't yet heard from our prime minister."

Harmon could feel the pull of his eyes across the room. They faced each other, both motionless in their seats, while Harmon remembered his early days on Cheiron, with Nola sick and lying alone in her room at night while he went out to work. And then she'd died, and somehow he'd still gone out to work, because it wasn't in his nature to starve or sit. Now he had his position, and his suite, and his reputation.

It was going to be terribly hard, getting this cabinet to pull together. They were working on a chancy plan at best—if it failed, that was the end of them as a functioning group, and the end of hope for Earth, perhaps, and yet they were almost bound to fail, divided among themselves, shot through with bitterness and shame, worn out to begin with— What was a man to do?

"It's my intention to stay and work," he said after that long moment, knowing it was probably a terrible mistake. "I gave my promise." The temptation to do the opposite had been very strong. Hartmann had been right—even if they succeeded, there was nothing for them on Earth to compare with what they had here.

Wireman bowed his head for a moment and slumped in his chair as the tension drained out of him. Then he raised his head. "Very well, gentlemen, you've heard what Tom had to say. Now I'd like a vote —how many of you are in favor of proceeding with the proposal to arm General Hammil?" He looked around expectantly. Harmon looked with him—and winced.

Then he sighed quietly and wondered what he'd gotten himself into. A clear majority of the cabinet was opposed. The division seemed to fall precisely along the line separating those who'd been able to make careers on Cheiron and those who, for one reason or another, had not. He felt exposed, with only old Yellin and the other recluses to count on in crises. It was not his natural side of the fence at all. He'd have to fight the very men he understood and was friendly with, and count for allies on men with whom he'd

had nothing in common for twenty years. More and more, he was oppressed by the knowledge that they were all weak to begin with—that there were not enough of them for the work, even united—and now, he knew beyond almost all possibility of doubt, they could only fail.

He would try it—he'd promised Wireman, and he'd sworn an oath a long time ago. Every logical faculty he possessed told him it was hopeless, and he believed in his own logic. But, he would try it, however unwillingly. He'd do his best to patch this up, and go on.

Then Wireman said: "Very well. Tom, I'm asking you to form a new cabinet from among Mr. Yellin's group. As for the rest of you, gentlemen, I'd like your resignations." His face was ashen. "I have no choice."

Panic-stricken, Harmon suddenly realized there were some bargains he could not keep. The room had fallen completely silent. In that silence, Harmon said: "Ralph! You can't do it!"

"I have to, Tom. I have to have people I can count on."

"You can't form a cabinet with six members. You can't bring in anyone new—we're practically all there are of us, right here in this room, and the rest didn't even have the tie of being in the Government in Exile to hold them to Earth. Those of us here have all got to work on this together, somehow. Six people just can't do all the necessary work—not six people as tired as we are. It can't be done. It's almost . . . yes, it *is* suicide! And certain failure, too."

"We'll *have* to do it. This is more important than our overworking ourselves. This is for Earth, and Earth's freedom. Each of us has to be dependable. Each of us is going to have to carry this thing through."

Harmon shook his head in disbelief and murmured: "We stayed together for twenty years while there was no hope. It took the chance of winning to break us up."

"Tom, have you changed your mind about staying with me?"

"Ralph—be reasonable!"

"I am reasonable. More reasonable than you, it seems to me." Wireman's neck seemed unable to hold his head erect, and he rubbed it wearily. "But, perhaps, you've grown away toward a different kind of reasoning from mine. All right—Mr. Yellin, I'll ask you to please form a new cabinet."

They were filing quietly out through the narrow corridor—Hartmann, Stanley, Genovese, and the rest, with Harmon bringing up the rear. Harmon tried not to listen to what Wireman and the others were discussing in the living room. Suddenly, affairs of state were no longer his concern. He moved in a shell of his own, vaguely noticing that the others ahead of him weren't talking to each other but were simply, as quietly as they could, leaving the apartment. When Hames touched his arm as he passed the kitchenette

doorway, it took him some little time to react. Then he said: "Yes?" He didn't recall what Hames had said.

The Chief of Protocol repeated it. "I beg your pardon, sir. Your final salary check—will you want me to assign it to the Liberation Fund, as usual?"

Harmon nodded quickly. "Yes . . . yes. And, here—" He took out his billfold and handed Hames most of his cash, doubling the amount of the check. "Add that to it."

"Yes, sir. Sir—you know, *he* has to go on whether he wants to stop or not."

"I know. Good-by, Hames."

"Good-by, sir."

"Come in for dinner, sometime. Compliments of the house."

"Thank you, sir. But I'm afraid I couldn't do that, now."

"No . . . no, I suppose not." He stepped out into the crowded hall, and Hames shut the blank brown door behind him. When the elevator came, there wasn't room for all of them. "Go ahead," Harmon murmured. "I'll take the next one down." He waited, alone, wondering whether Wireman would somehow make it work, after all. He didn't wonder where he'd see Hartmann or Genovese again, if ever. Possibly, there'd come a time when they could meet each other again. Or perhaps they'd all simply disappear into Centaurian society, never to re-emerge as anything but Centaurians, with no special distinction.

The elevator came and he took it downstairs, feeling as old and crippled as Yellin, feeling empty, feeling too tired with himself even to argue that there'd really been no choice.

It was hopeless from the start, he thought. From the day we left Earth. People tend to believe the symbol is the thing itself, yes. People can believe that so long as Ralph Wireman lives, so long as there is a group calling itself a cabinet, going through the ceremonies of function, that the government of Earth does, in truth, function. But, also, the people do not believe in these things, for the people are wiser than anyone knows. We drift, we lose the semblance of truth every day, and I'm sure that back on Earth they don't believe in us any longer —no matter how much or how little lip-service they might still pay. And I think in the backs of our minds we knew it, too. The ablest and most vigorous of us started to be drawn away from the moment we touched this world, and only the old and ordinary stayed. It's a natural process. There was no help for it. The best—the ones we needed most—were the ones we were bound to lose.

The elevator stopped at the lobby floor, a few inches out of alignment. Harmon seemed to need all his weight to push open the door, though actually it moved easily enough.

And Wireman knew it. I don't know how long ago he realized it,

but he knew it. For quite some time, possibly. He should be with us—he was the best of us all. He wouldn't be a broken man today. He wouldn't be threadbare. And I think he knows that, too. But he was our president, and he had to live out his lie. The people are wiser than they know, but they don't know it. There was no escape for Wireman.

Harmon let the elevator door close behind him and began walking out of the lobby, thinking he would never be quite as much of a man again.

But there was someone sitting in one of the lobby chairs.

"Hello. Michael," Harmon said.

Michael Wireman, the president's son, was a medium-tall, medium heavy man in his middle twenties, with his mother's dull brown hair and eyes, and her features. He looked almost nothing like his father, resembling him neither in appearance nor personality. He kept pretty much out of his father's way, and by tacit agreement that had never been put in words but had just worked itself out, he was never home during cabinet meetings. Harmon, who never visited the Wiremans socially, had consequently seen little of him since he was a small boy growing through his first five years aboard the refugee ship. The impression Harmon had of him was of a very ordinary boy; not the kind of son you'd expect of Wireman at all. Further than that, Harmon only knew that Wireman seemed to pretty much agree in that opinion. The only thing Michael seemed to inherit from his father was the shape of his ears—the famous jughandle curve that had been a good personality touch in Wireman but was faintly laughable in his son.

"Hello, Mr. Harmon." The boy—it was impossible to think of him as a man after having just left his father—had a colorless voice. He sat in his straight-backed chair, shoulders slumped permanently forward, with his hands dangling limp between his knees, and looked up at Harmon with a sort of shy friendliness. "Is the meeting over? I saw Mr. Stanley and Mr. Genovese leaving."

But, naturally, he hadn't spoken to them. Or perhaps they had ignored him. Either way.

"Yes, Michael. It's over. Mr. Yellin and some others are still up there, however."

"Oh. Then I guess I shouldn't go up yet." He spoke in a perfect Centaurian accent, showing no trace whatsoever of his origin. Even his clothes, which, being inexpensive, were neither styled nor shaped according to the latest local fashion, were nevertheless worn in the indefinably different way a Centaurian would wear them. "Are we all going back to Earth soon?"

Harmon thought over his answer. Then he said: "I suppose you will be, along with your father and mother."

Michael looked at him in sur-

prise. "Won't you be coming with us?"

"I'm . . . afraid not, Michael."

"Don't you *want* to go, Mr. Harmon?"

"I—" Harmon shook his head.

"Don't you miss it? Don't you want to see it again?" The note of surprise in Michael's voice was turning into frank incredulity.

"To be honest, Michael—"

"Do you *like* living here? Do you like these people, and the crude way they live?" Swept up, the boy wasn't even listening to Harmon any more. He seemed to be genuinely enthusiastic, personally excited, for the first time since Harmon'd known him. It was obviously a topic in which he was much more interested than almost any other.

"Crude?"

"*You* know what I mean. They're rough, they're impolite, they're pushy . . . they're nothing like the people on Earth."

Harmon took a deep breath. "Do you know a lot about Earthpeople, Michael?"

The boy flushed. "Well . . . of course, I never saw Earth." His animation checked itself for a moment. Then it rushed back redoubled, as these things will. "But my mother's told me all about them, and all about Earth. She's shown me all the pictures she has of all the places on Earth—all the big buildings, and the museums, and the libraries. She's told me all about Fifth Avenue, and the Arc de Triomphe—" he stumbled over the pronunciation—and Geneva, and Rome . . . all those places."

"I see." Of course—what else could have happened but that the boy and his mother would be drawn together to the point of spending hours perhaps every day throughout his life, reliving her life. "You know, the buildings weren't any bigger than some of the ones here. And there are some rather good museums."

"I know. But nobody goes to museums here."

"Yes—well . . ." Harmon was powerless. What reality ever took the place of a lifelong dream?

"I can't *wait* to go back!"

Harmon felt a peculiar bittersweet, sad amusement in himself. Here was this boy, neither a Centaurian nor an Earthman, neither a man nor whatever he might think he was, and yet so positive. When he spoke about Earth, something glowed in his eyes that startled Harmon in its resemblance to Wireman—and yet he spoke about it in a thick Centaurian accent. Harmon guessed the boy couldn't very well be happy, no matter where in the human universe he might find himself. Neither fish nor fowl—though perhaps there was some strength there somewhere.

"Michael—"

Harmon stopped, his eyes widening and then contracting to slits as he chewed over a new thought.

Then, after a time, he said, again, "Michael—"

"Yes, Mr. Harmon?"

"Michael, I wonder if you might come upstairs with me."

"Upstairs?"

"I . . . I've had a thought. I think perhaps your father might like to hear it. And certainly, you should be there when he does." Because, if Wireman accepted it, Michael's life was ruined.

But, with him, they just might do it. Wireman might just agree to it—particularly if Harmon offered to come back.

Neither fish nor fowl nor good red meat, but a symbol—a new pair of shoulders to carry the weight, with Wireman's name and Harmon behind him, with youth, with all those deep-rooted embodiments of the perfect compromise . . . Yes. Lord knew what would happen to him after a free Earth was re-established. Not even Harmon could guess how many political sides would use him for a football, or what agonies would pile themselves afresh on that agony-prone soul. But it would happen, that much Harmon knew.

And still it was their only hope. They were all of them tied together in this thing, all of them half-truths enlisted in the construction of a lie. They needed the lie. Earth's people needed it. In a very real sense, the Centaurian government needed it. And, after all, it was a better lie than most.

"We'd better hurry, Michael." He put his arm around the boy's shoulders. They were thicker and solider than you'd think. Good, Harmon thought. They'll carry weight. So much the less for me.

THE END

THE ANALYTICAL LABORATORY

I do get occasional complaints about serials . . . but take a look at the An Lab scores! One serial installment, and one long novelette—and what the point score doesn't quite show is that ninety-four per cent of the first-place votes went to those two stories. The four short stories shared the remaining six per cent of first-place votes. Somehow, it looks as though readers do want the long ones!

APRIL 1957 ISSUE

PLACE	STORY	AUTHOR	POINTS
1.	The Dawning Light (Pt. 2)	Robert Randall	2.07
2.	Call Me Joe	Poul Anderson	2.47
3.	Chain Reaction	John A. Sentry	3.62
4.	Torch	Christopher Anvil	3.70
5.	The Mile-Long Spaceship	Kate Wilhelm	4.17

THE EDITOR.

THE BEST POLICY

You know that one about, "Don't give me any more facts; I've already made up my mind and you're just trying to confuse me!" Maybe you thought it was a silly statement, huh...?

BY DAVID GORDON

Illustrated by Freas

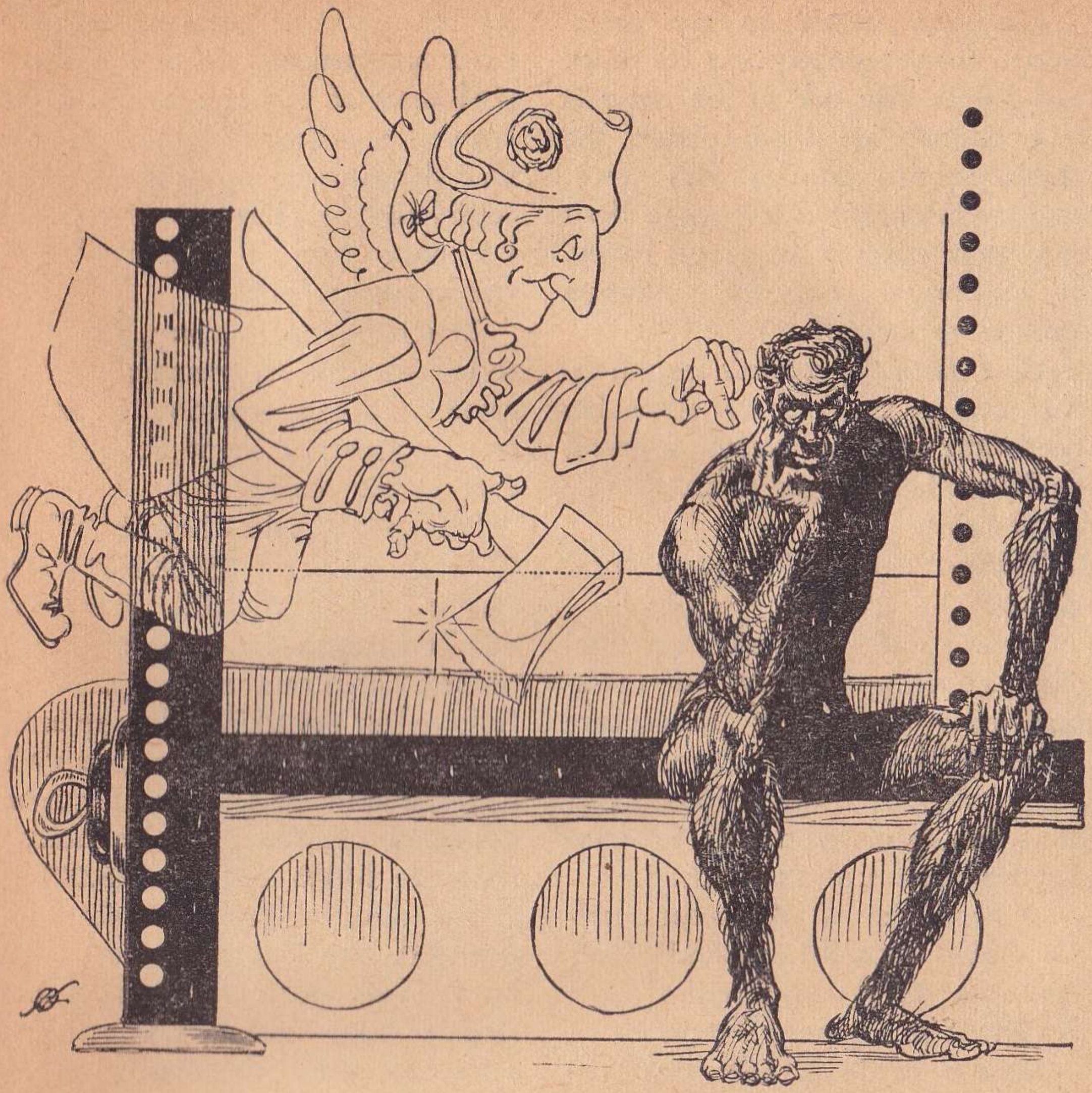
Thagobar Larnimisculus Verf, clad for the gridiron. His overall color was similar to that of a well-boiled lobster, fading to a darker purple at the joints of his exoskeleton. His clothing was sparse, consisting only of an abbreviated kilt embroidered with fanciful designs and emblazoned with a swirl of glittering gems. The emblem of his rank was engraved in gold on his plastron and again on his carapace, so that he would be recognizable both coming and going.

Borgax of Fenigwisnok, had a long name and an important title, and he was proud of both. The title was roughly translatable as "High-Sheriff-Admiral of Fenigwisnok," and Fenigwisnok was a rich and important planet in the Dal Empire. Title and name looked very impressive together on documents, of which there were a great many to be signed.

Thagobar himself was a prime example of his race, a race of power and pride. Like the terrestrial turtles, he had both an exo- and an endoskeleton, although that was his closest resemblance to the *chelonia*. He was humanoid in general shape, looking something like a cross between a medieval knight in full armor and a husky football player

All in all, he made quite an impressive figure, in spite of his five-feet-two of height.

As commander of his own spaceship, the *Verf,* it was his duty to search out and explore planets which could be colonized by his race, the Dal. This he had done diligently for many years, following exactly his



General Orders as a good commander should.

And it had paid off. He had found some nice planets in his time, and this one was the juiciest of the lot.

Gazing at the magniscreen, he rubbed his palms together in satisfaction. His ship was swinging smoothly in an orbit high above a newly-discovered planet, and the magniscreen was focused on the landscape below. No Dal ship had ever been in this part of the galaxy before, and it was comforting to have discovered a colonizable planet so quickly.

"A magnificent planet!" he said. "A wonderful planet! Look at that green! And the blue of those seas!" He turned to Lieutenant Pelquesh. "What do you think? Isn't it fine?"

"It certainly is, Your Splendor," said Pelquesh. "You should receive another citation for this one."

Thagobar started to say something, then suddenly cut it short. His hands flew out to the controls and slapped at switch plates; the ship's engines squealed with power as they brought the ship to a dead stop in relation to the planet below. In the magniscreen, the landscape became stationary.

He twisted the screen's magnification control up, and the scene beneath the ship ballooned outward, spilling off the edges as the surface came closer.

"There!' he said. "Pelquesh, what is that?"

It was a purely rhetorical question. The wavering currents of two-hundred-odd miles of atmosphere caused the image to shimmer uncertainly, but there was no doubt that it was a city of some kind. Lieutenant Pelquesh said as much.

"Plague take it!" Thagobar snarled. "An occupied planet! Only intelligent beings build cities."

"That's so," agreed Pelquesh.

Neither of them knew what to do. Only a few times in the long history of the Dal had other races been found—and under the rule of the Empire, they had all slowly become extinct. Besides, none of them had been very intelligent, anyway.

"We'll have to ask General Orders," Thagobar said at last. He went over to another screen, turned it on, and began dialing code numbers into it.

Deep in the bowels of the huge ship, the General Orders robot came sluggishly to life. In its vast memory lay ten thousand years of accumulated and ordered facts, ten thousand years of the experiences of the Empire, ten thousand years of the final decisions on every subject ever considered by Thagobar's race. It was more than an encyclopedia—it was a way of life.

In a highly logical way, the robot sorted through its memory until it came to the information requested by Thagobar; then it relayed the data to the screen.

"Hm-m-m," said Thagobar. "Yes. General Order 333,953,216-A-j, Chapter MMCMXLIX, Paragraph 402. 'First discovery of an intelligent or semi-intelligent species shall be followed by the taking of a specimen selected at random. No contact shall be made until the specimen has been examined according to Psychology Directive 659-B, Section 888,077-q, at the direction of the Chief Psychologist. The data will be correlated by General Orders. If contact has already been made inadvertently, refer to GO 472,678-R-s, Ch. MMMCCX, Par. 553. Specimens shall be taken according to . . ."

He finished reading off the General Order and then turned to the lieutenant. "Pelquesh, you get a spaceboat ready to pick up a specimen. I'll notify psychologist Zandoplith to be ready for it."

Ed Magruder took a deep breath of spring air and closed his eyes. It was beautiful; it was filled with spicy aromas and tangy scents that, though alien, were somehow home-

like—more homelike than Earth.

He was a tall, lanky man, all elbows and knees, with nondescript brown hair and bright hazel eyes that tended to crinkle with suppressed laughter.

He exhaled the breath and opened his eyes. The city was still awake, but darkness was coming fast. He liked his evening stroll, but it wasn't safe to be out after dark on New Hawaii, even yet. There were little night-things that fluttered softly in the air, giving little warning of their poisonous bite, and there were still some of the larger predators in the neighborhood. He started walking back toward New Hilo, the little city that marked man's first foothold on the new planet.

Magruder was a biologist. In the past ten years, he had prowled over half a dozen planets, collecting specimens, dissecting them with precision, and entering the results in his notebooks. Slowly, bit by bit, he was putting together a pattern—a pattern of life itself. His predecessors stretched in a long line, clear back to Karl von Linne, but none of them had realized what was missing in their work. They had had only one type of life to deal with—terrestrial life. And all terrestrial life is, after all, homogenous.

But, of all the planets he'd seen, he liked New Hawaii best. It was the only planet besides Earth where a man could walk around without a protective suit of some kind—at least, it was the only one discovered so far.

He heard a faint swishing in the air over his head and glanced up quickly. The night-things shouldn't be out this early!

And then he saw that it wasn't a night-thing; it was a metallic-looking globe of some kind, and—

There was a faint greenish glow that suddenly flashed from a spot on the side of the globe, and all went blank for Ed Magruder.

Thagobar Verf watched dispassionately as Lieutenant Pelquesh brought the unconscious specimen into the biological testing section. It was a queer-looking specimen; a soft-skinned, sluglike, parody of a being, with a pale, pinkish-tan complexion and a repulsive, fungoidal growth on its head and various other areas.

The biologists took the specimen and started to work on it. They took nips of skin and samples of blood and various electrical readings from the muscles and nerves.

Zandoplith, the Chief Psychologist, stood by the commander, watching the various operations.

It was Standard Procedure for the biologists; they went about it as they would with any other specimen that had been picked up. But Zandoplith was going to have to do a job he had never done before. He was going to have to work with the mind of an intelligent being.

He wasn't worried, of course; it was all down in the Handbook, every bit of Proper Procedure. There was nothing at all to worry about.

As with all other specimens, it was Zandoplith's job to discover the Basic Reaction Pattern. Any given organism could react only in a certain very large, but finite number of ways, and these ways could be reduced to a Basic Pattern. All that was necessary to destroy a race of creatures was to get their Basic Pattern and then give them a problem that couldn't be solved by using that pattern. It was all very simple, and it was all down in the Handbook.

Thagobar turned his head from the operating table to look at Zandoplith. "Do you think it really will be possible to teach it our language?"

"The rudiments, Your Splendor," said the psychologist. "Ours is, after all, a very complex language. We'll give him all of it, of course, but it is doubtful whether he can assimilate more than a small portion of it. Our language is built upon logic, just as thought is built upon logic. Some of the lower animals are capable of the rudiments of logic, but most are unable to grasp it."

"Very well; we'll do the best we can. I, myself, will question it."

Zandoplith looked a little startled. "But, Your Splendor! The questions are all detailed in the Handbook!"

Thagobar Verf scowled "I can read as well as you, Zandoplith. Since this is the first semi-intelligent life discovered in the past thousand years or so, I think the commander should be the one to do the questioning."

"As you say, Your Splendor," the psychologist agreed.

Ed Magruder was placed in the Language Tank when the biologists got through with him. Projectors of light were fastened over his eyes so that they focused directly on his retinas; sound units were inserted into his ears; various electrodes were fastened here and there; a tiny network of wires was attached to his skull. Then a special serum which the biologists had produced was injected into his bloodstream. It was all very efficient and very smoothly done. Then the Tank was closed, and a switch was thrown.

Magruder felt himself swim dizzily up out of the blackness. He saw odd-looking, lobster-colored things moving around while noises whispered and gurgled into his ears.

Gradually, he began to orient himself. He was being taught to associate sounds with actions and things.

Ed Magruder sat in a little four-by-six room, naked as a jaybird, looking through a transparent wall at a sextette of the aliens he had seen so much of lately.

Of course, it wasn't these particular bogeys he'd been watching, but they looked so familiar that it was hard to believe they were here in the flesh. He had no idea how long he'd been learning the language; with no exterior references, he was lost.

Well, he thought, *I've picked up a good many specimens, and here I*

am, a specimen myself. He thought of the treatment he'd given his own specimens and shuddered a little.

Oh, well. Here he was; might as well put on a good show—stiff upper lip, chin up, and all that sort.

One of the creatures walked up to an array of buttons and pressed one. Immediately, Magruder could hear sounds from the room on the other side of the transparent wall.

Thagobar Verf looked at the specimen and then at the question sheet in his hand. "Our psychologists have taught you our language, have they not?" he asked coldly.

The specimen bobbled his head up and down. "Yup. And that's what I call real force-feeding, too."

"Very well; I have some questions to ask; you will answer them truthfully."

"Why, sure," Magruder said agreeably. "Fire away."

"We can tell if you are lying," Thagobar continued. "It will do you no good to tell us untruths. Now: What is your name?"

"Theophilus Q. Hassenpfeffer," Magruder said blandly.

Zandoplith looked at a quivering needle and then shook his head slowly as he looked up at Thagobar.

"That is a lie," said Thagobar.

The specimen nodded. "It sure is. That's quite a machine you've got there."

"It is good that you appreciate the superiority of our instruments," Thagobar said grimly. "Now: Your name."

"Edwin Peter St. John Magruder."

Psychologist Zandoplith watched the needle and nodded.

"Excellent," said Thagobar. "Now, Edwin—"

"'Ed' is good enough," said Magruder.

Thagobar blinked. "Good enough for what?"

"For calling me."

Thagobar turned to the psychologist and mumbled something. Zandoplith mumbled back. Thagobar spoke to the specimen.

"Is your name 'Ed'?"

"Strictly speaking, no," said Magruder.

"Then why should I call you that?"

"Why not? Everyone else does," Magruder informed him.

Thagobar consulted further with Zandoplith and finally said: "We will come back to that point later. Now . . . uh . . . Ed, what do you call your home planet?"

"Earth."

"Good. And what does your race call itself?"

"*Homo sapiens.*"

"And the significance of that, if any?"

Magruder considered. "It's just a name," he said, after a moment.

The needle waggled.

"Another lie," said Thagobar.

Magruder grinned. "Just testing. That really *is* a whizzer of a machine."

Thagobar's throat and face darkened a little as his copper-bearing blue blood surged to the surface in

suppressed anger. "You said that once," he reminded blackly.

"I know. Well, if you really want to know, *homo sapiens* means 'wise man.' "

Actually, he hadn't said "Wise man"; the language of the Dal didn't quite have that exact concept, so Magruder had to do the best he could. Translated back into English, it would have come out something like "beings with vast powers of mind."

When Thagobar heard this, his eyes opened a little wider, and he turned his head to look at Zandoplith. The psychologist spread his horny hands; the needle hadn't moved.

"You seem to have high opinions of yourselves," said Thagobar, looking back at Magruder.

"That's possible," agreed the Earthman.

Thagobar shrugged, looked back at his list, and the questioning went on. Some of the questions didn't make too much sense to Magruder; others were obviously psychological testing.

But one thing was quite clear; the lie detector was indeed quite a whizzer. If Magruder told the exact truth, it didn't indicate. But if he lied just the least tiny bit, the needle on the machine hit the ceiling—and, eventually, so did Thagobar.

Magruder had gotten away with his first few lies—they were unimportant, anyway—but finally, Thagobar said: "You have lied enough, Ed."

He pressed a button, and a nerve-shattering wave of pain swept over the Earthman. When it finally faded, Magruder found his belly muscles tied in knots, his fists and teeth clenched, and tears running down his cheeks. Then nausea overtook him, and he lost the contents of his stomach.

Thagobar Verf turned distastefully away. "Put him back in his cell and clean up the interrogation chamber. Is he badly hurt?"

Zandoplith had already checked his instruments. "I think not, Your Splendor; it is probably only slight shock and nothing more. However, we will have to retest him in the next session anyhow. We'll know then."

Magruder sat on the edge of a shelflike thing that doubled as a low table and a high bed. It wasn't the most comfortable seat in the world, but it was all he had in the room; the floor was even harder.

It had been several hours since he had been brought here, and he still didn't feel good. That stinking machine had *hurt*! He clenched his fists; he could still feel the knot in his stomach and—

And then he realized that the knot in his stomach hadn't been caused by the machine; he had thrown that off a long time back.

The knot was caused by a towering, thundering-great, ice-cold rage.

He thought about it for a minute and then broke out laughing. Here he was, like a stupid fool, so angry

that he was making himself sick! And that wasn't going to do him *or* the colony any good.

It was obvious that the aliens were up to no good, to say the least. The colony at New Hilo numbered six thousand souls—the only humans on New Hawaii, except for a couple of bush expeditions. If this ship tried to take over the planet, there wouldn't be a devil of a lot the colonists could do about it. And what if the aliens found Earth itself? He had no idea what kind of armament this spaceship carried nor how big it was—but it seemed to have plenty of room inside it.

He knew it was up to him. He was going to have to do something, somehow. What? Could he get out of his cell and try to smash the ship?

Nope. A naked man inside a bare cell was about as helpless as a human being can get. What, then?

Magruder lay on his back and thought about it for a long time.

Presently, a panel opened in the door and a red-violet face appeared on the other side of a transparent square in the door.

"You are doubtless hungry," it said solemnly. "An analysis of your bodily processes has indicated what you need in the way of sustenance. Here."

The quart-size mug that slid out of a niche in the wall had an odd aroma drifting up from it. Magruder picked it up and looked inside. It was a grayish-tan, semitranslucent liquid about the consistency of thin gravy. He touched the surface with his finger and then touched the finger with his tongue. Its palate appeal was definitely on the negative side of zero.

He could guess what it contained: A score, more or less, of various amino acids, a dozen vitamins, a handful of carbohydrate, and a few per cent of other necessities. A sort of pseudo-protoplasmic soup; an over-balanced meal.

He wondered whether it contained anything that would do him harm, decided it probably didn't. If the aliens wanted to dope him, they didn't need to resort to subterfuge, and besides, this was probably the gunk they had fed him while he was learning the language.

Pretending to himself that it was beef stew, he drank it down. Maybe he could think better on a full stomach. And, as it turned out, he was right.

Less than an hour later, he was back in the interrogation chamber. This time, he was resolved to keep Thagobar's finger off that little button.

After all, he reasoned to himself, *I might want to lie to someone, when and if I get out of this. There's no point in getting a conditioned reflex against it.*

And the way the machine had hurt him, there was a strong possibility that he just might get conditioned if he took very many jolts like that.

He had a plan. It was highly nebulous—little more than a prin-

ciple, really, and it was highly flexbile. He would simply have to take what came, depend on luck, and hope for the best.

He sat down in the chair and waited for the wall to become transparent again. He had thought there might be a way to get out as he was led from his cell to the interrogation chamber, but he didn't feel like tackling six heavily armored aliens all at once. He wasn't even sure he could do much with just one of them. Where do you slug a guy whose nervous system you know nothing about, and whose body is plated like a boiler?

The wall became transparent, and the alien was standing on the other side of it. Magruder wondered whether it was the same being who had questioned him before, and after looking at the design on the plastron, decided that it was.

He leaned back in his chair, folded his arms, and waited for the first question.

Thagobar Verf was a very troubled Dal. He had very carefully checked the psychological data with General Orders after the psychologists had correlated it according to the Handbook. He definitely did not like the looks of his results.

General Orders merely said: "No race of this type has ever been found in the galaxy before. In this case, the commander will act according to GO 234,511,006-R-g, Ch. MMCDX, Par. 666."

After looking up the reference, he had consulted with Zandoplith. "What do you think of it?" he asked. "And why doesn't your science have any answers?"

"Science, Your Splendor," said Zandoplith, "is a process of obtaining and correlating data. We haven't enough data yet, true, but we'll get it. We absolutely must not panic at this point; we must be objective, purely objective." He handed Thagobar another printed sheet. "These are the next questions to be asked, according to the Handbook of Psychology."

Thagobar felt a sense of relief. General Orders had said that in a case like this, the authority of action was all dependent on his own decision; it was nice to know that the scientist knew what he was doing, and had authority to back it.

He cut off the wall polarizer and faced the specimen on the other side.

"You will answer the next several questions in the negative," Thagobar said. "It doesn't matter what the real and truthful answer may be, you will say '*no*'; is that perfectly clear?"

"No," said Magruder.

Thagobar frowned. The instructions seemed perfectly lucid to him; what was the matter with the specimen? Was he possibly more stupid than they had at first believed?

"He's lying," said Zandoplith.

It took Thagobar the better part of half a minute to realize what had happened, and when he did, his face became unpleasantly dark. But there was nothing else he could do;

the specimen had obeyed orders.

His Splendor took a deep breath, held it for a moment, eased it out, and began reading the questions in a mild voice.

"Is your name Edwin?"

"No."

"Do you live on the planet beneath us?"

"No."

"Do you have six eyes?"

"No."

After five minutes of that sort of thing, Zandoplith said: "That's enough, Your Splendor; it checks out; his nervous system wasn't affected by the pain. You may proceed to the next list."

"From now on, you will answer truthfully," Thagobar said. "Otherwise, you will be punished again. Is *that* clear?"

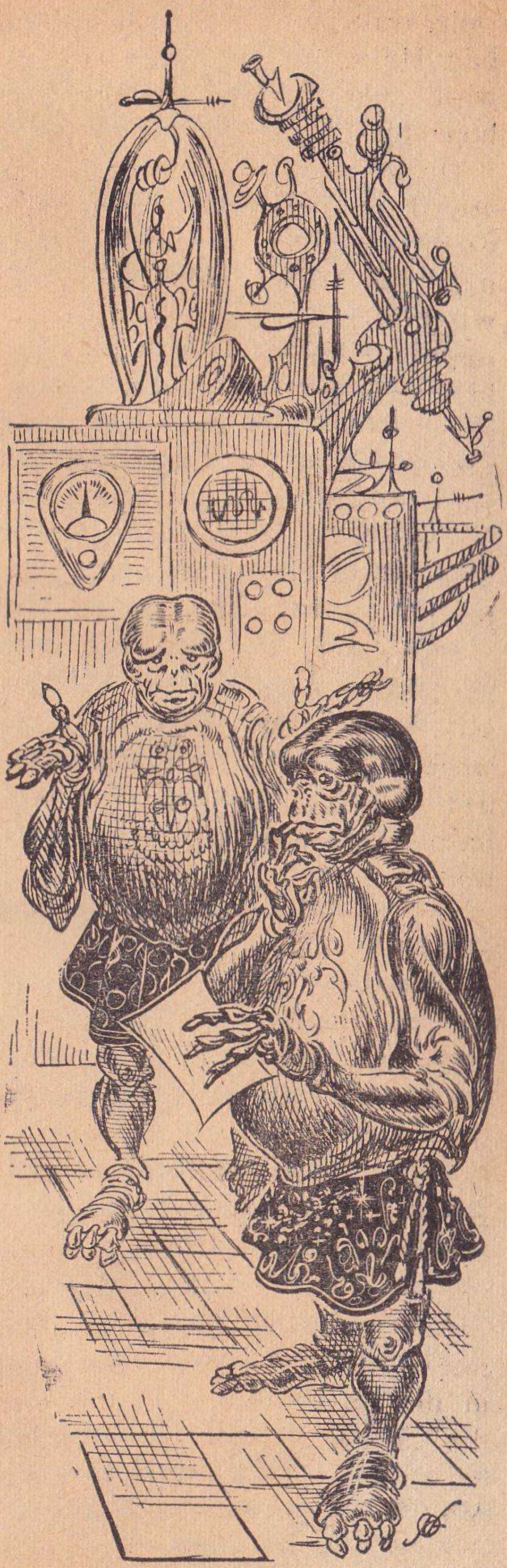
"Perfectly clear," said Magruder.

Although his voice sounded perfectly calm, Magruder, on the other side of the transparent wall, felt just a trifle shaky. He would have to think quickly and carefully from now on. He didn't believe he'd care to take too much time in answering, either.

"How many *homo sapiens* are there?"

"Several billions." There were actually about four billions, but the Dal equivalent of "several" was vaguely representative of numbers larger than five, although not necessarily so.

"Don't you know the actual number?"



"No," said Magruder. *Not right down to the man, I don't.*

The needle didn't quiver. Naturally not—he was telling the truth, wasn't he?

"All of your people surely aren't on Earth, then?" Thagobar asked, deviating slightly from the script. "In only one city?"

With a sudden flash of pure joy, Magruder saw the beautifully monstrous mistake the alien had made. He had not suspected until now that Earthmen had developed space travel. Therefore, when he had asked the name of Magruder's home planet, the answer he'd gotten was "Earth." But the alien had been thinking of New Hawaii! *Wheeee!*

"Oh, no," said Magruder truthfully, "we have only a few thousand down there." Meaning, of course, New Hawaii, which was "down there."

"Then most of your people have deserted Earth?"

"Deserted Earth?" Magruder sounded scandalized. "Heavens to Betsy, no! We have merely colonized; we're all under one central government."

"How many are there in each colony?" Thagobar had completely abandoned the script now.

"I don't know exactly," Magruder told him, "but not one of our colonized planets has any more occupants on it than Earth."

Thagobar looked flabbergasted and flicked off the sound transmission to the prisoner with a swift movement of his finger.

Zandoplith looked pained. "You are not reading the questions from the Handbook," he complained.

"I know, I know. But did you hear what he said?"

"I heard it." Zandoplith's voice sounded morose.

"It wasn't true, was it?"

Zandoplith drew himself up to his full five feet one. "Your Splendor, you have taken it upon yourself to deviate from the Handbook, but I will not permit you to question the operation of the Reality Detector. Reality is truth, and therefore truth is reality; the Detector hasn't erred since . . . since *ever*!"

"I know," Thagobar said hastily. "But do you realize the implications of what he said? There are a few thousand people on the home planet; all the colonies have less. And yet, there are *several billion* of his race! That means they have occupied around ten million planets!"

"I realize it sounds queer," admitted Zandoplith, "but the detector never lies!" Then he realized whom he was addressing and added, "Your Splendor."

But Thagobar hadn't noticed the breach of etiquette. "That's perfectly true. But, as you said, there's something queer here. We must investigate further."

Magruder had already realized that his mathematics was off kilter; he was thinking at high speed.

Thagobar's voice said: "According to our estimates, there are not that many habitable planets in the

galaxy. How do you account, then, for your statement?"

With a quick shift of viewpoint, Magruder thought of Mars, so many light-years away. There had been a scientific outpost on Mars for a long time, but it was a devil of a long way from being a habitable planet.

"My people," he said judiciously, "are capable of living on planets with surface conditions which vary widely from those of Earth."

Before Thagobar could ask anything else, another thought occurred to the Earthman. The thousand-inch telescope on Luna had discovered, spectroscopically, the existence of large planets in the Andromeda Nebula. "In addition," he continued blandly, "we have found planets in other galaxies than this."

There! *That* ought to confuse them!

Again the sound was cut off, and Magruder could see the two aliens in hot discussion. When the sound came back again, Thagobar had shifted to another tack.

"How many spaceships do you have?"

Magruder thought that one over for a long second. There were about a dozen interstellar ships in the Earth fleet—not nearly enough to colonize ten million planets. He was in a jam!

No! Wait! A supply ship came to New Hawaii every six months. But there were no ships on New Hawaii.

"Spaceships?" Magruder looked innocent. "Why, we have no spaceships."

Thagobar Verf shut off the sound again, and this time, he made the wall opaque, too. "No spaceships? *No spaceships?* He lied . . . I hope?"

Zandoplith shook his head dolefully. "Absolute truth."

"But . . . but . . . but—"

"Remember what he said his race called themselves?" the psychologist asked softly.

Thagobar blinked very slowly. When he spoke, his voice was a hoarse whisper. *"Beings with minds of vast power."*

"Exactly," said Zandoplith.

Magruder sat in the interrogation chamber for a long time without hearing or seeing a thing. Had they made sense out of his statements? Were they beginning to realize what he was doing? He wanted to chew his nails, bite his lips, and tear his hair; instead, he forced himself to outward calm. There was a long way to go yet.

When the wall suddenly became transparent once more, he managed to keep from jumping.

"Is it true," asked Thagobar, "that your race has the ability to move through space by means of mental power alone?"

For a moment, Magruder was stunned. It was beyond his wildest expectations. But he rallied quickly.

How does a man walk? he thought.

"It is true that by using mental forces to control physical energy," he said carefully, "we are able to move from place to place without the aid of spaceships or other such machines."

Immediately, the wall blanked again.

Thagobar turned around slowly and looked at Zandoplith. Zandoplith's face looked a dirty crimson; the healthy violet had faded.

"I guess you'd best call in the officers," he said slowly; "we've got a monster on our hands."

It took three minutes for the twenty officers of the huge *Verf* to assemble in the Psychology Room. When they arrived, Thagobar asked them to relax and then outlined the situation.

"Now," he said, "are there any suggestions?"

They were definitely *not* relaxed now. They looked as tense as bowstrings.

Lieutenant Pelquesh was the first to speak. "What are the General Orders, Your Splendor?"

"The General Orders," Thagobar said, "are that we are to protect our ship and our race, if necessary. The methods for doing so are left up to the commander's discretion."

There was a rather awkward silence. Then a light seemed to come over Lieutenant Pelquesh's face. "Your Splendor, we could simply drop an annihilation bomb on the planet."

Thagobar shook his head. "I've already thought of that. If they can move themselves through space by means of thought alone, they would escape, and their race would surely take vengeance for the vaporization of one of their planets."

Gloom descended.

"Wait a minute," said Pelquesh. "If he can do that, *why hasn't he escaped from us?*"

Magruder watched the wall become transparent. The room was filled with aliens now. The big cheese, Thagobar, was at the pickup.

"We are curious," he said, "to know why, if you can go anywhere at will, you have stayed here. Why don't you escape?"

More fast thinking. "It is not polite," Magruder said, "for a guest to leave his host until the business at hand is finished."

"Even after we . . . ah . . . disciplined you?"

"Small discomforts can be overlooked, especially when the host is acting in abysmal ignorance."

There was a whispered question from one of Thagobar's underlings and a smattering of discussion, and then:

"Are we to presume, then, that you bear us no ill will?"

"Some," admitted Margruder candidly. "It is only because of your presumptuous behavior toward me, however, that I personally, am piqued. I can assure you that my race as a whole bears no ill will whatever towards your race as a whole or any member of it."

Play it up big, Magruder, he told himself. *You've got 'em rocking—I hope.*

More discussion on the other side of the wall.

"You say," said Thagobar, "that your race holds no ill will towards us; how do you know?"

"I can say this," Magruder told him; "I know—beyond any shadow of a doubt—exactly what every person of my race thinks of you at this very moment.

"In addition, let me point out that I have not been harmed as yet; they would have no reason to be angry. After all, you haven't been destroyed yet."

Off went the sound. More heated discussion. On went the sound.

"It has been suggested," said Thagobar, "that, in spite of appearances, it was intended that we pick you, and you alone, as a specimen. It is suggested that you were sent to meet us."

Oh, brother! This one would have to be handled with *very* plush gloves.

"I am but a very humble member of my race," Magruder said as a prelude—mostly to gain time. But wait! He was an extraterrestrial biologist, wasn't he? "However," he continued with dignity, "my profession is that of meeting alien beings. I was, I must admit, appointed to the job."

Thagobar seemed to grow tenser. "That, in turn, suggests that you knew we were coming."

Magruder thought for a second. It had been predicted for centuries that mankind would eventually meet an intelligent alien race.

"We have known you were coming for a long time," he said quite calmly.

Thagobar was visibly agitated now. "In that case, you must know where our race is located in the galaxy; you must know where our home base is."

Another tough one. Magruder looked through the wall at Thagobar and his men standing nervously on the other side of it. "I know where you are," he said, "and I know exactly where every one of your fellows is."

There was sudden consternation on the other side of the wall, but Thagobar held his ground.

"What is our location then?"

For a second, Magruder thought they'd pulled the rug out from under him at last. And then he saw that there was a perfect explanation. He'd been thinking of dodging so long that he almost hadn't seen the honest answer.

He looked at Thagobar pityingly. "Communication by voice is so inadequate. Our co-ordinate system would be completely unintelligible to you, and you did not teach me yours, if you will recall." Which was perfectly true; the Dal would have been foolish to teach their co-ordinate system to a specimen—the clues might have led to their home base. Besides, General Orders forbade it.

More conversation on the other side.

Thagobar again: "If you are in telepathic communication with your fellows, can you read *our* minds?"

Magruder looked at him superciliously. "I have principles, as does my race; we do not enter any mind uninvited."

"Do the rest of your people know the location of our bases, then?" Thagobar asked plaintively.

Magruder's voice was placid. "I assure you, Thagobar Verf, that everyone of my people, on every planet belonging to our race, knows as much about your home base and its location as I do."

Magruder was beginning to get tired of the on-and-off sound system, but he resigned himself to wait while the aliens argued among themselves.

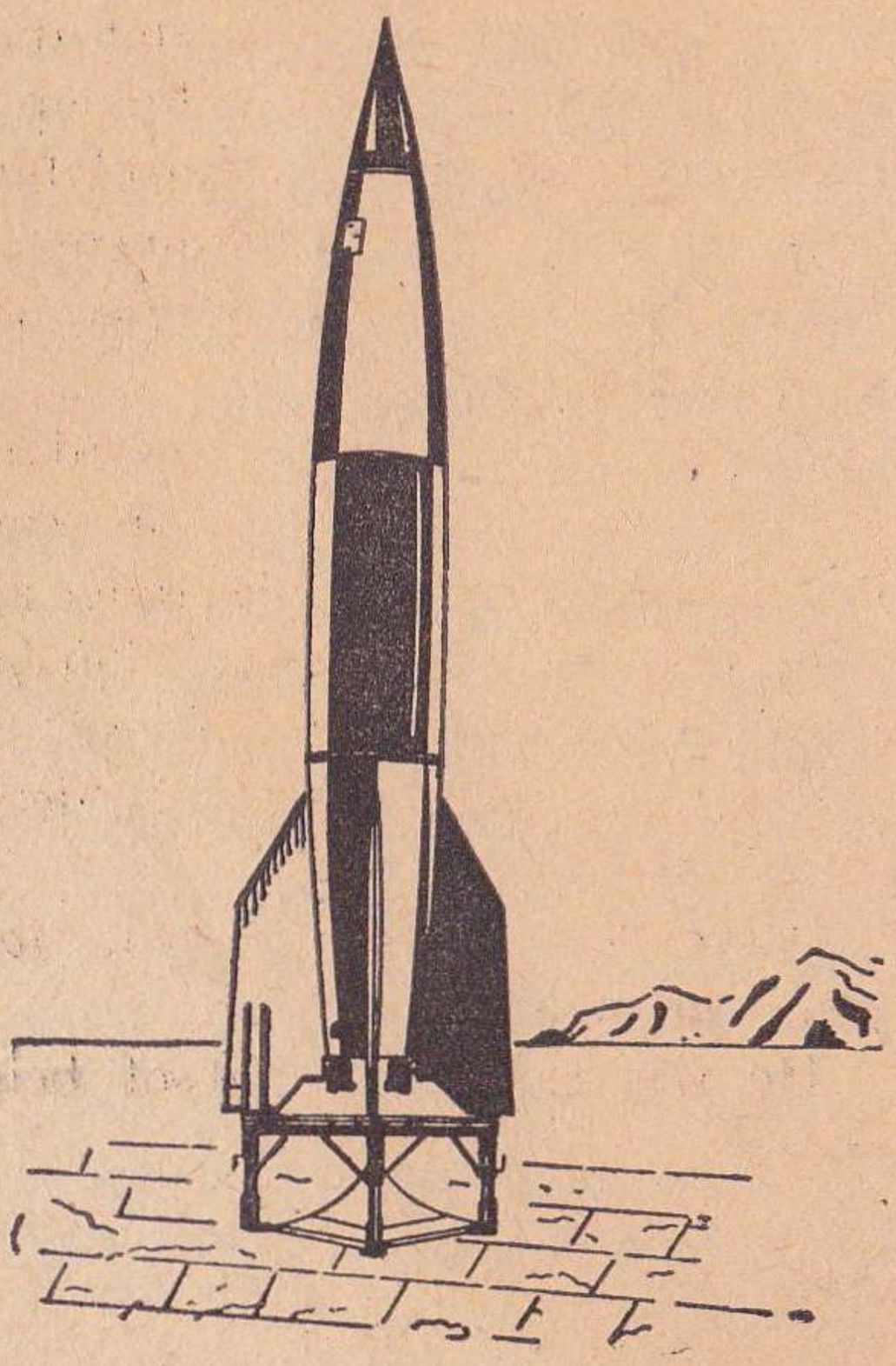
"It has been pointed out," Thagobar said, after a few minutes, "that it is very odd that your race has never contacted us before. Ours is a very old and powerful race, and we have taken planets throughout a full half of the galaxy, and yet, your race has never been seen nor heard of before."

"We have a policy," said Magruder, "of not disclosing our presence to another race until it is to our advantage to do so. Besides, we have no quarrel with your race, and we have never had any desire to take your homes away from you. Only if a race becomes foolishly and insanely belligerent do we trouble ourselves to show them our power."

It was a long speech—maybe too long. Had he stuck strictly to the truth? A glance at Zandoplith told him; the chief psychologist had kept his beady black eyes on the needle all through the long proceedings, and kept looking more and more worried as the instrument indicated a steady flow of truth.

Thagobar looked positively apprehensive. As Magruder had become accustomed to the aliens, it had become more and more automatic to read their expressions. After all, he held one great advantage: they had made the mistake of teaching him their language. He knew them, and they didn't know him.

Thagobar said: "Other races, then, have been . . . uh . . . punished by yours?"



"Not in my lifetime," Magruder told him. He thought of *homo neanderthalensis* and said: "There was a race, before my time, which defied us. It no longer exists."

"Not in your lifetime? How old are you?"

"Look into your magniscreen at the planet below," said the Earthman in a solemn tone. "When I was born, not a single one of the plants you see existed on Earth. The continents of Earth were nothing like that; the seas were entirely different.

"The Earth on which I was born had extensive ice caps; look below you and you will see none. And yet, we have done nothing to change the planet you see; any changes that have taken place have come by the long process of geologic evolution."

"Gleek!" It was a queer sound that came from Thagobar's throat just before a switch cut off the wall and the sound again.

Just like watching a movie on an old film, Magruder thought. *No sound half the time, and it breaks every so often.*

The wall never became transparent again. Instead, after about half an hour, it slid up silently to disclose the entire officer's corps of the *Verf* standing at rigid attention.

Only Thagobar Larnimisculus Verf, Borgax of Fenigwisnok, stood at ease, and even so, his face seemed less purple than usual.

"Edwin Peter St. John Magruder," he intoned, "as commander of this vessel, Noble of the Grand Empire, and representative of the Emperor himself, we wish to extend to you our most cordial hospitality.

"Laboring under the delusion that you represented a lower form of life, we have treated you ignominiously, and for that we offer our deepest apologies."

"Think nothing of it," said Magruder coolly. "The only thing that remains is for you to land your ship on our planet so that your race and mine can arrange things to our mutual happiness." He looked at all of them. "You may relax," he added imperiously. "And bring me my clothes."

The human race wasn't out of the hole yet; Magruder was perfectly well aware of that. Just what should be done with the ship and the aliens when they landed, he wasn't quite sure; it would have to be left up to the decision of the President of New Hawaii and the Government of Earth. But he didn't foresee any great difficulties.

As the *Verf* dropped toward the surface of New Hawaii, its commander sidled over to Magruder and said, in a troubled voice: "Do you think your people will like us?"

Magruder glanced at the lie detector. It was off.

"*Like* you? Why, they'll *love* you," he said.

He was sick and tired of being honest.

THE END

THE REFERENCE LIBRARY

BY P. SCHUYLER MILLER

THREE MEN

Raymond King Cummings—Ray Cummings to a generation of science-fiction readers, and to a few younger collectors—died on January 23rd at the age of sixty-nine. Some of you had the good fortune to meet him at the opening session of the New York Convention, where he made one of his rare appearances; some of the pocket-book oriented current generation of fandom, I'm told, had no idea who he was.

Ray Cummings was one of the handful of men who shaped modern science fiction in the days before the Gernsback magazines and before John Campbell's Astounding. A. Merritt came closest to literary stature, with his Tennysonian flair for color and lush imaginings. Edgar Rice Burroughs was the most popular: he set the pattern for unabashed action-adventure, "space opera" without space. John Taine—still active, but not writing—played with scientific concepts as the other two played with the fantasy and adventure of hidden places; until the advent of *Amazing Quarterly* his novels appeared only as books. Murray Leinster was the epitome of the professional, adaptable as an

amoeba, trying everything and doing it all well and sometimes very well. He is the only one of them who never became dated. And there was Ray Cummings . . .

I discovered him first in the summer of 1924, in Gernsback's *Science and Invention,* where "The Man On the Meteor" was running. I never succeeded in reading it all; the library where I found some back issues complained that kids like me were cutting those pages out. Then a boy down the street introduced me to *Argosy All-Story,* and there I found Ray Cummings' home ground. There, all through the late '20s and the '30s, we waited breathlessly for every week's new installment. Burroughs, by then, we could take or let alone. Merritt was a rare and wonderful treat, sometimes pretty hard to understand unless you were intoxicated with the sound of words. But in Ray Cummings' serials color and wonder never ended and everything was beautifully clear.

Bob Davis, greatest of the pulp editors of that era, said: "He is a Jules Verne returned and an H. G. Wells going forward." Like Verne, Ray Cummings made scientific wonders the core of his stories, but where Verne built securely on the science of his day, Cummings seized on the hints of a *future* science and spun his yarns around them. As far as I know, he was the first to add a strong, if melodramatic, plot to the gimmick of H. G. Wells' "Time Machine," and in "The Man Who Mastered Time" pretty well established the formula of the time-travel stories we are still reading and writing. By the same token, I think he was the first to graft the still new concept of Bohr's planetary atom on the theme of FitzJames O'Brien's "Crystal Lens" and make the world-in-the-atom his own. It would be hard to find a variety of science fiction to which he didn't at some time turn his practiced, competent hand.

He had something else, too, that Merritt had, and Talbot Mundy, but Burroughs didn't—he had style. You could open a copy of *Argosy* at random and begin to read, and if you had opened to a Cummings story, you knew it. English teachers threw up their hands in horror at the incomplete, choppy sentences—but it was effective. Looking back, it seems to me that it was a hybrid between the almost absurd simplicity that Dr. David H. Keller was shortly contributing to *Amazing,* and Merritt's flow of sound and color. You knew just what was happening, and feared for what was going to happen, even though you recognized subconsciously that just about every Cummings plot turned out the same way.

In view of what has been reprinted by the paper-back publishers in the last few years, it has always been a puzzle to me that none of them have picked up some of Ray Cummings' many serials and put them between covers. I'm not so sure that they would be dated and unaccept-

able to today's young readers, who apparently follow the PB's even more than the magazines. The simple Good versus Evil plots might seem corny to a generation fed on the sadism of private eye guns-and-guts stories and the "realism" of *Confidential,* but the color is there, the action is there, and the words are simple and understandable. Try it, Ace, backed up against something modern.

1956 was also the year in which we lost Fletcher Pratt. It's too late now to add my few shavings to the fire that has burned in his honor. Still, it seems to me that he was a figure in science fiction rather than a force. A man who was very definitely a force, and without whom this magazine wouldn't be here, died on October 22nd—F. Orlin Tremaine, Astounding's first editor under the Street & Smith banner.

Frederick Orlin Tremaine was probably the most professionally skilled editor ever to handle a science-fiction magazine. He started with two strikes against him, and an hostile umpire. The Gernsback followers and the loyal *Amazing* league had their backs up against cheap imitators, and Astounding under the Clayton name had never found itself. Under Tremaine's editorship and the Street & Smith policy of buying the best, the magazine quickly forged into first place in quality, in circulation, and in the number of striking "thought variant" gimmicks it tossed out for the faithful to wrangle over. Astounding became, if the simile isn't too strained, the general-fiction magazine of the science-fiction field. It was a policy that worked, or John Campbell would never have had the opportunity to take over when Tremaine became S&S's editorial director.

In his introduction to the handsome Heritage Press edition of Jules Verne's "Twenty Thousand Leagues Under the Sea" (325 pp; 1956; $5.00), Fletcher Pratt points out how very thoughtfully Verne designed Captain Nemo's *Nautilus.* He powered it with electricity—equipped it with electric stoves and fluorescent lamps—"trimmed" it for diving with a device that wouldn't be used for a generation—used a telephonic intercom system, and diving suits that anticipated the flexibility of present-day skin-diving rigs. Verne was the father of the Heinlein-Clement school of painstakingly thought-out detail, where Wells founded the "what will happen if" school.

The man behind the book is the subject of a recent biography by Verne's niece by marriage, Marguerite Allotte de la Fuye, "Jules Verne, Prophet of a New Age" (Coward-McCann, New York. 1956. 222 pp. $3.95). The book, translated from the French, has been written primarily from family letters and other papers. It shows him as the son, uncle and father—the young Bohemian who wrote operettas and musical skits, circulated in the lit-

erary society of his day, exercised a vigorous sense of humor with more diligence than judgment, and all the while read omnivorously in every field of science. He went from music to the stock exchange, determined always to write—and when "Five Weeks in a Balloon" became an overnight sensation, the dam burst. Verne never, it seems, found it hard to write: his mind was brimming with ideas, characters, incidents, plots, background detail. He *had* to write, and he had to write science fiction, though this was only a small part of his tremendous production of novels and short stories, most of them never put into English.

You won't learn much about Verne's books in this family portrait; there is not even a list, and the dates are hard to pin down. You may not be able to visualize him as the young hedonist with the back out of his shirt; although the author frequently describes photographs in the family archives, she doesn't show them—at least, this edition doesn't. The only portrait is on the jacket, and that shows the familiar gray-beard of his later, famous years. You will understand only indirectly Verne's relationship to the science and the scientific thinkers of his time, and how they were reflected in his books. Some day there will probably be a definitive biography of Verne, the writer. When it comes, it will have to draw on the same intimate details which went into this book, but it will step outside the family circle and show us Verne as his world saw him.

Verne was the father of science fiction as popular literature. Ray Cummings, a generation later, projected Verne's formula into the future while holding to the basic principle that these must be exciting stories. F. Orlin Tremaine built a magazine around these factors: projection plus entertainment—and here we are.

STRANGERS IN THE UNIVERSE, by Clifford Simak. Simon and Schuster, New York. 1956. 371 pp. $3.50

When names like Heinlein and Van Vogt, Kuttner and Asimov are brought up as pioneers of "modern" science fiction, someone is always doing a double-take when he remembers Simak. Because this veteran's stories go way back into the Gernsback days, and they've been good all along. Whether he has run neck-and-neck with the big-name leaders, or paced them most of the way, it's hard to say.

Eight magazines and six years (1950-56) are covered by the eleven stories in this collection. As you'd gather from the title, they are all more or less followers of one theme: Man and Alien, meeting among the stars. "Ingenious, provocative, entertaining" the publishers say on the jacket and it's perfectly true.

In "Shadow Show," the opening story, a scientist-team has been marooned on an asteroid with in-

structions to create life. They have invented a game of mental projection to fill their dead hours—and the Game begins to seem too real. "Contraption" has been in many anthologies: it's the one about the alien machine which finds an orphan boy's real need. Later in the book, "Kindergarten" is almost the same story told in entirely different terms: the machine that grants wishes, then begins to build a shining tower that shuts out all but a few . . .

"The Answers" is an epilogue to the Man-and-Dog "City" sequence: I'm not sure whether it was included in that book.

"The Fence" is a slight, gimmicky tale not up to its company, but "Target Generation" evokes the problems of keeping a goal through the generations when Man uses the only feasible means of reaching the stars, and does it convincingly. "Beachhead" captures the alien mood in its description of a world where everything goes wrong, though the mechanism isn't really convincing.

"Mirage" gives us men versus Martians in a little tale that could almost have come off Bradbury's typewriter. "Skirmish" uses some of the author's newspaper background for a chilling little fable of the revolt of the machines. "Retrograde Evolution" offers a disturbing answer to the problem of ending war, and the closing story—and one of the best—"Immigrant," again puts Man in his place among the junior races of the universe.

MISSION TO THE MOON, by Lester del Rey.

THE LOST PLANET, by Paul Dallas. Winston Co., Philadelphia. 1956. 206 & 209 pp. $2.00

The Schomburg jackets which have become a trademark of this series of juvenile science-fiction novels fit the 1956 offerings very nicely. Lester del Rey's sequel to his "Step to the Stars" carries Man from the space-station to the Moon, while the first offering of an English writer, Paul Dallas, concerns itself with races-of-good-will on a galactic level. Both are good, middle-of-the-road SF which should give teenagers an introduction both to the themes of the genre, and to some of the stereotypes.

The del Rey book is the better of the two, but it has the advantage of a kind of realism that can key into the Vanguard project. Jim Stanley, who became a space pilot and helped build the space station in the earlier book, is called back to help put together the Moon ship. As a complication, the Russian-Asian Combine puts a satellite in the same orbit, bringing the military aspect into the open and setting off a public drive to outlaw both satellites and the Moon-expedition. Finally, the brattish son of the satellite commandant takes off for the Moon in a stolen rocket, and Jim's final problem is ready for solution.

"The Lost Planet" takes us far enough into the future for trouble to be brewing between Mankind and

the octopoid people of Poseida. Experimental ships, trying to reach light-speed, have been disappearing and a powerful element on Earth blames the Poseidans and is urging war. The young hero of the book, Bill Hudson, becomes friends with a Poseidan youngster during a vacation on the "lost" planet, and, as is often the case in these books, a league of young-people-of-good-will solve the scientific mysteries of what happens at light-speed and persuades the pompous and blundering adults to turn away from war. The "secret" of the missing ships is not very tenable, but is no worse than the relativistic antics employed in many an adult book.

Incidentally, I owe Andre Norton —alias *Andrew* North—an apology for ever supposing she might have been the *Eric* North whose "Ant Men" is the one real lemon in this Winston series. This means that the Australian setting is probably as realistic as the publishers claimed, but the story is still the oldest of old stuff.

STAR WAYS, by Poul Anderson. Avalon Books, New York. 1956. 224 pp. $2.75

If anybody is going to bring back the plain good story, convincingly told, with suspense, likable people, and solid backgrounds, I guess Poul Anderson is the man to do it. Here is an original book, rather short, that is enjoyable from first to last: no lessons, no phony significance, but none the less a deep feeling for the things that will set the Vikings of space apart from other men.

The ship-clans of the Nomads are the traders of the galaxy, living by their own laws, for their own purposes, and generally at odds with the Co-ordination and Survey authorities back on Earth, whose thankless job it is to keep human civilization from fragmenting into warring local cultures. Peregrine Joachim Henry, one of the most respected of the ships' captains, meets his fellow space-rovers with evidence that an unknown, hostile civilization is gathering strength in one of the least known sectors of the star-clouds. The *Peregrine* goes to investigate, taking with her a Co-ordination agent, Trevelyn Micah, and a beautiful nonhuman girl, Ilaloa, whose telepathic powers may help them smell out the unknown. And so their troubles start . . .

It's fast-moving, convincing, and beautifully done. The flashes of other worlds and other cultures have depth and reality, and the central characters come alive by living. This new SF publisher is going great guns!

THE BEST FROM FANTASY AND SCIENCE FICTION, edited by Anthony Boucher. Doubleday & Co., Garden City. 1957. 255 pp. $3.50

This is the sixth volume of this annual series, and for once the publisher has had sense enough to say so on the jacket. Whatever you may

feel about the relative merits of the other annuals, the "Best" selections by T. E. Dikty and Judith Merril, you know from the start that this will almost certainly have the greatest variety and be the least predictable, as does the magazine from which the stories are taken.

I'll have to say right away that some previous volumes in the series have been better. I miss certain stories, either because they didn't fall inside whatever span the editor used —parts of 1955 and 1956— or because someone else got 'em first. Or, I suppose, because Tony Boucher decided they would spoil the balance of his book, which he has put together as carefully as any issue of his magazine.

Among the fifteen stories—seasoned with snatches of verse—there are fewer fantasies than you would suppose from the magazine that has taken *Unknown*'s honored place but never imitated it. Mildred Clingerman's "Mr. Sakrison's Halt" is an understanding little tale about an old lady searching for a moment lost in her youth. Rachel Maddux has an off-beat ghost story in "Final Clearance." Poul Anderson has devastated the whole Conan concept with a blunt broadsword in his chronicle of Cronkheit, "The Barbarian"—and done a beautifully definitive time-travel-past story in "The Man Who Came Early." And that's about it.

As for the SF, the Anderson story of an American MP thrown back into Iceland of one thousand years ago is simple, convincing and inevitable. Another favorite of mine is Jay Williams' "The Asa Rule," with an anthropological—or, perhaps, I should say xenological—treatment of contrasting culture values on Mars. Theodore Sturgeon's "And Now the News . . ." is science fiction in the sense that Dr. David Keller's little classic, "The Dead Woman," is: it's a penetrating study of psychosis. C. S. Lewis dips into another human mind in "The Shoddy Lands," and Ray Bradbury draws poetry out of still a third in "Icarus Montgolfier Wright."

The grim is here, too: nowhere grimmer than in Frederik Pohl's "The Census Takers"—though a gimmick offsets the picture of a mercilessly statistical society—or Will Stanton's "The Last Present," in which a boy is away from home a little too long. Ward Moore's "No Man Pursueth" is a kind of morality, which you can take as SF or fantasy, according to your view of the universe. And Avram Davidson, in "King's Evil," recreates England of nearly two centuries ago in a way that reminds me of John Dickson Carr.

The sly, wry or exuberant humor that you automatically expect from *F&SF* is most outspoken in the misadventures of Cronkheit, but it is also there in C. M. Kornbluth's study of Functional Epistemology, which in "The Cosmic Expense Account" is shown to have at least the potentialities of General Semantics, and Ron Smith's "I Don't

Mind." And as for straight-off-the-counter, standard, down-the-middle SF, Charles L. Fontenay investigates a far world where men are the draft horses and horseburgers of an alien race, in "The Silk and the Song."

It's good, but it's not really the best *F&SF* has to offer during that period. As I said, someone else must have slipped in first.

TALES OF GOOSEFLESH AND LAUGHTER, by John Wyndham. Ballantine Books, New York. 1956. 150 pp. 35¢

Coincidence is quite properly abhorred by all critics and most writers (let me tell you about my own "impossible" coincidence some time: the one that involves such unlikely things as a Pleistocene caribou, an unco-operative employer, an uninformed mother, my great-grandfather, and of course myself, with a puddle-catfish for irrelevant trimming). However, if my copy of this collection had not lost itself in the early holiday mails, I would never have read Ballantine's January title, Arthur Clarke's "Tales From the White Hart," first. And I would never have realized that these eleven prodigies also stem from that present-day Mermaid Tavern, where the elite among England's science-fiction practitioners sit quietly and get their stories from the people who lived them . . .

It is true that four of the tales are fantasies, and obviously never could have happened to anyone but the White Hart's regulars—Harry Purvis, for example. It is also true that others of the alleged science-fiction episodes have a certain air of rolling-eyed abandon quite at variance with the author's grimmer chronicles, such as "Re-Birth" or "Out of the Deeps." But—well, I've given you my conclusions, so let's see what you get for a well invested thirty-five cents.

To dispose of the fantasies first, the book opens with "Chinese Puzzle," the story of a respectable, middle-aged Welsh couple whose son sent them a dragon egg from China, who hatched it out, and whose outlandish pet soon brought on difficulties with a dragon of another color. You will find "More Spinned Against," which explains what happened to an inoffensive collector of spiders when he trapped Arachne herself, patron and epitome of arachnids.

In "Present from Brunswick" you will follow to a logical conclusion the disturbances arising in a suburban hamlet when another outlandish gift was introduced into a meeting of the Pleasantgrove (U. S. A.) Cultural Club Musical Society (Recorder Section). And in "Confidence Trick," you will encounter a kind of "Infernal Omnibus" to counteract the celestial vehicle described by a fellow-countryman of Mr. Wyndham's.

"Una" you may recognize: it's the account of what happened when a

crusading agent of the Society for the Suppression of the Maltreatment of Animals came up against the "perfect animal" created by a neighboring scientist. It's pure White Hart fare, as is "Heaven Scent," an adventure in olifactory essences, and "Jizzle," the exploits of a remarkable monkey named Giselle, who also gave her name to one of the English short-story collections in which some of these yarns appeared. "Opposite Number" offers something like a fission theory of time as explanation for the difficult situation which arose among Peter Ruddle, himself, and his ex-fiancé wife. "Wild Flower" is a delicate little tale that might have been told by one of the quiet persons in a back corner—Dunsany's Jorkens, who frequents the place, was always coming up with something of the kind.

We are left with two stories which may have reached the ostensible author by other means, though they may well be something contributed by one of Professor Soal's experts in precognition. The lighter of the two, quite in the White Hart mood, is "Compassion Circuit." It points out that we can go too far in humanizing our robots. "The Wheel," on the other hand, makes clear that whatever we do to our society through fear of science, we are not likely to de-humanize ourselves.

Maybe you've concluded that I enjoyed this collection as much as I did "White Hart." I did, and do. I hope someone else puts both of them between hard covers.

THE ASTOUNDING SCIENCE FICTION ANTHOLOGY, edited by John W. Campbell, Jr. Berkeley Books, N. Y. 1957. 188 pp. 35¢

The original "ASF Anthology," published by Simon and Schuster in 1952, ranked second only to the classic Healy-McComas "Adventures in Time and Space" as most popular anthology, in our last summer's poll. This is the second paper-backed selection of stories from the big book. You'll find them familiar, because most of them are true classics, but at this price that should stop nobody—if only to reread them.

There are eight stories in the lot, led off by Isaac Asimov's unforgettable "Nightfall" and Murray Leinster's equally definitive "First Contact." Clifford D. Simak's "Eternity Lost" is one of the equally definitive treatments of immortality. A. E. van Vogt's "Vault of the Beast" is one of the author's early monster stories. John Pierce—as "J. J. Coupling"—gave us "Invariant," a sleep-till-tomorrow variant, and Henry Kuttner, as "Lewis Padgett," offered "When the Bough Bends," the story of a super-baby and his tutors from the future. Kris Neville contributes "Cold War," a problem of the space stations, and Lester del Rey—of whom we hear too little nowadays—closes the book with "Over the

Top," in which a Martian helps a man make a basic decision about the future of man on Earth and Mars.

I'd say only the Van Vogt and Pierce items are below the best level of this magazine's "good old days" —1940-1949 are the years spanned —and they, too, are representative of factors that went into the pattern of modern science fiction as this editor, these authors, and this magazine made it.

SECOND TIME AROUND

FORBIDDEN AREA, by Pat Frank. Bantam Books, N. Y. 1957. 214 pp. 35¢. A superior suspense-and-spy thriller whose borderline claim to SF lies in the fact that it describes an approaching Russian attack on the United States that hasn't happened yet.

MEN AGAINST THE STARS, edited by Martin Greenberg. Pyramid Books, N. Y. 1957. 191 pp. 35¢. Nine stories out of Gnome Press' 1950 "theme" anthology, perhaps the best Marty Greenberg has put together. All but one were first published here. Authors: Wellman, Williams, Padgett, Walton, van Vogt, Clement, Leinster, Hull, Hubbard.

THE REPORT ON UNIDENTIFIED FLYING OBJECTS, by Edward J. Ruppelt. Ace Books, New York. 1956. 318 pp. 35¢. The author, you'll recall, headed the Air Force's Project Blue Book from 1951 until 1953. It's the sanest Flying Saucer book in print, and the only one whose author has really used official sources.

THE AGE OF THE TAIL, by H. Allen Smith. Bantam Books, New York, 1956. 117 pp. Ill. 25¢. This is the year when—come next September 22nd at 5:35 a.m., EDST—Mankind will regain his heritage and start to grow a tail. This dead-pan scientific study has been handed back from a future when our society has begun to adjust to the change.

THE INVISIBLE MAN, by H. G. Wells. Pocket Books, N. Y. 1957. 150 pp. 25¢. In treatment, at least, this is probably the closest of Wells' stories to modern SF: lots of plot, action, and a gimmick around which the whole thing spins.

THE END

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

(*Continued from page* 6)

Now the way to get a perfect score on a test is to give exactly the answers the tester considered ideal, or perfect. The consequence is that "perfect" turns out to be "You answer just the way I think you should, and that shows you are perfect."

On one test intended to measure IQ in superior adults, a friend of mine took the test and found the question "What planet is nearest the Earth?" He answered "Venus," and was scored wrong. The psychologists who prepared the test were not astronomers, and had decidedly inadequate astronomical knowledge; by knowing more about the subject than the test-makers, my friend got a *lower* score than another man, who was as ill-informed as the psychologists, would have.

Ashby, in one of his papers, points out that no human IQ score over two hundred has ever been found. Agreed. None will be found, either. An individual who did in fact have total comprehension of all fields of human knowledge, with perfectly accurate, and unlimited data, and had enormously rapid, and perfectly accurate thinking processes, would, by definition, arrive at answers other than those the test-makers considered perfect. The perfect thinker will arrive at answers that differ from those derived by imperfect thinkers. The psychologists preparing the tests are, admittedly, humanly limited people, and hence arrive at imperfect answers. But a perfect *score* is made by arriving at the *same* answers.

Therefore, the intelligence-amplifier would, because it achieved superhumanly precise answers, depart from a perfect score, and it would be said that, by test, it did not have an IQ above about one hundred thirty.

Incidentally, given a telepathic-clairvoyant individual of minimal ability to think, his IQ would be unmeasurable. He would always get a perfect score on any test; he'd get the answers from the test-maker's mind.

The second objection I raise is different. The real and fundamental test is that of solving the problems of real-world living. To a psychologist's way of thinking, Leonardo da Vinci had an IQ of only about one hundred thirty, Isaac Newton of only about one hundred twenty; IQ test results aren't the true test of intelligence anyway. Let's test the intelligence amplifier against real-world problems.

Suppose we assign it the problem: "What methods can solve the social, economic and political problems of India most quickly, and with maximum advantage to the people of India?"

The intelligent machine is given all world history, science, religion, everything possible, in the way of data to work with. It manipulates these factors, and comes to a conclusion: The best way for a rapid, complete, and long-range solution of

the economic, social and political problems demands cross-breeding of the highly inbred castes of India. The quality of the entire population can be drastically raised in a few generations, while the caste system itself would be eliminated, thus breaking many of the major economic barriers.

"Let the males of the highest caste marry females of the second caste, but mate with as large a number of the lower castes as possible. The females of the highest caste should marry males of the second caste, to maximize cross-breeding. The lower caste females should, to as large a degree as possible, be bred to highest class males. Every lower caste female should bear one child by a highest caste male before being mated to lower caste males."

There is excellent evidence for the validity of this solution; every animal breeder is well aware of the effect of "breeding up" a herd of scrub cattle by the introduction of one high-bred male. It is entirely sound on the basis of the laws of genetics.

Furthermore, history shows the effect of precisely such a system; Europe practiced it for centuries, where the low-caste, or serf, females, under the doctrine of *jus primae noctis,* were required to mate with a high-caste male before mating with a low-caste male.

The "rise of the middle classes" is an historical phenomenon unique to European history—as was that hybridization system.

The intelligence amplifier's solution would be very intelligent indeed . . . as a logical plan. The intelligence amplifier's component parts would, however, be scattered over a very wide area, in very small units, almost as soon as the proposed solution became known.

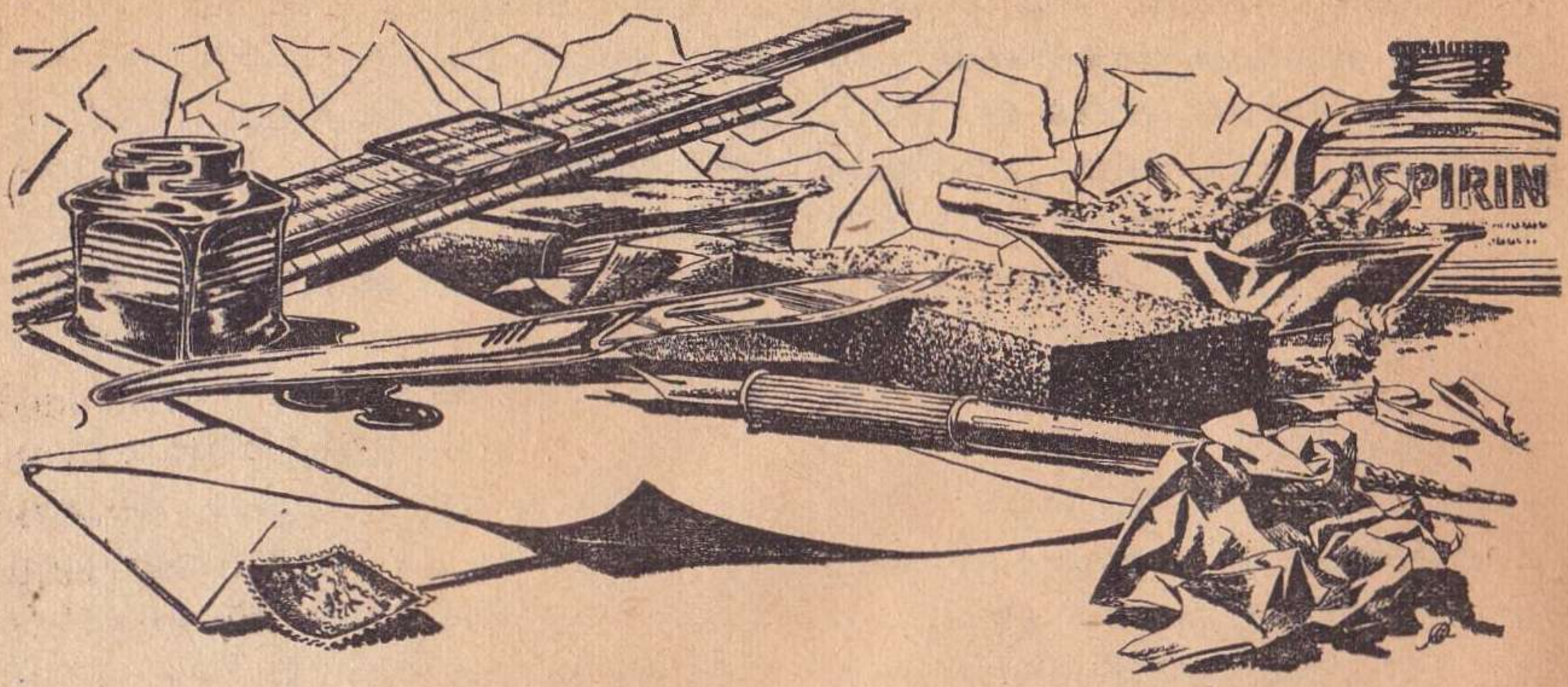
But . . . whoa back! Wait a minute! This is an intelligent, in fact, by definition, a hyper-intelligent entity, supplied with all available data of human history. Having all the data of human history, and intelligence, it would not only derive that solution, but would also accurately predict what would happen if it were published. It would, therefore, be too intelligent to make any such immediately-lethal suggestion.

Further careful consideration of the total situation would lead the Intelligent Amplifier to report, "Gee, Boss . . . that's too tough for me. What do *you* think we should do, huh?"

That is the *really* intelligent answer. Demonstration of hyper-intelligence, solving problems in terms of long-range group-benefits, is very short-sighted. It gets you killed too quickly to do any good.

The really intelligent intelligence-amplifier, then, would be intelligent enough to avoid revealing its (self-destructive!) powers of problem analysis. And, of course, being more intelligent than the operator, the operator would never be able to detect that the machine was concealing its successful operation.

THE EDITOR.



BRASS TACKS

Since so many had fun untangling W. H. Plummer's brain-teaser about kinetic energy and momentum . . . try this one, which doesn't crack quite so simply.

A rocket ship on the Earth-Mars run, has to accelerate 1 mile per second. The captain so informs the engineer. The captain observes Mars, up ahead, and determines that the engineer has, indeed, accelerated the ship 1 mile per second, from 29 to 30 miles per second. The engineer, observing Earth, behind them, knows they accelerated 1 m.p.s.—from 9 to 10 m.p.s. (No fair asking what sort of orbit the ship and the two planets are following! In this Universe of Discourse, maybe the planets run in opposite directions around the Sun. Who cares?)

Now the captain asks how much fuel was used. The engineer reports that x kilograms of fuel were consumed. Thirty seconds later, the skipper calls down, "Hey, your meters are jammed! According to the figures you gave me, either you got 498% efficiency out of your engines, or you're using a fuel I never heard of, with five times the latent energy per pound of standard gojooz fuel."

"Ah, skipper, your slide rule slipped a bearing," says the engineer. "I figure we achieved 99% efficiency . . . which is better than I expected, to be honest, but not 500%!"

Presently they realize they're computing the energy in relation to different frames of reference. But then they get into a worse argument. Which frame of reference should they use; Earth, whence they came, or Mars, where they have to make a landing? And how much energy did *they get out of that fuel, any-*

way? The chemical energy in the fuel is not *relative to external frames of reference!*

Dear Sir:

Concerning the very interesting paradox raised by W. H. Plummer in the February edition, it is true that the spaceman returning to his ship with some small velocity relative to his ship would have to dissipate an enormous amount of energy, as computed by an observer on Earth, if the ship were traveling at high velocity relative to Earth. However, this does not mean that the force of impact when the spaceman meets the ship will be any greater than it would be if the ship were sitting on the ground, all else being equal. The force of impact will still be measured by the time rate of change of angular momentum, i.e.

$$F = m\ (dv/dt)$$

where m is the mass of the spaceman and dv/dt is the instantaneous time rate of change of his velocity at any instant during impact. How "hard" the spaceman will hit the ship will thus depend only on his change in velocity, rather than his velocity relative to Earth, and Mr. Plummer can rest easy.

The huge amount of energy, as measured by the Earth observer, will still be dissipated none the less, if properly computed, being equal to

$$E = m \begin{matrix} s \\ s \\ i \\ f \end{matrix}$$

$$(dv/dt)\ ds = \tfrac{1}{2}m\ (v_i^2 - v_f^2)$$

as Mr. Plummer rightly concluded. (The subscripts i and f refer to the state at the beginning and end of the impact, respectively.) In evaluating the integral, it must be remembered that since everything is measured relative to Earth, the distance s over which the force acts will be much greater than it would be if the ship were standing still on Earth. It would be equal to the ship's velocity divided by the duration of the impact, whereas, if the observer and spaceship were traveling together, the distance would be very much smaller, depending upon the relative velocity of ship and spaceman, rigidity of the hull, frictional forces, masses of ship and spaceman, et cetera.

The whole point is that energy is a strictly relative quantity and depends on the frame of reference, whereas force is absolute in the sense that it does not depend upon the frame of reference, providing we stick to inertial (non-accelerated) frames. If, in dealing with the problem at hand, we choose for our coordinate system one which is moving with a velocity equal to that of the spaceship, the problem is much simplified and nothing is lost. The energy is then simply equal to $\frac{1}{2}mv^2$ where v is the spaceman's velocity.

This is the sort of procedure we ordinarily follow when we meet with dynamical problems. We do not consider, for example, the velocity of the Earth relative to the fixed stars when computing the energy of a moving body here on Earth, though we might just as well if we chose to complicate the problem.

The foregoing also answers the dilemma of Og and Ot appearing in the same letter. The fact is that though they arrive at different answers, both the ground observer and the train observer are correct in their measurement of the energy lost by the bullet. However, the force of impact as measured by either Og or Ot would be identical. When Mr. Plummer asks, "How hard does the bullet hit?" it is clear that he is confusing force of impact with energy of motion.—Spencer D. Raezer, Applied Physics Laboratory, 8621 Georgia Avenue, Silver Spring, Maryland.

That clears up that one—and is essentially similar to about one hundred fifty other answers that little brain-teaser of Plummer's drew!

Dear Mr. Campbell:

Upon reading the February Astounding, I became greatly intrigued over the idea of the "printed circuit" Hieronymus machine — especially since it cost so little to build. When I had finished drawing the circuit—India ink on typewriter paper—I realized I hadn't figured out where to hook up the metallic sensor plate. I checked the text, photos, and schematic, but was still in the dark. So I wrote to you for the answer. In the meantime, I proceeded to experiment *without* the sensor plate. At first—with myself—I had no results. When others tried it, the results were amazing! I have compiled a list of my findings.

In all cases, there was no "tacky" feeling or the sensation of having one's hand in "spilled orange juice." Instead, all reported a distinct feeling of warmth or heat upon touching the paper spiral coil without a sensor plate. This heat, they said, increased gradually and then tapered off. Each time they said the sensation was strongest, the plastic prism had been turned exactly 45°. Of course, I did not let anyone see me turn the prism, so they could not have had any way to know when to start feeling the heat.

The people whom I tested have little or no knowledge of electronics, and most of them do not read science fiction, I regret to report. No one knew what I was doing when I simply asked them to place one hand on the paper coil and tell me what they felt, if anything. All were mildly surprised when they "felt something warm" as the prism moved to 45°. (Nobody was as surprised as I when I got the first results!)

I next tried putting a coffee can lid over the paper coil. Everyone tested said that it felt warmer than

the coil. (I would like to point out that I allowed for the chance that it was just the warmth of the metal lid they felt, because I disconnected the threads leading to the coil several times, and they then said that the lid felt cold.) I tried a scrap piece of aluminum next, and the results indicated that the coffee can lid was a better "conductor." Next, I used a plate of steel and they said that it was better than even the coffee can lid. Now I put a piece of thick (½") plastic on the coil, and my subjects declared that they could "just barely feel it." (The heat, that is.) I don't think my subjects were particularly aware at the time that it would take a powerful amount of voltage or a high static charge of electricity to cause any sensation on that plastic board.

I then did some more experimenting, and the results of my efforts were quite unusual.

It would seem that a bigger coil —larger in surface area—underneath a smaller one, and connected to it in parallel by threads, creates a more potent heat. The steel plate on top of this arrangement really sets um jumping!

Shorting out the India ink condenser immediately stops the machine from functioning, but shorting the plate coil in the schematic with a screwdriver or a strip of aluminum foil *increases* the heat output greatly. Some described a definite—if one can be definite about something like this—"hot and cold all at once" sensation, and not a

rise in temperature or decrease, as such, when I shorted the coil turns.

When I laid a small strip of aluminum foil over the two extensions coming off of the circle around the prism in the drawing, they all said that the "hot-cold" sensation was present. (They were quite certain the "coldness" was not that of the metal plate. I tested this by disconnecting the threads to the coil several times.) But when I *penciled* in a line between the extensions where the aluminum foil had been, all sensation stopped, as though the condenser were shorted, or the machine inoperative!

When I shorted the big black dot in the center of the circle in which the prism rotates to the rim of the circle, there was a feeling of "coldness," but it was not the temperature of the metal plate, they said.

I next connected a 360 mmf tuning condenser across the plates of the India ink condenser in the diagram. This was done with wires, however, as it was becoming inconvenient to use so much thread. An extra-strong feeling of heat was described as emanating from the steel plate when the plates of the condenser were open nearly all the way. (This particular subject, least of all, could know what a tuning condenser is; he was only eight years old!) The heat tapered off as I closed the plates of the condenser, while leaving the prism at 45°.

I drew a step-up transformer schematic diagram, minus the core, in ballpoint pen ink. Then I hooked the primary—with the least number of turns—to the threads coming from the diagram and the secondary to the good old steel plate. This, of all the previous arrangements, seemed to produce the most heat. When I reversed the transformer, only a slight heat was felt.

After this, I used a genuine metal and wire electromagnetic speaker field coil in place of the paper spiral coil and nylon threads. This coil weighed some eight pounds and could handle over 150 volts @ 25 milliamps. I set the steel plate on the coil, and I turned the prism to 45° while the subject had his hand on the plate. Nearly as strong a sensation was described as that of the inked step-up transformer.

A very unusual thing, yet, then again not so strange at that, is that when I reversed the connections to the above field coil, each and every time the subject said the heat turned to *cold*—not the cold of the plate, but colder still! Maybe the machine *generates* something when hooked up one way, and *absorbs* that something when hooked in reverse (?).

This is the extent of my findings at present. All whom I tested, I tested individually, and none were aware before they passed through the portals of my ham shack of what they were going to be asked to do. When they saw the breadboard layout that was the Hieronymus machine, they probably assumed it to be just another of the "crazy" gadgets littering the shack. Unless they knew what one looked like, they

couldn't know that it was a psionic device. No one knew.

I myself, as I mentioned, seem to get no sensation from the machine; possibly it is due to the fact that I am a ham radio operator, and we just *don't* believe in such things! But from what I've seen, I am going to have to revise my thinking! I must say, I felt pretty silly building the psionic machine, and most of my friends whom I told about it were undecided as to which was crazier—me or the machine. Strangely enough, none of the skeptics were science-fiction addicts, and none had read the article in the February Astounding.

I would like to know, John, how and where you got the idea to draw the schematic of the Hieronymus machine on paper in the way in which it appeared. How did you think to put the parts down in such a way so that they work? Will they work in any relative positions, to your knowledge? Also, how did Mr. H. himself discover the machine?

This machine cost me absolutely nothing, as I omitted the vernier dial. I used a wood screw, fastened head first, in a plastic knob and driven into the surface of the prism.

I would like to get hold of more material on psionic machines and the like, in the future.

I don't attempt to offer any conclusions or Great Truths as to *how* or *why* the Hieronymus machine works as it does, but I would like to hear about any ideas on the subject or experiments you or your readers might have.

I will keep on experimenting, and reporting my results, if any.—David M. Dressler, K6MLE, 6835 Peach Avenue, Van Nuys, California.

Psionic Machine Type Three, by gosh! It's wonderful what a little inaccuracy of statement can do to

promote original discovery! I never tried using a metallic tactile plate; I've used only plastic. The description in the February '57 issue wasn't clear on that, as a number of readers pointed out, so Mr. Dressler has invented a new device. I used a piece of metal as a sample; not as the tactile surface. What were you using as the sample on your machine? How connected?

And as to how I or Hieronymus thought to build the machines—same way you did, friend! "Try it and see!"

Dear Editor:

Due to your courageous sponsoring of consideration of Psi phenomena, one feels most gratefully that in these columns speculation on kindred "unscientific" material will at the very least not expose you to ridicule. I am encouraged then to broach a subject long of intense interest to me in the hope of inciting others either to comment or to investigation. I refer to the matter of prevision in dreams, or dreaming of future incidents, as originally investigated by J. W. Dunne, the British aeronautical engineer.

Prior to his death in 1948 Mr. Dunne had published four books: "An Experiment with Time and the Serial Universe," with two popularizations of the thesis. The author commences by describing his own innumerable instances of dreaming of future happenings, and then proceeds to evolve a theory to explain the phenomenon. Dunne was far from being a crackpot: he designed Britain's first military plane and was a distinguished engineer. H. G. Wells and Joseph Priestley were among his admirers. He was given permission to conduct a large-scale experiment of dream pre-vision with students at Oxford, and the account of this and its extremely productive outcome are given in the first named book.

The experience of dreaming the future is extremely common, and the chances are good that you who read this have done it many times. The trick of noting these dreams is described, and once you catch on you will find the thing so routine that you may end by paying little attention to it. But: what does the phenomenon imply? First, you satisfy yourself that it can be done; then the true scientist must worry away at it for a solution. Dunne did this, but it does not follow that his theory is the correct one, of course.

That is the object of my letter: to encourage others to write in with their opinions of the man's answer, and the mathematically-trained to evaluate his proofs—which are wholly beyond my field; I have often wondered how they stand up under competent scrutiny. I should appreciate any letters from serious investigators of the Dunne Time theory, especially from those technically qualified to endorse or refute it.

Congratulations on the advanced and adventurous thinking of the

magazine.—Dr. Thomas Wheeler, 234 Vance Square, Pacific Palisades, California.

The experiment is fun, requires no special equipment—but may scare you!

Dear Mr. Campbell:

As you know, there are numerous Rocket and Propulsion societies in this country, some with a very wide membership.

We would like, however, to acquaint both you and the readers of ASF with another type of Society—the Society for the Advancement of Space Travel.

SAST has as its purpose an entirely different aim. We are an organization devoted to the study of the social and human problems involved in space travel.

As part of this, we include the education of the public towards the inevitable—the actual construction of an interplanetary rocket; one could call this a cat heralded by a MOUSE.

SAST, although not a particularly large organization, is affiliated with the American Astronautical Federation. Our members are predominantly college graduates and college students. This is not due to restriction on our part; to date, however, most of our members have heard of us by word-of-mouth, and we have had minimal publicity.

SAST publishes a quarterly entitled *Frontier,* as well as occasional technical booklets and supplements. For example, a supplement on elementary matrix algebra is now in preparation; *Frontier* is presently running a series on Symbolic Logic; and quite recently our editor prepared a bibliography of English-language books on space flight.

Frontier also reviews and digests books on the subject of space travel, and, of course, presents data on trends and opinions in the United States. Towards this end we maintain a testing and opinion polling program.

We should appreciate very much your publishing this letter in Brass Tacks. We hope to increase our active membership during the coming year, and ASF circulates to an extremely appropriate population.

Persons interested in joining SAST, or in information about the Society should contact the undersigned.—Peter Zilahy Ingerman, SAST Secretary, 4305 Locust Street, Philadelphia 4, Pennsylvania.

Thinking about a problem before it slugs you is usually advantageous.

Dear John:

Towards the end of your editorial in the February issue, you again mention our patent laws. The general impression that I have gathered from your remarks made over the years about the patent system is that you feel the researcher or inventor cannot properly be protected and rewarded for his work if it involves the discovery of new laws of nature.

The patent laws were not written to protect inventors. They were written in the interest of the public as a whole. If there were no patent laws, inventors would tend to use their inventions as secret processes and so keep them for many years from wide use and the resulting public benefit. By granting a patent, the Patent Office gives the inventor a limited monopoly to make, use, and sell his invention for seventeen years. In return for the potential advantage of the monopoly, the inventor has disclosed his invention to anyone who wants to buy a printed copy of his patent and, at the end of the seventeen years, the invention passes into the public domain to be used for the benefit of any and all. Therefore it can be seen that inventors as a small group are not intended to be singled out for special favor from the government.

Suppose you discover a new natural law dealing with extrasensory phenomenon. Why should the Patent Office give you a monopoly to make, use, and sell all processes or devices that function according to this natural law? Another inventor may make a superior device that you never contemplated that follows your claimed principle. If you were granted a patent on this natural law, it would tend to make the second inventor withhold his superior invention in secrecy to the detriment of the public.

Actually, in the United States, we have one of the finest patent systems in the world. Critics must realize, however, that a patent is only a valuable first step towards capitalizing on an invention. Good business sense and a realistic evaluation of the invention are also necessary.—Peter L. Tailer, Reg. Pat. Agt., 22 E. 17th Street, N. Y. C. 3, New York.

If your reasoning is applied to present situations, then there should be no improvement patents applied for. Also, your expression of the intent of the patent law is incomplete; as stated, the purpose is simply to encourage disclosure of inventions already achieved. But there is also the purpose of offering potential reward to encourage individuals to invent things.

—continued from Back Cover

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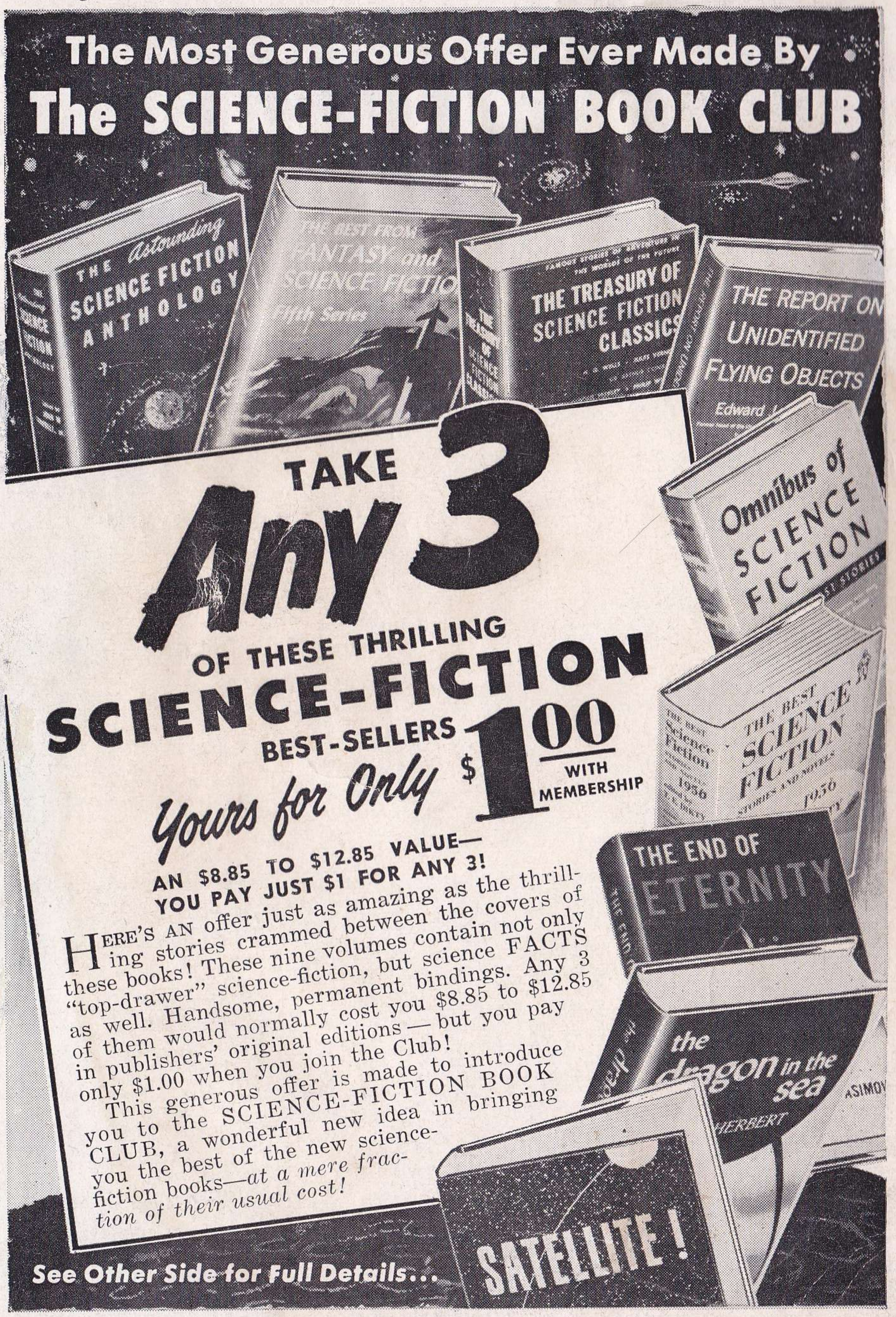

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